

Learning Together and Making Medication Decisions Together: A Mixed Methods Systematic Review of Interprofessional Education, Role Negotiation, and Translation into Clinical Practice

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Abstract

Interprofessional education (IPE) is widely used to prepare health-professions learners for collaborative practice, yet evidence that educational gains translate into negotiated professional roles and shared medication decisions in clinical settings remains fragmented. To integrate quantitative and qualitative evidence concerning interprofessional pharmacy education, role negotiation, and translation from educational outcomes into collaborative medication decision-making in practice, a mixed-methods systematic review was undertaken using PRISMA 2020 reporting principles, design-sensitive quality appraisal informed by the Mixed Methods Appraisal Tool, and a convergent integrated synthesis approach. Three complementary search routes were executed on 14 September 2026 across PubMed-indexed and publisher-indexed scholarly records. Eligible primary studies published from 2017–2026 involved pharmacy learners, pharmacists, or identifiable pharmacist participation in medication-related interprofessional work and reported educational, role-negotiation, collaborative-practice, implementation, or practice-translation outcomes. Quantitative and qualitative evidence were synthesized separately before integration. Findings were transformed only where their constructs could legitimately be aligned. Fifty-eight records were surfaced across the executed searches; 13 duplicate appearances were removed, leaving 45 unique records. Twenty-five were excluded during relevance screening and 20 primary evidence units were retained for detailed mixed-method evidence mapping. The evidence was weighted toward proximal educational outcomes such as collaborative attitudes, confidence, teamwork, role understanding, and perceived competence. Fewer studies examined sustained professional enactment, and direct evidence connecting IPE with objective medication-related patient outcomes was sparse. Qualitative practice evidence indicated that translation was conditioned by role clarity, professional identity, communication, organisational control, workload, leadership, resources, and relational work. Interprofessional learning can strengthen capabilities relevant to collaboration, but educational improvement should not be treated as evidence that collaborative medication decision-making has been achieved in practice. Translation depends on how roles are negotiated and supported within clinical organisations. Evaluation should therefore distinguish educational outcomes, enacted interprofessional roles, and practice-level medication decision-making rather than collapsing them into a single measure of IPE success.

Keywords: Interprofessional education, Pharmacy education, Role negotiation, Medication decision-making, Collaborative practice, Mixed-methods systematic review

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Introduction

Interprofessional education has become a prominent strategy for preparing pharmacy and other health-professions students to work collaboratively. Pharmacy-focused reviews describe generally favourable learner responses and improvements in attitudes, readiness,

perceived teamwork, role understanding, and related educational outcomes, while broader syntheses similarly suggest that structured interprofessional learning can strengthen measures associated with collaborative practice [1–3]. The difficulty is that these outcomes sit at different distances from the clinical activity that ultimately matters. Confidence in collaboration, favourable views of another profession, and performance during a structured learning activity do not demonstrate that graduates subsequently negotiate responsibilities effectively or participate in better medication decisions. That distinction becomes particularly important for pharmacy because medication management is intrinsically distributed. Pharmacists, prescribers, nurses, patients, caregivers, and other professionals may contribute different knowledge and authority to prescribing, reconciliation, monitoring, counselling, and treatment modification. Collaborative medication work therefore requires more than exposure to another profession during training. It requires sufficient understanding of professional contributions, opportunities to exercise them, and workable arrangements through which disagreements, uncertainty, accountability, and decision authority can be negotiated. Longitudinal evidence illustrates both the promise and the problem. Graduates can describe ways in which pre-registration interprofessional learning influenced later collaborative behaviour, indicating that educational experiences may remain meaningful after qualification [4]. Such evidence is uncommon, however, and attribution is difficult. Professional roles are reconstructed as practitioners enter new teams, organisations, regulatory arrangements, and workload environments. An educational effect that is visible immediately after an IPE intervention can therefore weaken, persist, or take a different form once learners encounter actual professional boundaries and institutional constraints.

Three analytical domains consequently require separation. The first is educational outcome: what changes during or following IPE in knowledge, attitudes, confidence, communication, teamwork, or perceived collaborative competence. The second is role negotiation: how pharmacists and other professionals understand, claim, permit, contest, or adapt responsibilities when working together. The third is translation into clinical practice: whether interprofessional learning is reflected in observable collaborative activity around medication decisions after

or beyond the educational intervention. The domains are related but cannot be used interchangeably.

A mixed-methods systematic review is appropriate because the translation problem cannot be answered through effect estimates alone. Quantitative designs can identify changes in educational outcomes or measured collaborative competencies, whereas qualitative studies can explain how professional identity, authority, communication, resources, workload, and organisational routines shape whether collaborative practices are enacted. Integrating these evidence forms can therefore test whether apparently positive educational findings converge with evidence of role enactment and clinical-practice translation, where they diverge, and where the available literature does not support a connection.

The review asked: What does mixed-methods evidence show about interprofessional pharmacy education, role negotiation, and translation from educational outcomes into collaborative medication decision-making in clinical practice? Its central analytical safeguard was to retain educational outcomes, role negotiation, practice translation, and barriers or enablers as separate evidence classes before integration.

Materials and Methods

The review was structured as a mixed-methods systematic review and reported according to PRISMA 2020 principles [5]. The review question, eligibility logic, extraction dimensions, quality-appraisal approach, and integration domains were specified before synthesis. Search and selection arithmetic were maintained separately from the final manuscript reference allocation so that bibliographic requirements did not determine review inclusion.

The methodological sequence comprised identification, deduplication, relevance screening, extraction of review-specific study characteristics, design-sensitive appraisal, separate quantitative and qualitative syntheses, selective transformation where constructs were sufficiently compatible, and convergent integration. Review-flow counts were derived from the documented search process. No study was selected or excluded on the basis of journal quartile.

Eligibility

Primary empirical studies published from 2017 through 2026 were eligible when pharmacy learners, practising pharmacists, or an identifiable pharmacist role formed

part of an interprofessional educational or clinical activity. Studies were required to address at least one of four review domains: educational outcomes of IPE; understanding or negotiation of professional roles; translation of interprofessional learning into clinical practice; or barriers and enablers affecting collaborative medication-related work.

Quantitative, qualitative, and mixed-methods designs were eligible. Educational settings could include classroom, simulation, clinical placement, hospital, primary-care, or community-pharmacy environments. Practice studies were eligible where pharmacists participated in collaborative medication review, prescribing-related discussion, medication optimisation, communication, or comparable medication-management activities.

Studies were not required to report patient outcomes because doing so would have excluded much of the literature necessary to examine the education-to-practice pathway. Conversely, a study was not considered evidence of practice translation merely because its educational intervention addressed an authentic clinical topic. Practice translation required evidence extending beyond proximal educational response into professional enactment, workplace interaction, or sustained collaborative behaviour.

Secondary reviews and methodological publications were excluded from the primary evidence set but could inform background, methods, interpretation, and comparison. Journal Q1 status governed the manuscript reference policy and was not an eligibility criterion for review evidence.

Search

Three complementary scholarly search routes were executed on 14 September 2026. The first focused on pharmacy IPE and education-to-practice translation using combinations of *interprofessional education*, *pharmacy*, *pharmacist*, *clinical practice*, *collaboration*, and *medication*. The second targeted role negotiation and collaborative medication work using combinations of *pharmacist*, *pharmacy*, *role negotiation*, *professional role*, *collaborative medication*, *medicines optimisation*, and *interprofessional*. The third was an update-oriented route focused on 2024–2026 literature concerning pharmacy IPE, practice-based education, clinical translation, medication decision-making, and pharmacist collaboration.

The executed searches used PubMed-indexed and publisher-indexed scholarly records. Search outputs were recorded by route and matched by title and DOI to identify duplicate appearances. Searches were deliberately broader than the final manuscript reference set so that review inclusion was driven by scientific eligibility rather than by the fixed number of citations required for the article.

Selection

The three executed search routes surfaced 58 records. Thirteen duplicate appearances were identified through title and DOI matching, leaving 45 unique candidate records. Titles, abstracts, and available report information were screened against the eligibility criteria. Twenty-five records were removed because they were secondary or contextual publications, lacked identifiable pharmacy or medication relevance, did not examine a review-relevant educational or collaborative outcome, or otherwise fell outside the primary evidence scope.

Twenty primary evidence units were retained for detailed extraction and synthesis. Secondary systematic reviews, reporting guidance, appraisal methodology, and contextual interprofessional literature were maintained separately and were not included in the primary-evidence count.

Data extraction

Extraction was structured around the review question rather than simple bibliographic description. For each included evidence unit, the review recorded study design, country or region, educational or healthcare setting, participant group, reported sample size, intervention or practice exposure, comparator where applicable, relevant design features, outcome or construct definition, measurement method, temporal design, principal findings, reported direction or magnitude, practice-translation or implementation dimension, methodological limitations, contradictory or null findings, applicability boundaries, and planned synthesis assignment.

Particular attention was given to the evidentiary distance between an observed result and clinical-practice translation. An improvement in collaborative attitude was coded as an educational outcome even when the educational scenario involved medication management. Evidence of role understanding was kept distinct from evidence that responsibilities were actually negotiated in practice. Practice translation was reserved for

longitudinal, workplace, placement, or clinical evidence demonstrating how collaborative activity was enacted beyond the immediate educational endpoint.

Missing characteristics were recorded as not reported rather than inferred. The extraction process also identified claims that each study could support and claims that its design could not support, limiting later conversion of self-reported educational effects into causal or patient-level conclusions.

MMAT quality appraisal

Methodological quality was considered using design-appropriate MMAT principles [6]. The appraisal was used to qualify interpretation rather than to convert

heterogeneous evidence into a single numerical hierarchy. Screening questions and design-specific criteria were considered separately for qualitative, nonrandomised quantitative, descriptive quantitative, and mixed-methods studies.

Where the available evidence record did not contain enough report information to support a criterion-level judgment, the criterion was coded CT (cannot tell) rather than inferred. This was particularly important for studies for which the retained evidence record consisted primarily of bibliographic and abstract-level material. Studies were not excluded solely because appraisal information was incomplete; instead, uncertainty was carried into synthesis.

Table 2. Design-sensitive MMAT appraisal status of the included mixed evidence

Evidence unit	Study design family	MMAT screening status	Design-specific criterion status	Interpretation for synthesis
E01	Mixed methods	Research question and mixed design identifiable	Several criterion-level details CT	Useful for proximal educational findings; integration claims interpreted cautiously
E02	Controlled quantitative pilot	Eligible question and comparison identifiable	Some design criteria CT	Controlled signal retained; pilot scale limits inference
E03	Mixed/practice-based evaluation	Question and data relevance identifiable	Several criteria CT	Greater ecological relevance than classroom-only studies; causal inference restricted
E04	Simulation programme evaluation	Question identifiable	Several criteria CT	Appropriate for role-learning claims, not practice effectiveness
E05	Practice-based observational	Question identifiable	Several criteria CT	Direct contextual exposure; effect attribution limited
E06	Observational/tool application	Question identifiable	Several criteria CT	Supports interaction-process observation, not clinical impact
E07	Nonrandomised longitudinal	Question and longitudinal design identifiable	Attrition/selection concerns carried forward	Stronger temporal evidence; objective patient outcomes absent
E08	Pilot feasibility	Question identifiable	Several criteria CT	Feasibility findings retained without effectiveness inference
E09	Qualitative	Question and qualitative approach identifiable	Several reporting criteria CT	Implementation themes retained as context-specific
E10	Mixed methods	Sequential mixed design identifiable	Several criterion details CT	Quantitative and qualitative strands interpreted together but not as practice-effect evidence
E11	Mixed/descriptive	Question identifiable	Several criteria CT	Practitioner perspective useful; external generalisation limited
E12	Pre/post quantitative	Question identifiable	Comparison and bias criteria partly CT	Proximal confidence/attitude findings only
E13	Controlled pre/post	Question and comparison identifiable	Several criteria CT	Comparative teamwork signal retained; clinical translation not inferred
E14	Programme evaluation	Question identifiable	Several criteria CT	Perception outcomes treated as proximal
E15	Qualitative	Clear qualitative question and sampling frame	Some criterion details CT	Direct practice barriers retained with contextual limits
E16	Qualitative process study	Clear medication-practice question	Some criterion details CT	Rich process evidence for negotiated medication work

E17	Qualitative	Clear role-negotiation question	Some criterion details CT	Direct role evidence retained; transferability bounded
E18	Multiple qualitative case study	Clear case-study question	Small completed case set	Strong explanatory value, no prevalence inference
E19	Realist-informed qualitative pilot	Question and mechanism focus identifiable	Pilot-scale criteria limit certainty	Mechanisms treated as plausible rather than proven
E20	Qualitative implementation study	Question and theoretical approach identifiable	Some criterion details CT	Organisational implementation patterns retained without frequency estimates

Abbreviations: CT, cannot tell; MMAT, Mixed Methods Appraisal Tool. No Vancouver citation numbers are displayed in the table.

Quantitative evidence synthesis

Quantitative evidence was synthesized narratively because interventions, outcome instruments, professional combinations, exposure durations, and follow-up periods were not sufficiently homogeneous to justify a single pooled estimate. Outcomes were first grouped according to what they actually measured: collaborative attitudes and readiness, confidence, teamwork or collaborative competence, perceptions of professional roles, and longer-horizon self-perceived collaborative capability. Educational outcomes were not transformed into a common numerical metric. A measured improvement in one domain was not assumed to indicate improvement in another, and studies with null or inconsistent domain-level findings were retained as such. Longitudinal outcomes were separated from immediate post-intervention findings because persistence after qualification represents a different inferential question from short-term educational responsiveness.

Practice-oriented quantitative evidence was especially limited. Consequently, no quantitative synthesis was used to estimate the effect of IPE on medication safety, prescribing quality, medication adherence, clinical outcomes, or healthcare utilisation.

Qualitative evidence synthesis

Qualitative evidence was synthesized through iterative coding of review-relevant findings concerning role understanding, negotiation, communication, professional identity, authority, organisational conditions, and collaborative medication work. Descriptive findings were retained close to study terminology before being compared across studies.

Four recurring interpretive areas were examined: how professionals understood one another's contributions; how responsibility was negotiated or constrained during medication-related work; which organisational conditions enabled or inhibited enactment of pharmacist expertise; and how participants connected prior educational experiences with later collaborative practice.

Contradictory patterns were preserved. Role expansion could coexist with uncertainty about authority; formal integration of pharmacists could coexist with passive role negotiation or skill underuse; and positive attitudes toward interprofessional working could coexist with workload, communication, leadership, or resource constraints that made collaborative enactment difficult.

Data transformation where required

Transformation was restricted to findings that could be legitimately brought into a common analytical category. Quantitative findings concerning attitudes, competence, teamwork, or role understanding were therefore converted only into directionally descriptive statements such as improvement, no clear change, mixed change, or not assessed. Effect sizes were not created where authors had not reported them.

Qualitative findings were not converted into pseudo-quantitative frequencies. Instead, they remained thematic findings and were compared with transformed quantitative categories at the level of shared review questions. Findings with no conceptually defensible cross-method counterpart remained method-specific and were marked as such.

JB1 convergent integrated synthesis

The integrated synthesis followed convergent integrated logic consistent with JBI methodological guidance [7]. Quantitative and qualitative evidence were first analysed separately so that the meaning of each design was retained. Only then were findings juxtaposed around common questions concerning educational change, role negotiation, practice enactment, and contextual conditions.

Integration focused on whether evidence streams converged, complemented one another, diverged, or addressed different points in the education-to-practice pathway. A positive educational outcome could therefore converge with qualitative evidence that learners better

understood another profession while simultaneously failing to establish that collaborative medication decisions occurred in routine clinical care.

This approach made evidentiary distance explicit. Immediate educational response, sustained professional capability, negotiated workplace role, and collaborative medication decision-making were treated as progressively different empirical propositions. Evidence supporting one proposition did not automatically migrate to the next.

Integration matrix

The integration matrix was constructed around synthesized finding units rather than individual studies. Quantitative findings were aligned with qualitative categories only when they addressed sufficiently similar constructs. Evidence concerning role negotiation and practice translation remained distinct even where both appeared to support a broader conclusion about collaboration.

The matrix also retained an explicit evidence-limit column so that convergence in educational outcomes could not conceal the absence of direct clinical-practice evidence.

Table 4. Convergent integration matrix linking educational outcomes, role negotiation, and clinical-practice translation

Integrated review domain	Transformed quantitative evidence	Qualitative evidence category	Cross-method relationship	Practice-translation interpretation	Evidence limit
Collaborative attitudes and readiness	Predominantly favourable immediate change	Learners and practitioners generally value interprofessional working	Convergence	Supports receptiveness to collaboration	Receptiveness does not demonstrate enacted collaboration
Collaborative competence and teamwork	Improvement reported in several educational interventions	Participants describe learning to recognise, communicate with, and work across professional contributions	Complementarity	Supports development of capabilities relevant to collaborative work	Most measures remain proximal and self-reported
Understanding professional roles	Role-perception and role-understanding measures commonly improve	Qualitative evidence describes improved recognition of professional contributions but continuing ambiguity in practice	Partial convergence	Education can improve role knowledge while workplace roles remain negotiable	Knowledge of a role is not equivalent to authority or opportunity to enact it
Role negotiation in medication work	Rarely measured directly in educational quantitative studies	Responsibility is shaped by professional identity, communication, GP or organisational control, relational work, and local expectations	Qualitative extension	Practice translation requires active negotiation beyond educational preparation	No defensible quantitative effect estimate for role negotiation
Persistence after training	Limited longitudinal evidence suggests some sustained self-perceived collaborative attitudes and skills	Graduates and practitioners describe contextual adaptation of collaborative behaviour	Complementarity with limited direct convergence	Some educational influence may persist into early careers	Objective medication or patient outcomes remain largely unmeasured
Collaborative medication decision-making	Direct quantitative evidence is sparse	Practice studies show medication decisions emerging through discussion, clarification, shared mental models, and negotiated professional contributions	Evidence asymmetry	Clinical collaboration is observable, but its causal connection to prior IPE is weakly established	Attribution from educational intervention to clinical decision quality is unsupported

Barriers and enabling conditions	Infrequently quantified in comparable form	Workload, communication, leadership, resources, role clarity, professional identity, and organisational arrangements shape enactment	Qualitative dominance	Translation is context dependent	Frequency and relative importance cannot be estimated from qualitative evidence
Overall education-to-practice pathway	Strongest evidence at proximal educational level; progressively thinner evidence at later stages	Qualitative findings explain why educational capability may or may not become enacted practice	Complementary integration	Educational gains are relevant but insufficient indicators of clinical translation	No evidence supports collapsing education, negotiated role, and patient-level outcomes into one effectiveness construct

The integrated architecture therefore preserves three analytically separate questions: whether IPE changes learners, whether professionals subsequently negotiate workable interprofessional roles, and whether those roles become enacted in collaborative medication decisions. The Results sections that follow apply this distinction to the included evidence without substituting one evidentiary level for another.

Results and Discussion

The executed searches surfaced 58 records. After removal of 13 duplicate appearances identified through title and DOI matching, 45 unique records entered

relevance screening. Twenty-five records were excluded because they did not satisfy the predefined primary-evidence scope, leaving 20 primary evidence units for extraction and mixed-method synthesis.

The selection process therefore retained the separation between the systematic-review evidence set and contextual or methodological literature. Secondary reviews, reporting guidance, and methodological sources used elsewhere in the manuscript were not counted among the 20 primary evidence units.

The selection arithmetic is represented without adding retrieval or full-text stages for which separate counts were not contained in the documented selection record.

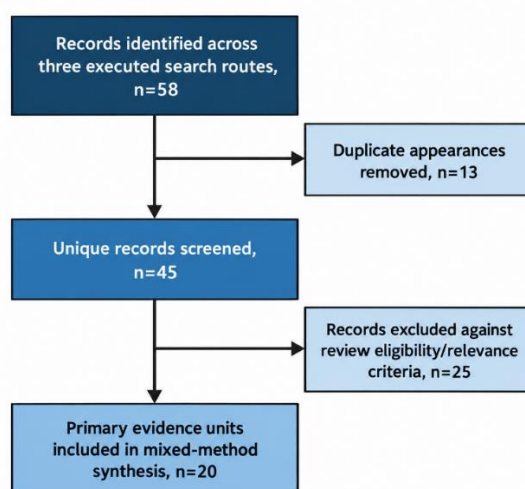


Figure 1. Executed PRISMA-aligned selection flow for the mixed-methods evidence set

Characteristics

The included evidence was heterogeneous in educational setting, professional composition, design, and distance

from clinical practice. Mixed-method pharmacy–medicine IPE studies examined perceived collaborative competence and participants’ accounts of

interprofessional learning [8], while controlled pilot work evaluated structured pharmacy–medicine collaboration against comparison conditions [9]. Practice-based primary-care education extended the evidence toward medicines optimisation in authentic service environments [10], whereas role-exchange simulation focused on collaborative prescribing and reciprocal understanding of professional contributions [11].

Other studies examined community-pharmacy collaboration during experiential education [12], directly

observed construction of knowledge among pharmacy and nursing learners [13], and longitudinal development extending from preregistration IPE into early professional careers [14]. Pilot work also addressed interprofessional collaboration during hospital discharge [15]. Practice-based qualitative studies captured stakeholder experiences of pharmacy IPE implementation [16], while mixed-method investigations examined pharmacy students' readiness, perceived benefits, and barriers [17] and practising pharmacists' perspectives on IPE and collaborative practice [18].

Table 1. Characteristics of the included evidence relevant to interprofessional learning, negotiated roles, and practice translation

Included evidence unit	Profession mix	Educational or practice setting	Design orientation	Primary review-relevant focus	Practice-translation proximity
Mertens 2025	Medicine–pharmacy	University IPE	Mixed methods	Collaborative competence	Proximal
Petersen 2025	Medicine–pharmacy	Educational pilot	Controlled quantitative	Collaborative learning	Proximal
Anderson 2026	Medicine–pharmacy	Primary care	Practice-based evaluation	Medicines optimisation	Intermediate/direct exposure
O’Boyle 2026	Medicine–pharmacy	Simulation	Programme evaluation	Collaborative prescribing roles	Proximal
Wilbur 2026	Pharmacy + other professions	Community pharmacy	Observational/experience	Practice collaboration	Direct contextual exposure
Lounsbery 2025	Nursing–pharmacy	IPE setting	Observational	Knowledge construction	Proximal
Darlow 2022	Multiple professions including pharmacy	Education to early career	Longitudinal nonrandomised	Persistence of collaborative attitudes/skills	Longitudinal
Almoghira 2023	Medicine–pharmacy	Hospital-discharge education	Pilot feasibility	Collaborative discharge work	Proximal/intermediate
Jebara 2023	Pharmacy + practice stakeholders	Practice-based education	Qualitative	Implementation experience	Intermediate
El-Awaisi 2018 students	Pharmacy + IPE partners	University	Mixed methods	Readiness, benefits, barriers	Proximal
El-Awaisi 2018 practitioners	Pharmacists + healthcare teams	Practice	Mixed/descriptive	Collaborative-practice perspectives	Direct contextual
Kostas 2018	Medicine–pharmacy	Medication-management education	Pre/post	Confidence and attitudes	Proximal
Waltz 2020	Nursing–PT–pharmacy	Education	Controlled pre/post	Teamwork competency	Proximal
Li 2023	Multiple professions	Teaching hospital	Programme evaluation	Professional perceptions	Proximal
Tan 2024	Pharmacists–physicians–patients	Primary care	Qualitative	Communication barriers	Direct practice

Parslow 2024	GPs–pharmacists	General practice	Qualitative process study	Medication optimisation	Direct practice
Bradley 2024	Pharmacists–GPs–practice staff	General practice	Qualitative	Role negotiation	Direct practice
Lake 2024	Pharmacists–primary-care teams	Primary care	Multiple case study	Professional identity and role negotiation	Direct practice
Kaae 2025	Pharmacist–GP–patients	General practice	Qualitative pilot	Medication-review mechanisms	Direct practice
Reidy 2026	Pharmacists–primary-care leaders	Primary care	Qualitative implementation	Structured medication-review integration	Direct practice

Quality

Quality limitations reflected the diversity of the evidence base rather than one dominant flaw. Educational evaluations frequently relied on self-reported attitudes, confidence, teamwork, or perceived competence and often lacked long-term follow-up. Controlled designs strengthened some educational comparisons, but small pilots and locally implemented programmes limited generalisability.

Practice-oriented qualitative studies offered stronger contextual access to role negotiation and implementation but could not provide prevalence estimates or causal effect sizes. The four-year longitudinal study offered unusually valuable temporal evidence, although attrition, nonrandomisation, and reliance on self-perceived outcomes constrained inference about objective practice change.

Studies of medication-management confidence [19], teamwork competencies [20], and perceptions of other professions in a clinical teaching environment [21] were therefore retained as evidence of proximal educational change rather than as proof of improved patient care.

Educational outcomes

Across the educational evidence, the most consistent findings concerned attitudes toward interprofessional working, perceived collaborative competence, teamwork, role understanding, and confidence. Medication-focused modules could increase learners' confidence and improve attitudes toward collaboration [19], while controlled educational work indicated that interprofessional participation could improve teamwork measures beyond profession-specific comparison conditions [20]. Hospital-based programmes similarly demonstrated changes in how learners perceived other health professions [21].

The pattern is compatible with theory-based approaches to IPE curriculum design, which emphasize deliberate links among learning activities, interprofessional interaction, and intended collaborative competencies [22]. Nevertheless, the observed outcomes remained predominantly proximal. Improvements in confidence, perceptions, or self-assessed teamwork did not demonstrate that participants later negotiated professional responsibilities effectively in clinical environments.

Table 3. Separation of proximal educational outcomes from role negotiation and practice translation

Outcome or construct domain	Typical evidence form	What the evidence supports	Role-negotiation evidence	Practice-translation evidence	Principal evidentiary limit
Interprofessional attitudes/readiness	Pre/post questionnaires	IPE can improve receptiveness to collaboration	Usually indirect	Rarely demonstrated	Attitude is not enacted practice
Collaborative confidence	Self-report scales	Learners may feel more prepared for collaborative work	Limited	Sparse	Confidence is not performance
Teamwork competence	Controlled or pre/post measures	Some interventions improve measured teamwork	Partial	Limited	Often short-term and self-reported
Understanding professional roles	Surveys, qualitative accounts	Learners can develop clearer appreciation of other professions	Moderate	Context dependent	Role knowledge does not confer authority

Collaborative prescribing/medication work	Simulation and practice-based education	Learners can rehearse shared medication tasks	Moderate	Intermediate	Simulation is not routine practice
Longitudinal collaborative capability	Follow-up surveys/qualitative accounts	Some collaborative attitudes and perceived skills can persist	Moderate	Partial	Objective medication outcomes seldom measured
Negotiation of pharmacist responsibilities	Interviews, case studies	Roles are actively shaped by identity, communication, organisational control, and local expectations	Direct	Direct contextual	Mainly qualitative, local evidence
Collaborative medication decisions	Practice observation/interviews	Medication work can be negotiated across professions	Direct	Direct but limited	Weak causal linkage to prior IPE
Patient or clinical outcomes attributable to IPE	Rare	Insufficient evidence for a general effect claim	Not applicable	Insufficient	Attribution chain remains unestablished

Role negotiation

Educational preparation enters practice through relationships in which professional contributions must be recognised and authorised. Communication research shows that hierarchy, relational conditions, and organisational context can affect interprofessional interaction [23]. Reviews of communication behaviours likewise indicate that collaborative practice contains multiple observable behaviours rather than a single generic communication capability [24]. Mixed-method evidence from clinical placements reinforces the importance of context in determining whether interprofessional competencies are exercised [25].

The practice literature further shows that introducing an interprofessional role does not settle how that role will operate. Reviews of collaborative-practice interventions report substantial variation in how interprofessional activities are designed, implemented, and embedded [26], and structured case discussions similarly differ in content, process, and contextual requirements [27].

For pharmacy specifically, collaborative practice in primary care commonly centres on medication review, prescribing support, communication, and optimisation activities [28]. Patient-facing evidence additionally suggests that understanding and acceptance of pharmacists' responsibilities depend partly on how those roles are communicated and experienced [29]. Communication barriers can emerge at pharmacist–patient, pharmacist–physician, and wider service interfaces [30].

Direct practice studies sharpen this interpretation. Collaborative medication optimisation involves

negotiated interaction between GPs and pharmacists; new pharmacist roles may be constrained by ambiguity, competing workload demands, variable skill utilisation, and organisational control; and unclear professional identity can leave pharmacists relatively passive in defining their contribution [31–33]. These findings do not imply that role negotiation always fails. They indicate that role enactment remains contingent even when collaborative intent is favourable.

Translation into clinical practice

Evidence became progressively thinner as the outcome moved from educational response toward sustained clinical enactment. Practice-based medicines-optimisation education provided stronger ecological proximity than classroom-only IPE because learners encountered collaborative activity in primary-care settings. Community-pharmacy experiences similarly exposed students to real-world interprofessional interactions.

The longitudinal evidence provided the clearest temporal bridge. Participants followed into early careers retained some interprofessional attitudes and self-perceived collaborative capabilities, but objective patient-care or medication outcomes were not established. Translation therefore cannot be represented as a simple continuation of an educational effect.

Practice studies show what successful translation would need to encompass: professionals must communicate about medicines, recognise one another's expertise, gain permission and opportunity to act, and coordinate responsibilities within existing service routines. A

pharmacist can possess collaborative capability while remaining unable to use it because workload, organisational authority, professional expectations, or resource arrangements constrain participation.

Barriers and enablers

The qualitative evidence identified several interacting conditions affecting collaborative medication work. Communication structures could inhibit or enable clarification across professional interfaces. Organisational arrangements influenced whether pharmacists' expertise was incorporated into decisions or left underused. Professional identity shaped willingness to claim or negotiate responsibilities, while local expectations influenced how other team members responded.

Relational investment and shared mental models emerged as plausible mechanisms supporting patient-centred medication review [34]. Implementation evidence from structured medication reviews similarly indicated that workload, leadership, administrative resources, training, and local organisational processes influenced whether pharmacist-led work became routine [35].

These findings argue against treating barriers as isolated obstacles that can simply be removed one at a time. The same educational capability may be enacted differently under different configurations of role clarity, authority, resources, and relationships. Conversely, favourable organisational conditions cannot substitute for interprofessional competence when practitioners lack the

communicative or collaborative capabilities needed to use them.

Integrated cross-method findings

Four conclusions emerged from the convergent integration.

First, the strongest and most recurrent evidence concerns proximal educational change. Interprofessional programmes can improve attitudes, confidence, teamwork measures, role understanding, or perceived collaborative competence.

Second, role understanding and role enactment are not equivalent. Qualitative evidence shows that practitioners continue to negotiate authority, identity, task boundaries, and expectations after entering practice. Educational preparation may make negotiation easier, but it does not remove the need for negotiation.

Third, the evidence connecting IPE directly to collaborative medication decision-making is substantially thinner than the evidence supporting immediate learner outcomes. Longitudinal and practice-based studies provide important bridging evidence, but they do not justify a general causal claim that IPE improves medication-related patient outcomes.

Fourth, contextual conditions explain part of the gap between educational capability and clinical enactment. Workload, organisational control, leadership, resources, communication, professional identity, and relational work can amplify or attenuate the use of interprofessional capability.

The cross-method relationship is summarized in **Figure 2**.

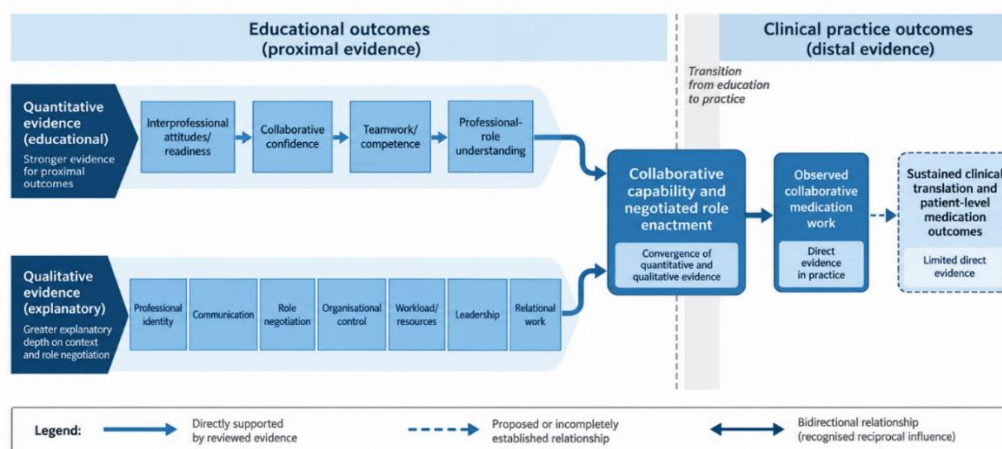


Figure 2. From interprofessional learning to enacted collaborative medication decisions: convergent and divergent evidence across the translation pathway

This review indicates that the central challenge in evaluating pharmacy IPE is not whether learners respond positively to interprofessional experiences, but how far those responses travel. The evidence is comparatively rich for proximal educational outcomes and substantially weaker for sustained, observable clinical translation. This imbalance helps explain why the literature can appear consistently favourable while still leaving uncertainty about collaborative medication decision-making.

The distinction matters because interprofessional practice is enacted within organisations rather than carried forward unchanged from educational settings. Communication behaviour, professional identity, workload, authority, and organisational routines influence whether pharmacists can use capabilities acquired through IPE. Changes in stereotypes and professional perceptions may contribute to a more favourable collaborative climate [36], but they remain only part of the pathway.

The findings also caution against a binary view in which IPE either “works” or “does not work.” Educational outcomes vary by construct, intervention, and context, and some domains may improve while others do not [37]. The more useful question is which educational changes persist, which support active negotiation of responsibilities, and under what conditions those negotiated roles affect medication work.

The longitudinal evidence is particularly informative because it demonstrates the possibility of persistence while simultaneously exposing the attribution problem. When early-career professionals report durable collaborative attitudes or skills, the finding is compatible with an influence of prior IPE, but later workplace experiences also shape practice. Clinical placements and early professional environments further modify how collaboration is understood and enacted [4, 14, 25].

The integrated evidence therefore supports an evaluative progression rather than an assumed causal chain: educational change should be measured as educational change; role negotiation should be observed as workplace interaction; and clinical translation should be demonstrated through practice-relevant behaviour or outcomes. The closer a claim moves toward patient-level benefit, the greater the need for longitudinal, comparative, and practice-based evidence.

Strengths and limitations

A principal strength of the review is its deliberate separation of educational outcomes, role negotiation, and

clinical-practice translation. This prevented favourable learner outcomes from being interpreted automatically as evidence of successful medication-related practice change. The convergent integrated approach also allowed qualitative findings to explain why apparently similar educational capabilities may be enacted differently across settings.

The review has important limitations. The evidence base was heterogeneous in intervention design, profession mix, setting, measurement, and follow-up, precluding defensible meta-analysis across the principal review domains. Much of the educational literature relied on self-reported or proximal outcomes. Practice-level evidence was predominantly qualitative, offering explanatory depth but not prevalence estimates or effect sizes.

The documented search process was based on the documented scholarly search procedures and retained the reported selection counts. Separate report-retrieval and full-text exclusion stages were not available as independently counted selection stages and were therefore not reconstructed. Some MMAT criteria could likewise not be determined from the available reporting record and were retained as cannot tell rather than inferred.

Educational and practice implications

IPE evaluation in pharmacy should extend beyond immediate satisfaction, attitudes, and confidence. Educational programmes should specify which collaborative behaviours they are intended to develop and how those behaviours could later be observed in medication-related practice.

Practice-based learning appears particularly important because it exposes learners to the conditions under which professional roles actually become negotiable. Educational design should therefore give learners opportunities to discuss responsibility, uncertainty, authority, disagreement, and medication decisions across professional boundaries rather than limiting collaboration to parallel participation in a shared activity. For clinical organisations, the findings suggest that employing or colocating pharmacists is insufficient if role expectations, decision rights, communication routines, workload, and implementation support remain unclear. Services seeking stronger collaborative medication work should examine whether practitioners have both the capability and organisational permission to contribute.

Future research should use longitudinal designs that follow learners into professional practice, incorporate direct observation or practice-relevant outcome measures where feasible, and distinguish persistence of educational attitudes from actual role enactment. Mixed-method designs are especially useful when they connect measured change with explanations of why translation succeeds, stalls, or varies across contexts.

Conclusion

Interprofessional education can strengthen attitudes, confidence, teamwork, role understanding, and capabilities relevant to collaborative practice. The evidence becomes less complete, however, when the question shifts from what learners gain to how professionals subsequently negotiate roles and make medication decisions together.

Clinical translation depends on more than educational preparation. Professional identity, communication, authority, workload, organisational resources, leadership, and relationships influence whether collaborative capability is enacted in practice. The available evidence therefore supports a differentiated interpretation: educational outcomes demonstrate learning, role-negotiation evidence demonstrates how professional contributions are established, and practice evidence demonstrates whether collaboration reaches medication decision-making. Strong evaluation should preserve these distinctions and test the links between them rather than assume them.

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