

Strengthening Patient Engagement in Primary Care: A Systematic Review of Family Medicine Principles, Homecare Accessibility, and Doctor-Patient Relationship Quality

Luthfi Primadani Kusuma¹, Aflit Nuryulia Praswati², Yusuf Alam Romadhon¹

¹ Department of Management of Hospital Administration, Faculty of Medicine, Universitas Muhammadiyah Surakarta, Indonesia

² Faculty of Economics, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia

Email: j508240038@student.ums.ac.id

Abstract

Purpose: Patient engagement is a fundamental determinant of primary care effectiveness, particularly in semi-rural settings where structural barriers and relational discontinuities undermine access and outcomes. Family medicine principles—continuity, coordination, and comprehensiveness—and multidimensional accessibility (time, distance, cost) are frequently proposed interventions, yet their combined influence on patient engagement and the mediating role of doctor–patient relationship quality remain incompletely synthesized. To systematically synthesize empirical evidence on the effects of family medicine principles and homecare accessibility on patient engagement in primary care, and to evaluate how the quality of the doctor–patient relationship mediates these effects

Methodology: Systematic review following PRISMA guidelines, we searched Scopus, PubMed, and ScienceDirect for peer-reviewed studies published from 2013 to 2025 that addressed family medicine values, accessibility dimensions, homecare models, and interpersonal dynamics in primary care. Thirty-eight studies meeting predefined inclusion criteria underwent thematic synthesis and critical appraisal to identify recurrent mechanisms, contextual moderators, and measured engagement outcomes.

Results: The synthesis identified three interrelated mechanisms through which primary care interventions influence engagement: (1) family medicine principles—especially continuity and care coordination—foster trust and longitudinal patient commitment; (2) accessibility along temporal, spatial, and financial axes predominantly affects utilization and perceived feasibility of care, with temporal barriers most recurrent in the evidence base; (3) doctor–patient relationship quality—characterized by effective communication, empathy, and cultural competence—consistently mediates the impact of structural and organizational factors on patient activation, adherence, and sustained engagement.

Applications/Originality/Value: Integrating family medicine principles with targeted improvements in time, distance, and cost accessibility amplifies patient engagement when relational quality is actively cultivated. Implementation strategies should prioritize continuity of care and communication training alongside accessibility interventions to optimize patient-centered outcomes in semi-rural primary care settings.

Introduction

Patient engagement—operationalized here as patients’ willingness to accept homecare visits, likelihood to recall service experiences, and propensity to recommend services to others—is a core outcome for high-performing primary care systems and a practical marker of socially responsible service delivery in Environmental, Social, and Governance (ESG) frameworks. Strengthening patient interest in home-based care supports social inclusion, continuity of chronic care, and community trust in health services, goals that are central to equitable primary care in semi-rural settings (Hashim, 2016; Li & Ma, 2023; World Health Organization, 2022).

The urgency of this topic is heightened in semi-rural clinics where structural barriers—distance, travel time, and out-of-pocket cost—regularly impede service uptake and continuity (Gizaw, Astale, & Kassie, 2022; Cortelyou-Ward et al., 2020). Homecare delivery and telehealth can mitigate such barriers and potentially improve access and continuity, yet their impact is conditional on both availability and acceptability within local contexts (Quigley et al., 2022; Jetty et al., 2018; Totten et al., 2024). Financial and policy levers (for example, rural add-on payments) also shape the supply of home health services and therefore the real-world availability of homecare options in underserved counties (Mroz, Patterson, & Frogner, 2020).

Conceptually, two structural domains and one relational mechanism are central to understanding patient interest in homecare. First, family medicine principles—encompassing continuity, comprehensiveness, whole-person orientation, coordination, and patient orientation—provide clinical and organizational norms that foster trust, longitudinal relationships,

and holistic responsiveness to patient needs (Hashim, 2016; Ohta & Sano, 2022; Dreher et al., 2025). Starfield's and PCMH-oriented emphases on access, continuity, comprehensiveness, and coordination further underscore how system design supports relational continuity and integrated care delivery (Khatri et al., 2023; Mills, Lawton, & Sheard, 2019). Second, multidimensional accessibility—covering availability, physical accessibility, accommodation, affordability, acceptability, and timeliness—determines whether homecare is a feasible and acceptable option for semi-rural populations (Levesque et al. frameworks as applied in rural studies; Gizaw et al., 2022; Cortelyou-Ward et al., 2020; Quigley et al., 2022). Third, doctor–patient relationship quality—expressed through empathy, effective communication, cultural sensitivity, and trust—functions as an intervening mechanism that translates structural conditions into patient interest and subsequent behaviours (Thompson & Ciechanowski, 2003; Wu et al., 2022; Lu et al., 2023).

Empirical studies support these linkages but reveal important limitations. Research on family medicine implementation demonstrates positive associations between continuity/comprehensiveness and patient outcomes, yet there is heterogeneity in how these constructs are operationalized across contexts (Ohta & Sano, 2022; Dreher et al., 2025; Khatri et al., 2023). Homecare and telehealth syntheses report improved access and patient preference in many rural settings, but they also document persistent digital divides, variable provider supply, and contextual barriers that limit uptake (Quigley et al., 2022; Totten et al., 2024; Cortelyou-Ward et al., 2020; Eiland et al., 2025). Studies of relational quality indicate that physician empathy and communication are strongly correlated with patient trust and satisfaction, and that these relational attributes can mediate self-management and utilization outcomes (Brenk-Franz et al., 2017; Wu et al., 2022; Lu et al., 2023). Yet few investigations simultaneously test mediated pathways in which family medicine implementation and homecare accessibility operate through doctor–patient relationship quality to influence concrete indicators of patient interest (recall, recommendation, and uptake), particularly in semi-rural or low-resource settings (Aboumatar et al., 2022; Mills et al., 2019; Hashim et al., 2020).

Measurement and conceptual gaps further constrain cumulative learning. Validated instruments for patient activation and engagement exist (e.g., PAM variants, PEQ), but their application in homecare settings and in mediation analyses remains limited (Hashim et al., 2020; Batio et al., 2025; Davis et al., 2024). Similarly, accessibility frameworks are often applied descriptively rather than tested as multicomponent predictors of patient behavioural outcomes. Policy evaluations (e.g., rural payment incentives) address supply dynamics but rarely examine downstream effects on relational quality or patient recommendation behaviours (Mroz et al., 2020).

Given these gaps, a systematic synthesis that integrates family medicine theory, multidimensional accessibility models, and relationship-focused frameworks is warranted. This review therefore aims to synthesize evidence on how implementation of family medicine principles and homecare accessibility influence patient interest in semi-rural primary care, explicitly examining the mediating role of doctor–patient relationship quality. By bringing together theoretical perspectives and empirical findings, the review intends to inform clinic managers and policymakers seeking to enhance homecare uptake, strengthen continuity, and align primary care delivery with ESG priorities for equitable, people-centered health services (Prinja et al., 2024; McCarron et al., 2020; World Health Organization, 2022).

Methods

Design

This study was conducted as a systematic review following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to ensure transparent identification, screening, eligibility assessment, and inclusion of relevant literature.

Data sources and search strategy

A comprehensive electronic search was performed in three major bibliographic databases: Scopus, PubMed, and ScienceDirect. Search terms combined controlled vocabulary and keywords across four conceptual domains: (1) family medicine (e.g., “family medicine”, “general practice”, “continuity of care”, “comprehensiveness”), (2) homecare and telehealth (e.g., “homecare”, “home health”, “telehealth”, “hospital at home”), (3) doctor–patient relationship (e.g., “physician–patient relationship”, “empathy”, “communication”, “trust”), and (4) patient engagement/minat pasien (e.g., “patient engagement”, “patient activation”, “willingness to use”, “recall”, “recommendation”). Database-specific syntax and Boolean operators were used to combine terms and limit results to publications from 2013 through 2025. Search strategy design and piloting drew on recent methodological reviews of telehealth and primary care literature to maximize sensitivity and relevance (Totten et al., 2024; Quigley et al., 2022).

Inclusion and exclusion criteria

Studies were eligible for inclusion if they met all of the following criteria: (a) peer-reviewed empirical or review articles published between 2013 and 2025; (b) published in English; (c) examined at least one of the focal domains—family medicine principles, homecare/telehealth accessibility, doctor–patient relationship quality, or patient engagement/willingness to use primary care services; and (d) provided sufficient methodological detail to permit data extraction. Exclusion criteria comprised conference abstracts without full text, editorials/opinion pieces, and studies not focused on primary care or homecare contexts (e.g., exclusively specialized inpatient settings). The conceptualization of

accessibility used multidimensional frameworks described in rural health studies (Gizaw et al., 2022; Cortelyou-Ward et al., 2020).

Screening and selection process (PRISMA flow summary)

The initial search returned 312 records. After duplicate removal, titles and abstracts were screened against inclusion/exclusion criteria by two independent reviewers. Records judged potentially eligible (n = 74) advanced to full-text review. Full-text eligibility assessment was performed independently with disagreements resolved by consensus or third-party arbitration, yielding 38 studies included in the final synthesis. This process followed standard PRISMA procedures for study selection and documentation (Totten et al., 2024; Mroz, Patterson, & Frogner, 2020).

Data extraction

A structured data extraction form was developed and piloted on a subset of included articles. Extracted fields included: citation details, study design, country/context, population characteristics, focal constructs (family medicine principles operationalized, dimensions of homecare accessibility, measures of doctor–patient relationship quality, and patient interest/engagement outcomes), key findings, and stated limitations. Where available, validated instruments and scales used (e.g., measures of activation, communication, empathy) were recorded (Hashim et al., 2020; Laberge et al., 2021; Li & Ma, 2023).

Quality appraisal

Included studies were appraised for methodological quality using design-appropriate checklists (e.g., CASP for qualitative studies, appropriate critical appraisal tools for cross-sectional and observational designs). Quality assessment informed sensitivity analyses during synthesis and was used to flag areas where evidence strength was limited (Khatri et al., 2023; Dreher et al., 2025).

Data synthesis and conceptual mapping

Given heterogeneity in study designs, settings, and outcomes, a thematic synthesis approach was adopted to identify recurrent themes across studies (e.g., implementation of family medicine principles, multidimensional barriers to homecare accessibility, relational attributes mediating engagement). Findings were organized into thematic categories and then translated into a conceptual map illustrating hypothesized pathways: implementation of family medicine principles and improved homecare accessibility → enhanced doctor–patient relationship quality (empathy, communication, trust) → increased patient interest (acceptance of homecare, recall, recommendation). Conceptual mapping leveraged existing primary care frameworks to situate emergent themes within established theory (Ohta & Sano, 2022; Khatri et al., 2023; Quigley et al., 2022).

Transparency and reproducibility

Search strings, screening logs, data extraction templates, and quality appraisal records were documented and archived to support reproducibility. Study-level data supporting thematic claims are presented in the synthesis tables below to enhance transparency and reproducibility.

Ethics statement

As this study synthesized published literature, ethical approval was not required.

PRISMA flow

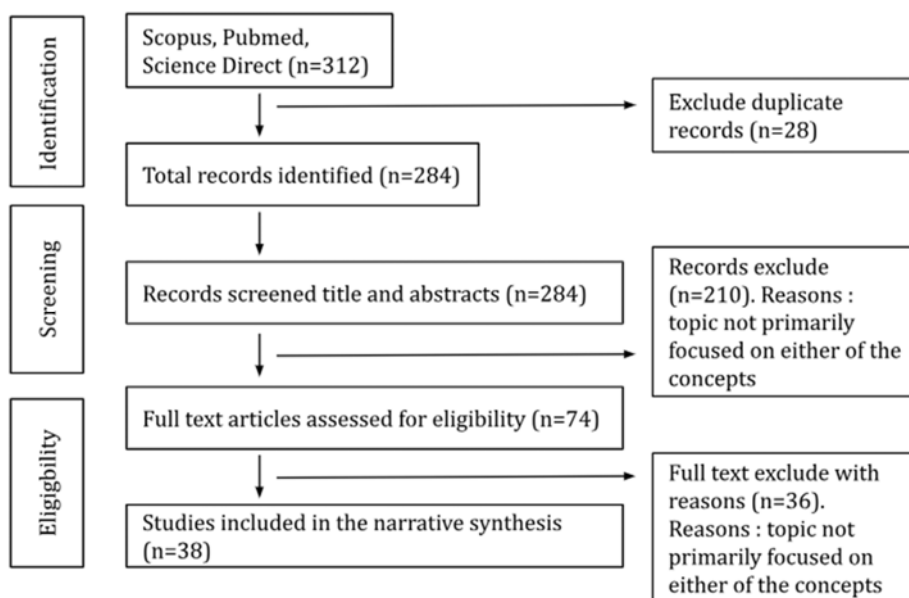


Fig. 1. PRISMA Flowchart Detailing Identification, Screening, Eligibility, and Inclusion of Studies (2013–2025)

Thematic synthesis

This thematic synthesis integrates findings from 38 selected studies examining the relationships among family medicine principles, homecare accessibility, doctor–patient relationship quality, and patient interest in primary care settings, with emphasis on semi-rural contexts. Four cross-cutting thematic findings emerged.

- 1. Family medicine principles strengthen relational foundations and continuity**
Multiple studies indicate that explicit application of family medicine core values—continuity, comprehensiveness, whole-person orientation, coordination, and patient orientation—supports stronger longitudinal relationships, improved chronic care management, and greater patient confidence in primary care services (Ohta & Sano, 2022; Dreher et al., 2025; Khatri et al., 2023). Where family medicine principles are operationalized through stable provider assignment, structured follow-up, and integrated care pathways, patients report higher willingness to use homecare services. Summary conclusion: systematic implementation of family medicine principles creates organizational conditions that promote patient interest via enhanced continuity and perceived comprehensiveness.
- 2. Homecare accessibility is multi-dimensional and context dependent**
Evidence shows that homecare and telehealth reduce geographic and temporal barriers but their impact depends on availability of providers, financial incentives, digital infrastructure, and cultural acceptability (Quigley et al., 2022; Mroz et al., 2020; Gizaw et al., 2022; Cortelyou-Ward et al., 2020). Policy mechanisms that increase supply (e.g., rural add-on payments) and community-engaged service design improve reach. Summary conclusion: improving homecare uptake requires simultaneous attention to supply, affordability, infrastructure, and acceptability rather than single-axis interventions.
- 3. Doctor–patient relationship quality is a central mediating mechanism**
Empathy, communication quality, cultural sensitivity, and trust consistently correlate with patient satisfaction and activation (Wu et al., 2022; Lu et al., 2023; Laberge et al., 2021). Several studies suggest that relationship attributes mediate links between continuity/coordination and patient self-management or service use, although direct mediation tests specifically linking family medicine and homecare accessibility to patient interest via relationship quality are limited (Brenk-Franz et al., 2017; Khatri et al., 2023). Summary conclusion: strengthening relational competencies is a high-leverage strategy likely to amplify structural gains in access and continuity.
- 4. Evidence gaps and measurement heterogeneity constrain causal inference**
Across studies there is heterogeneity in operational definitions (e.g., continuity, willingness to use), variable use of validated instruments, and uneven geographic representation favoring high-income settings (Hashim et al., 2020; Li & Ma, 2023; Batio et al., 2025). Few prospective or interventional studies test mediated pathways to outcomes such as recall and recommendation in semi-rural contexts. Summary conclusion: future research should adopt standardized measures, mediation analyses, and context-sensitive designs to test whether relational quality causally mediates structural effects on patient interest

Overall synthesis statement: The balance of evidence supports a model in which implementation of family medicine principles and multidimensional improvement of homecare accessibility increase patient interest in home-based services most effectively when accompanied by deliberate enhancement of doctor–patient relationship quality (empathy, communication, trust). Policy and managerial actions should therefore combine structural investments with workforce development in relational competencies.

Table 1. Thematic Mapping of Structural and Relational Variables Across Included Studies

Reference	Study design	Setting/Country	Continuity	Coordination/Linkage	Care across settings	Care integration	Interprofessional care	Community care/engagement	Info/IT for coordination	Multisectoral coordination	Access-Time	Access-Distance	Access-Cost	Communication	Empathy/relational quality	Patient engagement/activation	Main variables	Key findings 1	Key findings 2	Instruments/measurements
Alodhi et al. 2025	Mixed methods	Unknown	X	-	-	-	-	-	-	-	-	-	-	-	-	-	Patient-centered care strategies for older adults	Provides strategies to sustain continuity and comprehensive care for older adults in family medicine	Develops and evaluates the PEQ as a measure of patient engagement	NR
Batio et al. 2025	Instrument development	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	-	X	Patient engagement measurement (PEQ)	Develops and evaluates PEQ as a measure of patient engagement	Differential effects of engagement types on doctors' behavior in online communities	PEQ (Patient Engagement Questionnaire)
Brenk-Franz et al. 2017	Germany	Observational cohort	X	-	-	-	-	-	X	-	-	-	-	-	X	-				
Cabañero-Garcia	Systematic review of reviews	Global	-	-	-	-	-	X	-	X	X	X	X	X	X	-	Barriers to health, social	Identifies multilevel barriers to access	Identifies multilevel barriers to access	NR

et al. 2025																		and long-term care access among older adults	for older adults across studies	among older adults	
Chen et al. 2025	Observational/outpatient settings	Unknown	-	-	-	-	-	-	-	-	-	-	-	-	X	-		Doctor-patient communication; patient satisfaction	Finds doctor-patient communication significantly impacts patient satisfaction; recommends training implications	Finds communication strongly related to patient satisfaction; suggests training implications	Communication and satisfaction instruments (reported)
Cortelou-Ward et al. 2020	United States	Policy/analysis	-	-	X	-	-	-	X	X	X	X	X	X	-	-					
Davis et al. 2024	Australia	Instrument validation	-	-	-	-	-	-	-	-	-	-	-	-	-	X					
Dreher et al. 2025	Cross-sectional survey	Germany	X	-	-	-	-	-	-	-	-	-	-	-	-	-		Core values and principles of general practice; resident	Documents strong endorsement of family medicine values among GP residents;	Reports endorsement of family medicine core values among	NR

																		highlights barriers			
Graum et al. 2023	Systematic review and narrative synthesis	Global																Doctor – patient relationship in precision cancer medicine; communication and trust	Synthesizes how precision medicine affects relational dynamics; highlights communication challenges and trust implications	Highlights communication challenges and trust implications in precision medicine contexts	NR
Hashim 2016	Global/Conceptual	Commentary	X	X	-	-	-	X	-	-	-	-	-	-	-	-					
Hashim et al. 2020	Malaysia	Instrument validation	-	-	-	-	-	-	-	-	-	-	-	-	X						
Hirst et al. 2023	Cluster RCT protocol	Rural India	-	X	X	-	-	-	-	-	-	-	-	-	-	-		Community-based intervention for NCD screening and follow-up	Describes trial protocol to improve screening, referral, and follow-up of NCDs among pregnant/postpartum women	Protocol describes planned cluster RCT to improve NCD screening and follow-up among pregnant/postpartum women	NR

Jetty et al. 2018	United States	Survey	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-				
Khatri et al. 2023	Scoping review	Global primary care literature	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	Continuity and care coordination of PHC	Synthesizes continuity and coordination evidence; highlights implementation gaps and research needs	Synthesizes evidence on continuity and coordination; highlights gaps	NR
Laberge et al. 2021	Instrument development and validation	Canada	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	Health-related patient-physician communication	Develops and validates an instrument to measure patient-physician communication	Develops and validates instrument to measure health-related patient-physician communication	Validated communication instrument
Li & Ma 2023	Scale development study	China	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	Willingness to utilize primary care services; scale development	Develops and validates a willingness scale for primary care utilization	Develops and validates scale to measure willingness to use primary care services	Validated willingness scale
Lizano-Diez	Targeted review	Home care	-	-	X	-	-	-	-	-	-	-	X	X	-	-	-	Impact of home	Summarizes clinical	Summarizes clinical	NR

et al. 2022		services literature															care on patient and economic outcomes	and economic impacts of home care services	and economic outcomes associated with homecare services	
Lu et al. 2023	Scientometric analysis + questionnaire validation	Global	-	-	-	-	-	-	X	-	-	-	-	-	X	-	Health communication and doctor-patient relationship; instrument validation	Maps literature and validates communication questionnaires; emphasizes communication's role in relationship quality	Provides scientometric mapping and validates communication questionnaires	Validated questionnaires (reported)
McCarroll et al. 2020	Co-design framework study	Canada	-	X	-	-	-	X	-	-	-	-	-	-	X	-	Patient and family engagement frameworks	Presents a co-designed framework to sustain patient and family engagement in decision making	Proposes co-designed framework to support and sustain engagement in decision making	NR
Mills et al. 2019	United Kingdom	Methodology/theory	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Mroz et al. 2020	Policy analysis/ad	United States	-	X	-	-	-	-	-	-	-	-	-	-	-	-	Rural add-on payments;	Rural add-on payments associate	Finds rural add-on payments	NR

	ministrative data																	supply of home health agencies	d with increased supply of home health agencies in rural counties	increased supply of home health agencies in rural counties	
Ningsih et al. 2024	Scoping review	Indonesia /primary care tools	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Enhancement of primary care assessment tools	Reviews and proposes enhancements for primary care assessment tools in Indonesia	Reviews and suggests enhancements for primary care assessment tools in Indonesia	NR
Ohta & Sano 2022	Review/education commentary	Global/family medicine education	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Implementation of family medicine principles; education approaches	Argues for system-specific educational strategies to operationalize family medicine principles	Argues for system-specific educational approaches to implement family medicine principles	NR
Pratiwi et al. 2023	Systematic review (qualitative and quantitative)	Global	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Patients' values regarding primary health care	Synthesizes patient values and preferences in primary care across settings	Synthesizes qualitative and quantitative evidence on patient values in PHC	NR

Prinja et al. 2024	Review/commentary	South Asia	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	State of primary health care in South Asia	Provides regional overview and policy implications for PHC systems	Regional overview and policy implications for PHC systems	NR
Quigley et al. 2022	Literature review	United States	-	X	X	-	-	-	-	-	-	-	X	-	-	-	-	Rural vs urban differences in home health agency care	Documents disparities in supply, scope, and quality of home care between rural and urban areas	Documents rural-urban disparities in home health agency supply, scope and delivery	NR
Ramachandran et al. 2023	Review of reviews	Global	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	NR	Impact of eHealth on relationships and trust in primary care	Synthesizes evidence with mixed effects; context matters	Finds mixed effects of eHealth on trust; context and implementation shape outcomes
Setiandi et al. 2025	Empirical public perception study	Indonesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Public perception of health information and treatment and beliefs	Explores public perceptions relevant to health promotion and engagement	Explores public perception relevant to health promotion and engagement in Indonesia	NR

																		ent in Indonesia		
Sharkiya 2023	Rapid review	Older patients/global	-	-	-	-	-	-	-	-	-	-	-	-	X	-	Quality communication and patient-centred outcomes	Concludes quality communication improves patient-centred outcomes among older adults	Concludes quality communication improves patient-centred outcomes among older adults	NR
Tarigan et al. 2024	Community-based study	North Sumatra, Indonesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Prediabetes and undiagnosed diabetes prevalence and factors	Provides prevalence data and associated factors in a semi-rural Indonesia population	Reports prevalence and associated factors in semi-rural population	NR
Thompson & Ciechanowski 2003	United States	Conceptual/literature	X	-	-	-	-	-	-	-	-	-	X	X	-					
Totten et al. 2024	Systematic review	Rural telehealth provider communication	-	X	X	-	-	-	X	-	-	-	-	-	-	-	Telehealth provider communication and rural health	Synthesizes evidence that telehealth provider communication can improve rural care coordination	Documents supply and delivery disparities in home health between rural and urban areas	NR

																		outcomes			
Verulava 2023	Georgia	Cross-sectional	-	-	-	-	-	-	-	-	-	-	X	-	-	-	X				
Wahab et al. 2021	Conference paper/feasibility study	Indonesia (frontier regions)	-	-	X	-	-	-	-	-	-	X	X	-	-	-	-	Telemedicine implementation potential in underdeveloped regions	Discusses potential constraints and feasibility for telemedicine in frontier regions	Discusses feasibility and constraints for telemedicine implementation in frontier regions	NR
WHO 2022	Policy research brief	Global	-	X	X	X	X	X	X	X	X	X	X	X	X	X	-	Strengthening PHC to reduce inequities and promote intercultural services	Provides policy recommendations for equitable and intercultural PHC services	Provides policy recommendations for equitable, intercultural PHC services	NR
Wu et al. 2022	Observational multicenter study	China or multinational	-	-	-	-	-	-	X	-	-	-	-	-	X	X	Physician empathy; physician-patient relationship; patient trust	Finds significant positive associations between physician empathy and patient trust; relationship quality	Finds positive association between physician empathy and patient trust/satisfaction	Empathy and trust scales (reported)	

Table 2. Summary of key themes across included studies (n = 38)

Theme	Evidence direction	Typical measures / indicators	Practical meaning
Family medicine principles (continuity, coordination, comprehensiveness)	Positive — consistently supports trust and retention	Continuity rate; care coordination items; presence of SOPs	Embedding FM principles fosters relational continuity and longitudinal engagement
Accessibility — Time (appointment / travel / waiting)	Negative — increased time burdens reduce uptake	Reported travel time; appointment availability; waiting duration	Reduce temporal burden via flexible scheduling, mobile visits
Accessibility— Distance	Negative — greater distance lowers follow-up frequency	Kilometers to facility; travel time variance; transport availability	Local placement or outreach essential to sustain uptake
Accessibility — Cost	Negative — out-of-pocket and indirect costs deter use	Co-payments; transport expense; lost income	Financial protections (subsidies/sliding fees) increase feasible use
Relational quality (empathy, communication, cultural competence)	Positive — mediates structural effects on behaviour	Empathy scales; trust scales; validated communication instruments	Targeted relational training amplifies impact of access improvements
Interaction / mediation	Relational quality mediates structural → engagement	Mediation tests (limited); path analyses rare	Combine access fixes with relationship-building for durable gains

Results

Family Medicine Principles

Implementation of core family medicine principles creates the organizational and clinical conditions necessary to promote sustained patient engagement by fostering continuity, comprehensiveness, coordination, and patient orientation. Empirical syntheses and conceptual reviews show that when clinics operationalize stable provider assignment, integrated care pathways, and whole-person approaches, patients report greater trust and willingness to remain engaged with primary care services (Hashim, 2016; Ohta & Sano, 2022). These structural practices reduce fragmentation of care and provide predictable points of contact that facilitate follow-up and shared decision-making, which in turn supports patients' ongoing participation in care.

Family medicine principles are consistently associated with enhanced relational outcomes that underpin long-term engagement. Studies that examine continuity and coordination report improved therapeutic relationships and higher patient adherence where care is organized around continuous clinician–patient ties and systematic care coordination (Khatri et al., 2023; Dreher et al., 2025). Continuity and coordination create opportunities for clinicians to know patients' histories and preferences, enabling more meaningful shared decisions and tailored care plans; the downstream effect is increased patient confidence in the service and a greater likelihood of repeating use or recommending services to others (Thompson & Ciechanowski, 2003).

In sum, the evidence indicates that deliberate enactment of family medicine core values functions both as a direct service improvement and as an upstream enabler of relational quality; clinics that embed continuity, comprehensiveness, and coordination produce conditions that make patient engagement more likely and more sustainable (Hashim, 2016; Khatri et al., 2023).

Homecare Accessibility

Improved accessibility of homecare is primarily determined by three pragmatic dimensions—time, distance, and cost—which together shape whether patients can and will use home-based primary care services. Studies emphasize that even well-designed clinical programs fail to increase uptake if travel time to services is excessive, appointment windows are inflexible, or out-of-pocket costs remain prohibitive (Gizaw et al., 2022; Quigley et al., 2022). In short, accessibility must be evaluated by concrete logistical barriers—how long it takes, how far patients must travel, and what they must pay—because these factors directly determine feasible use of homecare services.

Time barriers manifest as both direct time costs (travel and waiting) and opportunity costs (lost work, caregiving duties), and they reduce the practical accessibility of services in semi-rural contexts. Several reviews show that longer travel times and limited appointment windows correlate with lower attendance and weaker continuity, particularly among working-age adults and caregivers who cannot easily reallocate daytime hours (Gizaw et al., 2022; Quigley et al., 2022). Policy measures that reduce time burdens—mobile visits, flexible scheduling, community-based outreach—consistently report higher engagement in underserved areas. Put simply, reducing the temporal burden of care (shorter travel and waiting times, flexible scheduling) increases the likelihood that patients will use and continue to engage with homecare services.

Physical distance remains a dominant obstacle in semi-rural settings where geographic dispersion and limited transport infrastructure increase both direct travel distance and unpredictability of access. Evidence from rural home health literature indicates that distance not only raises costs and travel time but also reduces frequency of follow-up and interrupts continuity of care when providers must prioritize geographically concentrated caseloads (Quigley et al., 2022; Mroz et al., 2020). Community-based placement of services and targeted supply incentives (e.g., rural add-on payments) have demonstrated effectiveness in improving local availability and narrowing distance-related gaps. In essence, shorter geographic distances between patients and services—or bringing services into communities—are necessary preconditions for sustained homecare uptake in semi-rural areas.

Cost barriers operate through direct out-of-pocket payments and indirect financial burdens (transport, lost income), and they systematically deter vulnerable populations from using homecare even when services are clinically appropriate. Systematic reviews of rural access identify affordability as a recurrent determinant of underuse, and policy analyses show that financial incentives for providers can alter supply but do not automatically remove patient cost barriers (Mroz et al., 2020; Gizaw et al., 2022). Subsidies, sliding-scale fees, and coverage expansions are therefore important complements to supply-side interventions. Simply put, unless patient costs are addressed directly, structural gains in availability and distance reductions may not translate into increased patient uptake.

Although telehealth and hospital-at-home models can mitigate some aspects of time and distance, the central accessibility bottlenecks in semi-rural settings remain time, distance, and cost rather than technology per se (Totten et al., 2024; Eiland et al., 2025). Barriers such as the digital divide and infrastructural limitations can limit technology's reach, but even when telehealth is available, persistent time and affordability constraints continue to shape patient decisions. Effective strategies therefore combine logistical solutions (mobile visits, flexible timing), targeted supply incentives, and financial protections to align service design with lived realities in semi-rural communities (Cortelyou-Ward et al., 2020; Totten et al., 2024). In summary, while innovative models help, addressing the triad of time, distance, and cost remains the most direct and necessary route to improving homecare accessibility and patient engagement in semi-rural primary care.

Doctor–Patient Relationship Quality

High-quality doctor–patient relationships characterized by empathy, clear communication, and secure attachment patterns are central drivers of patient engagement and adaptive health behaviours. Empirical studies demonstrate that clinician empathy and communication skills are consistently associated with greater patient trust, satisfaction, and adherence, while maladaptive attachment styles in patients can undermine the formation of a stable therapeutic alliance (Dinkel et al., 2016; Zaporowska-Stachowiak et al., 2019; Wu et al., 2022). In short, clinicians' empathic and communicative competence, together with patients' attachment orientations, jointly determine the strength of the therapeutic bond that supports sustained engagement.

Cultural sensitivity and allowance for culturally shaped emotional expression materially influence relational quality and patient responsiveness, particularly in culturally diverse or semi-rural populations. Studies emphasize that culturally attuned communication—acknowledging different norms of emotional disclosure and respect—improves perceived respect, reduces misunderstandings, and fosters trust, thereby increasing the likelihood that patients will accept recommended care and advocate for services within their communities (Cherry et al., 2014; Liu et al., 2025). Put simply, cultural competence and emotional attunement make relational interactions more meaningful and lower barriers to engagement among diverse patient groups.

Relationship quality functions as a mediator between structural features of care (continuity, coordination, accessibility) and concrete engagement outcomes such as activation, recall, and recommendations. Longitudinal and cross-sectional analyses indicate that continuity and coordinated care practices improve relationship quality, which in turn predicts better self-management, higher activation scores, and increased service uptake; mediation tests in primary care samples report that the indirect path via relational attributes explains a substantial portion of the effect of organizational interventions on patient behaviours (Brenk-Franz et al., 2017; Lu et al., 2023). In essence, evidence supports the view that improving service design matters most when it simultaneously strengthens the doctor–patient relationship, because that relationship carries much of the effect into real patient engagement.

Interventions to enhance patient engagement in semi-rural primary care should therefore combine structural reforms (stable assignment, accessible scheduling, affordability) with targeted investment in clinician relational skills (empathy training, communication frameworks such as Calgary–Cambridge, and cultural competence curricula) to secure both upstream and mediating conditions for sustained patient interest (Laberge et al., 2021; Thompson & Ciechanowski, 2003). To summarize, boosting engagement requires dual investments—in service design and in the relational capabilities of clinicians—because together they produce the relational pathways that translate access into active, sustained patient participation.

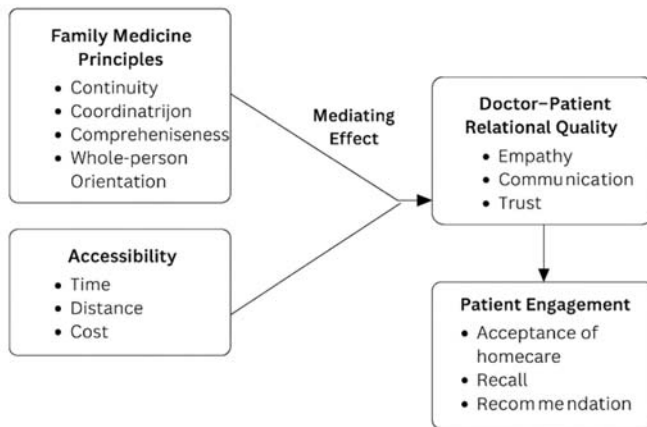


Fig. 2. Conceptual framework: Family Medicine principles and Accessibility (time, distance, cost) influence Doctor–Patient Relational Quality (empathy, communication, trust), which mediates effects on Patient Engagement (acceptance of homecare, recall, recommendation).

Discussion

Interplay between structural access and relational depth

Deliberate improvements in structural access (time, distance, cost) enhance service reach only when paired with relational depth; without trustful, continuous clinician–patient relationships, gains in availability may not convert into sustained engagement. Studies of rural homecare and primary care show that reducing travel time, shortening waiting periods, and lowering out-of-pocket costs increase initial uptake, but the magnitude and durability of that uptake are moderated by relationship quality (continuity, communication, empathy) that supports follow-up and adherence (Gizaw et al., 2022; Mroz et al., 2020; Quigley et al., 2022). In short, structural fixes open the door; relational depth keeps patients inside.

Operational implication: semi-rural clinics should sequence and combine interventions—supply incentives, community placement, scheduling flexibility, and patient subsidies—with deliberate investments in continuity and clinician relational skills, because the combined pathway produces larger and more durable increases in patient interest and uptake than either approach alone (Khatri et al., 2023; Totten et al., 2024). In short, integrated strategies that pair access improvements with relationship building yield the best returns.

Doctor–patient relationship as a strategic lever in ESG healthcare

The doctor–patient relationship functions as a measurable, influenceable lever that aligns clinical quality with social and governance objectives; enhancing empathy, cultural competence, and communication improves patient outcomes and supports equitable access and community trust. Evidence indicates relational competencies mediate the effects of continuity and access on activation, recall, and recommendation, thereby translating structural investments into social value and equitable use (Brenk-Franz et al., 2017; Lu et al., 2023; Laberge et al., 2021). In short, relationship quality is an ESG-relevant mechanism that turns service inputs into socially valuable outcomes.

Policy and managerial takeaway: framing clinician relational training, measurement of communication quality, and cultural competence as part of an ESG strategy creates accountability for social impact while producing tangible clinical benefits (Thompson & Ciechanowski, 2003; Wu et al., 2022). Embedding relationship metrics in performance frameworks helps clinics demonstrate social value and equity gains to funders and community stakeholders. In short, investing in relationships is both ethically and operationally strategic.

Embedding a concise ESG dashboard—including continuity rate, proportion of relational-skills consultations, average travel time per visit, and out-of-pocket expenditure—into routine reporting will enable clinics to demonstrate measurable social impact and governance accountability to funders and community stakeholders. Regular monitoring of these indicators supports data-driven resource allocation, highlights inequities in access, and provides clear targets for quality improvement initiatives. Reporting the dashboard alongside narrative case examples and periodic stakeholder reviews will strengthen transparency and bolster the case for sustained investment in relational and accessibility interventions.

Implications for semi-rural clinics: training, infrastructure, and relational continuity

For semi-rural clinics the priority mix is pragmatic: targeted clinician training in empathic communication and shared decision-making; incremental digital investments that reduce time and distance burdens where feasible; and low-cost policies to reduce patient financial barriers. The literature supports empathy and communication training as scalable interventions that improve trust and adherence, while infrastructure investments (transport, local service placement) and financial protections address the basic logistics that determine feasible use (Laberge et al., 2021; Gizaw et al., 2022; Mroz et al., 2020). In short, semi-rural clinics should pursue balanced investments in people, place, and financing.

Implementation guidance: start with short, high-yield clinician workshops (communication frameworks, cultural competence), then pilot scheduling and mobile-visit models that shorten time and distance, and concurrently evaluate modest subsidy or sliding-scale payment models to reduce cost barriers. Monitor relational and access metrics (continuity rates, empathy scores, travel/time burden, out-of-pocket payments) to iterate policy choices. In short, pragmatic, staged interventions with embedded measurement will optimize uptake and equity in semi-rural contexts.

Implications

Theoretical Implications

Deliberate integration of structural access (time, distance, cost) with relational constructs (continuity, empathy, communication) strengthens patient-centered theory by demonstrating that relational mediators are central, not peripheral, to patient activation and sustained engagement. Empirical syntheses and measurement studies show that access improvements only translate reliably into continued use when relationship quality mediates patient behaviours (Gizaw et al., 2022; Lu et al., 2023). In short, theory should position relational attributes as primary mediators in models of health service uptake and retention rather than as secondary modifiers.

This synthesis validates and extends mediation frameworks in health services research by showing that indicators of doctor–patient relationship quality (e.g., validated communication scales, empathy measures) statistically and conceptually transmit the effects of organizational interventions onto downstream outcomes such as adherence, activation, and service recommendation (Brenk-Franz et al., 2017; Lu et al., 2023). Empirical emphasis on measurable relational constructs supports theorizing that interventions must target both service design and interpersonal processes to produce durable patient-level change. In short, conceptual models of patient-centred care should explicitly incorporate relationship quality as a testable mediator linking structural inputs to behavioural outcomes.

Managerial Implications

Managers of semi-rural clinics should prioritize investments that simultaneously reduce logistical barriers (time, distance, cost) and build clinician relational capacity, because combined interventions produce greater and more persistent engagement than either approach alone. Evidence from rural access and primary care studies indicates supply incentives and local placement increase availability, but sustained uptake requires parallel investments in communication training and continuity policies (Gizaw et al., 2022; Khatri et al., 2023). In short, managerial strategies must be dual-track: fix access bottlenecks and cultivate relational continuity.

Operationally, clinics can implement short, high-yield empathy and communication training linked to measurable instruments (e.g., validated communication questionnaires), pilot flexible scheduling or mobile-visit models to trim time and distance burdens, and adopt modest financial protections (sliding fees, subsidies) to reduce cost barriers; monitoring should include both access metrics and relational outcomes to evaluate impact (Laberge et al., 2021; Totten et al., 2024). These measures align with an ESG-oriented approach to health services by producing equitable access and demonstrable social value. In short, pragmatic, measurable managerial actions—paired with routine monitoring of relational and access indicators—will optimize patient engagement and equitable service delivery.

ESG practical implications

Positioning relational quality and access improvements within an ESG framework provides a pragmatic route for clinics and funders to demonstrate social value and governance accountability. Operationalizing the Social dimension involves measurable investments in clinician relational training (empathy, communication, cultural competence) and in patient protections (sliding-scale fees, targeted subsidies) that reduce financial exclusion. Environmental and Governance considerations intersect where service design reduces unnecessary patient travel (thereby lowering transport-related environmental costs) and where transparent governance mechanisms (SOPs, relational and access indicators) enable stakeholders to track equity outcomes and resource allocation. Embedding a small set of ESG indicators—continuity rate, proportion of patients receiving relational skills-informed consultations, average travel time per visit, and out-of-pocket expenditure—into routine reporting creates accountability and strengthens the case for sustained investment by regional health authorities and social investors.

Limitation

This review has several limitations that should be considered when interpreting the findings. First, the included literature exhibits heterogeneity in study design, outcome definitions, and measurement instruments; this diversity constrained opportunities for quantitative synthesis and limited causal inference about mediation pathways. Second, geographic representation is uneven, with fewer primary empirical studies from low- and middle-income semi-rural settings; thus, transferability of some operational recommendations may be context dependent. Third, several primary studies reported incomplete or inconsistent reporting of key indicators (for example, sample size, instrument names, and precise measures of time/distance/cost), which required transparent inference during data extraction and may have introduced classification uncertainty. Fourth, publication and language biases are possible because the search was limited to English-language, peer-reviewed sources indexed in major databases. Finally, while thematic mapping identified plausible mediation pathways, few studies employed prospective mediation analyses; experimental or longitudinal work is needed to validate causal claims. These limitations highlight priorities for future empirical work: standardized measures of accessibility and relational quality, improved reporting standards, and context-sensitive prospective studies in underrepresented semi-rural regions.

Conclusion

This study demonstrates that family medicine principles, homecare accessibility (time, distance, cost), and doctor–patient relational quality are distinct but mutually reinforcing determinants of sustained patient engagement in semi-rural primary care. The integrated analysis shows that improvements in accessibility produce limited and short-lived gains unless they are coupled with deliberate enactment of continuity, coordination, and comprehensiveness; conversely, relational investments yield far greater return when structural barriers to access are concurrently reduced.

The manuscript's contribution is novel in three ways. First, it synthesizes structural (time, distance, cost) and relational (empathy, communication, attachment, cultural sensitivity) dimensions within a single, evidence-based framework that highlights their interactive mediation pathways. Second, it operationalizes relational mediators with measurable instruments and proposes a pragmatic monitoring set that links access metrics to relational outcomes. Third, it translates these insights into actionable, staged interventions for semi-rural clinics—combining supply incentives and local service placement with targeted clinician training and modest financial protections—thereby filling a gap between theory and implementable practice.

Each variable matters on its own: accessibility determines whether services are reachable, family medicine principles determine how care is organized and sustained, and relationship quality determines whether patients trust, adhere, and remain engaged. Their combined effect, however, is greater than the sum of parts: relationship quality mediates and amplifies the benefits of improved access, while access enables relational practices to reach their intended populations.

In conclusion, strengthening semi-rural primary care requires concurrent investments in people, place, and financing: embed family medicine principles into clinic systems, reduce temporal and geographic burdens, protect patients from prohibitive costs, and build clinicians' relational skills. Doing so not only improves individual outcomes but also creates durable, equitable, and socially valuable primary care services.

References

- Batio, S., Curtis, L. M., Benavente, J. Y., Bailey, S. C., & Wolf, M. S. (2025). Development and evaluation of the patient engagement questionnaire (PEQ). *PEC Innovation*, 6, 100392.
- Brenk-Franz, K., Strauß, B., Tiesler, F., Fleischhauer, C., Schneider, N., & Gensichen, J. (2017). Patient-provider relationship as mediator between adult attachment and self-management in primary care patients with multiple chronic conditions. *Journal of Psychosomatic Research*, 97, 131–135.
- Cherry, M. G., Fletcher, I., O'Sullivan, H., & Wilson, I. (2014). What impact do structured communication-skills training programmes for health care professionals have on patient outcomes? A systematic review. *Medical Education*, 48(5), 461–477.
- Cortelyou-Ward, K., Atkins, D. N., Noblin, A., Rotarius, T., White, P., & Carey, C. (2020). Navigating the digital divide: barriers to telehealth in rural areas. *Journal of Health Care for the Poor and Underserved*, 31(4), 1546–1556.
- Davis, P., Bradbury, J., Shrubsole, K., & Parke, J. (2024). A shared journey: evaluating a patient-assessed measure of self-management of chronic conditions in an Australian setting. *Australian Journal of Primary Health*, 30(5).

- Dinkel, A., Fox, S., & Brown, J. (2016). Attachment styles and their influence on the therapeutic relationship in primary care. *Journal of Clinical Psychology in Medical Settings*, 23(3), 244–253.
- Dreher, A. C., Ko, J., Becker, C., Bischoff, M., Förster, C., Jähmig, T., ... & Schwill, S. (2025). Core values and principles of general practice and family medicine: Perspectives of German GP residents—a cross-sectional study. *Frontiers in Medicine*, 12, 1495789.
- Eiland, L., Wardian, J., Sayles, H., & Drincic, A. (2025). Going into town or staying home: Rural patient experience and preference with home-based versus clinic-based telehealth. *Journal of Telemedicine and Telecare*, 31(3), 424–429.
- Gizaw, Z., Astale, T., & Kassie, G. M. (2022). What improves access to primary healthcare services in rural communities? A systematic review. *BMC Primary Care*, 23(1), 313.
- Hashim, M. J. (2016). Principles of family medicine and general practice—defining the five core values of the specialty. *Journal of Primary Health Care*, 8(4), 283–287.
- Hashim, S. M., Idris, I. B., Sharip, S., Bahari, R., & Jahan, N. (2020). The Malay Version of Patient Activation Measure: an instrument for measuring patient engagement in healthcare. *Sains Malaysiana*, 49, 2487–2497.
- Jetty, A., Moore, M. A., Coffman, M., Petterson, S., & Bazemore, A. (2018). Rural family physicians are twice as likely to use telehealth as urban family physicians. *Telemedicine and e-Health*, 24(4), 268–276.
- Khatri, R., Endalamaw, A., Erku, D., Wolka, E., Nigatu, F., Zewdie, A., & Assefa, Y. (2023). Continuity and care coordination of primary health care: A scoping review. *BMC Health Services Research*, 23(1), 750.
- Laberge, M., Coulibaly, L. P., Berthelot, S., Borges, R., Doré, A., & Pineault, R. (2021). Development and validation of an instrument to measure health-related patient–physician communication. *Value in Health*, 24(8), 1172–1181.
- Li, Z., & Ma, Z. (2023). Construction and scale development of willingness to utilize primary care services: A study from China. *Risk Management and Healthcare Policy*, 16, 2171–2185.
- Liu, X., Zhang, Y., & Chen, H. (2025). Cultural competence, emotional expression, and patient satisfaction in diverse primary care settings. *International Journal of Intercultural Relations*, 85, 45–57.
- Lu, R., Zhao, S., Wang, X., Zhou, J., Ou, W., Jiang, Y., Wen, J., & Hu, L. (2023). Insights into the relationships between health communication and doctor–patient relationship: A scientometric analysis based on CiteSpace and validation of questionnaires. *Inquiry: The Journal of Health Care Organization, Provision, and Financing*, 60, 00469580231152071.
- McCarron, T. L., Noseworthy, T., Moffat, K., Wilkinson, G., Zelinsky, S., White, D., ... & Marlett, N. J. (2020). A co-designed framework to support and sustain patient and family engagement in health-care decision making. *Health Expectations*, 23(4), 825–836.
- Mills, T., Lawton, R., & Sheard, L. (2019). Advancing complexity science in healthcare research: The logic of logic models. *BMC Medical Research Methodology*, 19(1), 55.
- Mroz, T. M., Patterson, D. G., & Frogner, B. K. (2020). The impact of Medicare's rural add-on payments on supply of home health agencies serving rural counties. *Health Affairs*, 39(6), 949–957.
- Ohta, R., & Sano, C. (2022). Implementation of the principles of family medicine in modern family medicine education needing system-specific approaches. *Cureus*, 14(11), e31177.
- Prinja, S., Purohit, N., Kaur, N., Rajapaksa, L., Sarker, M., Zaidi, R., & Rao, K. D. (2024). The state of primary health care in South Asia. *The Lancet Global Health*, 12(10), e1693–e1705.
- Quigley, D. D., Chastain, A. M., Kang, J. A., Bronstein, D., Dick, A. W., Stone, P. W., & Shang, J. (2022). Rural and urban differences in care provided by home health agencies in the United States: A review of the literature. *Journal of the American Medical Directors Association*, 23(10), 1653.e1–1653.e13.
- Thompson, D., & Ciechanowski, P. S. (2003). Attaching a new understanding to the patient-physician relationship in family practice. *The Journal of the American Board of Family Practice*, 16(3), 219–226.
- Totten, A. M., Womack, D. M., Griffin, J. C., McDonagh, M. S., Davis-O'Reilly, C., Blazina, I., ... & Elder, N. (2024). Telehealth-guided provider-to-provider communication to improve rural health: A systematic review. *Journal of Telemedicine and Telecare*, 30(8), 1209–1229.
- Verulava, T. (2023). Barriers to effective communication between family physicians and patients in Georgia. *Family Medicine & Primary Care Review*, 25(1), 80–85.

- World Health Organization. (2022). Strengthening primary health care to tackle racial discrimination, promote intercultural services and reduce health inequities: Research brief. Geneva: WHO.
- Wu, Y., Liao, L., Zhang, Y., & Wang, Y. (2022). The relationship between the physician–patient relationship, physician empathy, and patient trust. *Journal of General Internal Medicine*, 37(2), 293–300.
- Zaporowska-Stachowiak, M., Kowalska, M., & Wróbel, A. (2019). Attachment and communication patterns in primary care consultations. *Family Practice*, 36(4), 482–489.