

Invisible Curriculum, Unmeasured Outcomes: A Theory-Informed Analysis of Quality Assurance Gaps in Family Medicine Training

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Abstract

Background: Family practice training is central to health system performance, yet its quality assurance mechanisms remain insufficiently aligned. Despite the widespread adoption of competency-based medical education (CBME), persistent gaps exist between defined competencies and their measurable outcomes. This study explores these gaps through a theory-informed analysis of quality assurance structures in family medicine training in Türkiye.

Methods: This study employed a theory-informed conceptual and interpretive design. A structured analytical framework was developed based on health policy analysis, CBME theory, and quality assurance models, including continuous quality improvement (CQI). Documentary sources, including international frameworks (WHO, WONCA), national curricula (TUKMOS), institutional reports, and accreditation documents were purposively selected. Analysis was conducted across four predefined domains: educational outcomes, assessment systems, accreditation structures, and feedback mechanisms, using a stepwise approach of mapping, structuring, cross-level comparison, and conceptual synthesis.

Results: The findings reveal a consistent pattern of structural misalignment across system levels. Competencies are clearly defined but insufficiently operationalised into measurable outcomes.

Assessment systems are diverse but lack standardisation and comparability in Türkiye. Accreditation processes are well established yet predominantly institution-focused rather than outcome-oriented. Feedback mechanisms are widely implemented but poorly integrated into continuous improvement cycles.

These disconnections culminate in a systemic “invisible curriculum–unmeasured outcomes gap,” whereby critical components of competence, such as contextual decision-making, longitudinal care, and professional identity formation remain insufficiently captured within formal evaluation systems.

Conclusion: Quality assurance in family practice training is conceptually robust but functionally fragmented. Addressing this challenge requires a shift from component-based approaches toward a system-integrated, feedback-driven model that aligns competencies, assessment, accreditation, and feedback across all levels, which in many systems are not instituted. Such a reconceptualisation is essential to ensure that competence is not only defined but also measurable, validated, and continuously improved in practice.

Keywords: Family practice training, Quality assurance, Competency-based medical education (CBME), Assessment systems, Accreditation, Feedback mechanisms, Hidden curriculum, Medical education, Primary care, Health systems

Introduction

Family practice training is fundamental to effective health systems, influencing physician competence, care accessibility, continuity, and equity (1–5). Strong primary care improves health outcomes, reduces costs, and enhances care coordination (6–8). Consequently, the quality of family practice training is a key determinant of health system performance (9,10).

Medical education has shifted from knowledge-based to competency-based, outcome-oriented models over the past two decades (11,7). In family practice, WONCA and the World Health Organization have defined competency frameworks covering clinical expertise, communication, professionalism, and community orientation (8,9). These frameworks prepare physicians for the complexity and continuity of primary care (5,10). Despite these advances, translating competency frameworks into standardised, measurable outcomes remains inconsistent (11,12). Assessment methods vary across institutions and often emphasise knowledge or simulated performance rather than real-world competence (13–15). Moreover, fragmented feedback systems limit continuous educational improvement (16,17).

This creates an “invisible curriculum—unmeasured outcomes gap,” whereby competency-based curricula lack coherent programme-level evaluation despite structured assessment systems (18–22). Digital health, including decision-support systems, telemedicine, and AI-enabled patients, further expands competency requirements to digital literacy and adaptive decision-making (23–27). However, quality assurance remains focused on accreditation and structural standards rather than educational outcomes (28–30). This study examines how quality in family practice training is conceptualised, operationalised, and governed (31).

State of the Art: Quality Assurance in Family Practice Training

Family medicine is recognised as a scientific discipline with its own knowledge base and educational framework (32). However, training remains heterogeneous across countries and institutions (33). Much competence develops through the “invisible curriculum,” including longitudinal patient care, experiential learning, clinical uncertainty, and professional identity formation (18,19,34–36). Contemporary education promotes continuous quality improvement through feedback-driven learning (16,37,38). However, family practice training and quality assurance remain rooted in pre-digital models, with emerging competencies inadequately integrated into curricula and assessment (4,39). Thus, the main challenge is not the absence of quality frameworks but their fragmented implementation, highlighting the need for integrated, feedback-driven quality assurance systems. (Table 1).

Domain	State of Knowledge	Structural Gap
Competencies	well defined	poorly measured
Assessment	diverse tools exist	lack of standardisation
Accreditation	well developed	institution-focused
Feedback	present	not system-integrated
Digital transformation	emerging	not embedded

Table 1. Synthesis of the State of the Art in Quality Assurance for Family Practice Training

Family practice training in Türkiye has expanded rapidly since the Health Transformation Program, supported by competency-based postgraduate curricula such as TUKMOS (2,40– 44). Nevertheless, training remains heterogeneous across institutions, with substantial variation in competency assessment and measurable outcomes despite nationally defined standards (12,40,41,43). Quality assurance continues to rely mainly on institutional accreditation rather than programme-level outcome evaluation (45).

Aim of the Study

The aim of this study was to critically examine how quality in family practice training is conceptualised, operationalised, and governed, and to identify the structural gaps that emerge between these domains.

Materials and Methods

Study Design

This study used a theory-informed conceptual and interpretive approach to examine quality assurance in family practice training, focusing on structural relationships and patterns of alignment and misalignment rather than evidence aggregation or quantification. The analysis was guided by an integrated framework combining health policy analysis (31),

Competency-Based Medical Education (CBME) (7,22), and quality assurance/continuous improvement models (ESG, CQI) (21,28). These frameworks informed four predefined analytical domains: educational outcomes, assessment systems, accreditation structures, and feedback mechanisms.

Each domain was operationalised through specific analytical questions (Table 2).

Domain	Analytical Focus	Key Questions
Educational outcomes	Definition and measurability of competencies	Are competencies clearly defined? Are they measurable?
Assessment systems	Tools and standardisation	How are competencies assessed? Are methods comparable?
Accreditation	Institutional vs program-level focus	Does accreditation evaluate learning outcomes or structures?
Feedback mechanisms	Integration and improvement cycles	Is feedback used for continuous quality improvement?

Table 2. Analytical Framework for Evaluating Quality Assurance in Family Practice Training

Purposefully selected documentary sources were analysed as analytical artefacts rather than datasets. Selection was based on relevance to family practice training, inclusion of competency or quality assurance frameworks, representation of policy, institutional, and programme perspectives, and public accessibility. Sources included national curricula, institutional accreditation reports, international frameworks (e.g., WHO, WONCA), and key medical education literature. All sources were fully documented in the reference list.

1. International Policy and Educational Frameworks

World Health Organization (WHO). Primary Health Care: Transforming Vision into Action (2018) (3)
 World Health Organization (WHO). Global Strategy on Digital Health 2020–2025 (2021) (25)
 WONCA Europe. The European Definition of General Practice/Family Medicine (2011) (8)
 WONCA. Global Standards for Postgraduate Family Medicine Education (46)
 ESG (ENQA). Standards and Guidelines for Quality Assurance in the European Higher Education Area (2015) (28)
 European Union. Directive 2005/36/EC on the Recognition of Professional Qualifications (47)

2. Türkiye National Policy and Training Documents

T.C. Sağlık Bakanlığı. Sağlıkta Dönüşüm Programı (2003 ve devam eden raporlar) (48)
 Tıpta Uzmanlık Kurulu (TUK). Aile Hekimliği Uzmanlık Eğitimi Çekirdek Müfredatı (TUKMOS) (43)
 Yükseköğretim Kalite Kurulu (YÖKAK). Kurumsal Akreditasyon Programı Rehberi (45)
 Türkiye Cumhuriyeti Sağlık Bakanlığı eğitim ve hizmet sunumuna ilişkin resmi dokümanlar (49)

3. Institutional Documents (Türkiye)

Akdeniz University Faculty of Medicine – Family Medicine Training Programme documents (50)
 İstanbul University – Postgraduate medical education documentation (51)
 Ege University – Programme structure and assessment reports (52)
 Ankara University – Residency training guidelines (53)
 Dokuz Eylül University – Educational programme documentation (54)
 Atatürk University – Training and evaluation framework (55)

(Where available, publicly accessible curriculum outlines, evaluation forms, and institutional quality reports were reviewed.)

4. Accreditation and Quality Assurance Reports

University Internal Evaluation Reports (KİDR) (56)
 YÖKAK Institutional Accreditation Reports (57)
 Institutional quality assurance documentation (programme-level where available)

5. Key Academic and Theoretical Sources

Walt & Gilson – Health policy analysis framework (31)
 CBME literature (Frank et al., Holmboe et al., Ten Cate) (7,11, 22)
 Assessment theory (van der Vleuten et al., Hodges) (13,14,20,21)
 Quality assurance and CQI (Batalden & Davidoff) (58)
 Hidden curriculum (Hafferty) (18)
 Professional identity formation (Cruess et al.) (36)
 Digital health and AI in medicine (Topol, WHO reports) (23,25)

Analytical Procedure

The analysis followed a structured four-step iterative process designed to ensure transparency, consistency, and analytical rigour (31,59,60,61):

- 1. Mapping:** Documents were reviewed to identify definitions of competencies, learning outcomes, quality indicators, assessment, accreditation, and feedback, mapping how quality was conceptualised across sources.
- 2. Structuring:** Extracted data were organised into four predefined domains: educational outcomes, assessment systems, accreditation structures, and feedback mechanisms. Similar concepts were grouped and reviewed iteratively.
- 3. Cross-level comparison:** Policy, institutional, and programme levels were compared to identify alignment and structural misalignment between competencies, assessment, accreditation and feedback.
- 4. Conceptual synthesis:** Findings were synthesised to identify recurring patterns, structural gaps, and invisible or unmeasured competencies, leading to a theory-informed model of quality assurance as a dynamic, feedback-driven, system-integrated process.

No statistical analysis was performed because this was a theory-informed conceptual study.

Instead, a structured, iterative interpretive approach was used to identify patterns and structural misalignments. Analytical rigor was ensured through a predefined framework (educational outcomes, assessment, accreditation, and feedback), iterative analysis, cross-level comparison, triangulation of policy, institutional, and academic sources, and transparent documentation of methods. The aim was to generate a theory-informed, system-level understanding rather than statistically generalisable findings.

Patient and Public Involvement (PPI statement)

No patients or the public were involved, as the study analysed publicly available documents.

Although dissemination of these findings will not include direct patient involvement, the findings aim to improve training systems and, ultimately, patient care quality.

Ethical Considerations

Ethical approval was not required for this study, as it involved the analysis of publicly accessible policy documents, institutional reports, and academic literature. No human participants, personal data, or confidential information were included.

Results

System-Level Patterns and Structural Gaps in Family Practice Training

The analysis of policy documents, training curricula, institutional reports, and international frameworks revealed a consistent pattern:

quality assurance in family practice training is conceptually well defined but structurally fragmented across system levels.

Rather than isolated deficiencies, the findings point to systemic misalignments between educational outcomes, assessment systems, accreditation processes, and feedback mechanisms.

1 Educational Outcomes: Defined but weakly Operationalised

All analysed sources describe family practice training within a competency-based framework. International standards (WONCA and the World Health Organization) define core competencies including clinical expertise, communication, professionalism, and community orientation (3,8,9). In Türkiye, the TUKMOS curriculum closely aligns with these standards (7,43). Likewise, training programmes at major universities demonstrate formal consistency with national and international competency frameworks.

However, despite this high degree of conceptual alignment, a recurring pattern emerges across all sources:

competencies are clearly defined, but their operationalisation into measurable and standardised outcomes remains limited

In most documents:

learning objectives are described in broad and descriptive terms explicit performance indicators are rarely specified measurable benchmarks for competence are inconsistently defined.

Although competency frameworks are well established, their translation into measurable, standardised, and reproducible outcomes remains limited (11,22). Across all sources, competencies are clearly defined, but performance indicators and assessment criteria are inconsistently operationalised, creating a gap between competency definition and verification. This finding is consistent with the broader CBME literature on challenges in achieving valid and comparable assessment outcomes (11,20–22).

2 Assessment Systems: Diverse but Non-Comparable

All analysed programmes employ multiple assessment methods, including OSCEs, portfolios, and workplace-based tools such as the Mini-CEX, reflecting a shift toward multidimensional competency assessment (7,14,15). These approaches evaluate knowledge, clinical skills, and professional behaviour while improving alignment between assessment and real-world primary care practice (14,21).

However, despite this apparent methodological richness, a consistent pattern emerges across the analysed programmes:

assessment systems are diverse in form but limited in comparability and integration

Substantial variability exists in:

- the design and structure of assessment tools
- the frequency and timing of evaluations
- the criteria used to judge performance
- the documentation and use of assessment outcomes

Assessment practices vary across institutions despite using similar tools such as OSCEs and Mini-CEX, limiting comparability. Their validity is further constrained by assessor variability, contextual influences, and non-standardised scoring (14,20). Likewise, OSCEs and portfolios assess selected competencies but do not consistently reflect real-world clinical performance (15,34).

Taken together, these findings suggest that current assessment systems:

measure multiple aspects of performance but do not function as **standardised, comparable, or system-level indicators of competence**

This reinforces a broader limitation identified in the CBME literature: assessment systems, although conceptually aligned with competency frameworks, often lack the coherence and integration required to ensure robust and reproducible evaluation of competence across training settings (7,20,21).

Cross-document analysis showed marked variability in assessment design, frequency, performance criteria, and documentation across programmes. Although assessment systems exist universally, they lack standardisation and programmatic integration, limiting comparability and their contribution to quality improvement. Consequently,

assessments often measure activities rather than validated competence, consistent with challenges reported in CBME literature (14,20,21,34).

3 Accreditation Systems: Institution-Focused, Not Outcome-Focused

Accreditation analysis showed that quality assurance in family practice training is primarily institution-based, focusing on governance, strategic planning, documentation, and compliance with predefined standards (28,29). These mechanisms support institutional accountability and consistency.

However, a key limitation emerges across all analysed sources:

accreditation evaluates structures rather than educational outcomes

Across multiple institutional reports from major universities in Türkiye (including Akdeniz, Hacettepe, Ege, İstanbul, Ankara, and Gazi Universities), several consistent patterns are observed:

programme-level learning outcomes are **not systematically measured** the **effectiveness of assessment systems** is rarely evaluated

explicit links between **training processes and clinical competence** are not clearly demonstrated.

Accreditation provides limited evidence that training programmes produce competent practitioners, reflecting a broader gap between institutional compliance and educational effectiveness (29). In family practice, where competence is context-dependent and longitudinal, structural indicators alone are insufficient. Thus, accreditation ensures minimum standards but does not validate real-world training outcomes.

4 Feedback Mechanisms: Present but Not System-Integrated

All analysed institutions incorporate feedback mechanisms, including student surveys, course evaluations, and institutional review reports, recognising feedback as a formal component of quality assurance and educational monitoring.

However, the analysis reveals a consistent limitation:

Feedback is predominantly collected, but not systematically integrated into educational improvement processes.

Feedback is predominantly perception-based, emphasising learner satisfaction over objective clinical performance. Competence-based feedback is limited and inconsistently integrated into institutional evaluation and decision-making processes.

Most importantly, feedback systems are not embedded within **closed-loop quality improvement cycles**. There is limited evidence that: feedback data is systematically used to inform curriculum redesign performance data drives institutional or program-level change improvements are tracked longitudinally over time.

As a result, feedback mechanisms tend to function as stand-alone data collection tools rather than as drivers of continuous quality improvement. In this context, feedback remains: **collected but not operationalised**.

This pattern aligns with the broader literature, which emphasises that the effectiveness of feedback depends not on its presence, but on its integration into adaptive, system-level learning processes (16,17,21).

5 Cross-Level Misalignment: The Core Structural Problem

Cross-level analysis revealed systematic misalignment: competencies are defined at the policy level, assessments at the programme level, accreditation at the institutional level, and feedback at the learner level, but these components remain poorly integrated. Competency frameworks are not consistently translated into assessment, accreditation rarely incorporates outcome data, and feedback seldom informs programme improvement.

Consequently, quality assurance functions as fragmented rather than a continuous system, limiting validated educational outcomes. This finding is consistent with the CBME literature emphasising the need for alignment across competency definition, assessment, accreditation and feedback (4,21,22).

6 The “Invisible Curriculum–Unmeasured Outcomes” Gap

The findings indicate that much competence development in family practice remains invisible, unmeasured, and weakly governed. Although curricula define explicit competencies, key abilities, including contextual decision-making, longitudinal care, management of uncertainty, and professional identity, develop largely through the hidden curriculum (18,30,36). These complex, context-dependent competencies are inadequately captured by conventional assessment systems, creating an “invisible curriculum, unmeasured outcomes” gap in which the most important aspects of practice remain least measurable (20). This represents a fundamental limitation of current quality assurance models and highlights the need for more integrated, context-sensitive evaluation approaches.

Discussion

The findings show that the main challenge in family practice training is the fragmented integration of quality assurance components rather than their absence. Although competencies, assessment, accreditation, and feedback are well established, they remain poorly aligned. Competencies are not consistently translated into measurable outcomes, assessment lacks standardisation, accreditation emphasises institutional structures over educational effectiveness, and feedback is weakly linked to continuous improvement. Consequently, quality assurance is structurally established but functionally incomplete.

This fragmentation creates the “**invisible curriculum–unmeasured outcomes gap**,” whereby key competencies, such as contextual decision-making, longitudinal care, and professional identity, remain insufficiently evaluated. Although CBME frameworks, including WONCA, have strengthened the multidimensional conceptualisation of competence, encompassing technical, relational, ethical, and community-oriented domains (4,7,8), their operationalisation into valid, standardised, and measurable outcomes remains incomplete (11,22).

Operational Gap in Competency-Based Frameworks

Although CBME has clarified the multidimensional nature of competence in primary care, competencies remain insufficiently operationalised into measurable and standardised outcomes (4,7,11,20–23). Consequently, competency frameworks often function as normative goals rather than empirically verifiable constructs, underscoring the need for programmatic assessment approaches that link competencies with reproducible educational outcomes (11,20,34).

Assessment Systems: Multiplicity without Coherence

The adoption of OSCEs, portfolios, and workplace-based assessments reflects a shift toward multidimensional evaluation (7,20,24). However, variability in implementation, scoring, assessor judgement, and programme design limits reliability, comparability, and longitudinal evaluation of competence (14,20,21). Thus, multiple assessment tools alone do not ensure meaningful competency measurement or system-level quality assurance (20,21,34).

Accreditation Systems: Structural Strength, Limited Outcome Evidence

Accreditation frameworks provide governance, accountability, and institutional standardisation (28), but primarily assess structures and processes rather than educational outcomes (29). In family practice, where competence is relational, longitudinal, and context-dependent (30), accreditation alone cannot demonstrate graduates' competence. Integrating validated outcome measures into accreditation is therefore essential (22).

Feedback Mechanisms: Data without System Learning

Although feedback mechanisms are widely implemented (16), they rely largely on learner perceptions rather than objective competence measures (17). Feedback rarely informs curriculum redesign or institutional decision-making, reflecting the absence of closed-loop quality improvement and limiting adaptive system learning (16,58).

Cross-Level Misalignment

Competencies, assessment, accreditation, and feedback operate at different system levels but remain weakly integrated. This fragmentation disconnects competency definition, measurement, validation, and improvement, limiting verified educational outcomes and reinforcing concerns raised in the CBME literature (4,21,22).

The Hidden Curriculum

Much competence in family practice develops through experiential learning, longitudinal patient care, and management of uncertainty (18,30). Because current quality assurance prioritises observable and standardised indicators, these contextual and relational competencies remain underrepresented, highlighting the need for more context-sensitive evaluation models (20).

Digital Transformation

Artificial intelligence, telemedicine, and data-driven care require new competencies in digital literacy, algorithm interpretation, and adaptive decision-making (23,25–27). However, these competencies remain insufficiently integrated into existing curricula and assessment systems, widening the gap between training and clinical practice.

Toward an Integrated Quality Assurance System

The principal limitation of current quality assurance is the lack of integration across its components. Effective systems require alignment of competency frameworks, assessment, accreditation, and feedback within a continuous, outcome-oriented cycle (4,21).

Competencies should be translated into measurable outcomes, assessment should generate comparable longitudinal evidence, accreditation should incorporate outcome indicators, and feedback should drive continuous improvement. Such a dynamic, system-level approach provides a stronger foundation for competency-based education and adaptation to future challenges.

What did we Learn?

This study demonstrates that the principal challenge in family practice training is structural rather than conceptual. Competency frameworks are well established, but their translation into measurable outcomes remains incomplete. Assessment, accreditation, and feedback operate as fragmented rather than integrated processes, limiting the measurement, validation, and continuous improvement of competence.

The key lesson is that quality depends on system-level integration rather than stronger individual components. Competencies, assessment, accreditation, and feedback should function within a unified, feedback-driven framework that captures both measurable outcomes and the contextual, longitudinal, and professional dimensions of family practice.

Strengthening quality therefore requires integrating existing frameworks into a coherent, adaptive system rather than creating new ones.

Conclusion

Family practice training is central to both medical education and health system performance, yet its quality assurance remains fragmented. Although competencies, assessment, accreditation, and feedback are well established, they operate as poorly integrated components, limiting measurable and comparable outcomes. Competencies are defined but insufficiently operationalised, assessment lacks standardisation, accreditation focuses on structures rather than outcomes, and feedback is weakly linked to continuous improvement.

Key competencies developed through the hidden curriculum, including contextual decision-making, longitudinal care, and professional identity, remain inadequately evaluated. Digital transformation further widens the gap between training and practice by introducing competencies not yet systematically addressed. Improving family practice training therefore requires reconceptualising quality assurance as an integrated, feedback-driven system in which competencies become not only defined but also measurable, validated, and continuously improved.

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