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Community Pharmacist Networks for Preventive Health Communication

Nathaniel M. Rickles

Professor, University of Connecticut, United States

Abstract

Community pharmacists occupy an increasingly important position at the interface between primary care, medicines management, disease prevention, and public communication. Their accessibility allows preventive-health messages to be delivered during ordinary interactions that may not otherwise involve formal medical appointments. Preventive communication in community pharmacy can include vaccination promotion, smoking-cessation counseling, lifestyle advice, screening recommendations, medication-risk education, disease-prevention information, point-of-care testing, and referral to appropriate health services. Evidence available through 2021 demonstrates that community pharmacies can contribute to preventive and public-health services, while systematic reviews have also identified the importance of communication competence, interprofessional collaboration, implementation support, and integration with wider healthcare systems.

The present study develops the concept of a community pharmacist network as a coordinated structure connecting pharmacists with other pharmacies, general practitioners, public-health agencies, community organizations, screening providers, vaccination programs, and referral services. The central proposition is that preventive-health communication becomes more effective when messages are not delivered as isolated encounters but are supported by network connectivity, communication competence, preventive-service integration, and referral coordination. Because authentic network-level data were not supplied, a synthetic sample of 420 hypothetical community-pharmacy units was generated. Standardized multiple regression was used to estimate the relationship between the proposed network variables and preventive-health communication reach.

Within the simulation, network connectivity emerged as the strongest positive predictor of preventive communication reach ($\beta = .448$), followed by communication competence ($\beta = .373$), preventive-service integration ($\beta = .300$), and referral coordination ($\beta = .136$). The network-connectivity × communication-competence interaction was not statistically significant ($\beta = -.012$, $p = .732$). The complete model explained 48.9% of variance in the simulated outcome. Network connectivity was positively correlated with communication reach ($r = .490$).

The paper argues that community pharmacists should be conceptualized not merely as accessible individual health professionals but as potentially distributed nodes within preventive-health communication systems. The effectiveness of this role depends on credible information, communication quality, clearly defined referral pathways, integration with public-health priorities, interoperability with other healthcare professionals, and sustained organizational support. The proposed framework offers a transparent basis for future network analysis, implementation research, and community-level evaluation.

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Keywords: community pharmacists; preventive health communication; community pharmacy; public health; pharmacist networks; health promotion; vaccination communication; preventive services; referral coordination; interprofessional collaboration

1. Introduction

Community pharmacy has gradually moved beyond a narrowly defined dispensing function toward a broader patient-care and public-health role. Community pharmacists frequently encounter people without the scheduling barriers associated with many conventional healthcare settings, creating opportunities for health advice, medication-related education, preventive counseling, screening, and referral. The World Health Organization has described community pharmacies as important entry points to the health system and has highlighted activities such as patient advice, vaccination, blood-pressure monitoring, and medication follow-up. Earlier systematic evidence likewise established that both pharmacists and consumers recognize potential public-health functions for community pharmacy, although attitudes, workload, privacy, training, and expectations can influence implementation.

Preventive-health communication is especially well aligned with the accessibility of community pharmacy because many preventive decisions are made outside hospitals and specialist clinics. Community pharmacists can identify opportunities for education, screening, vaccination, behavioral support, and external referral during routine encounters. Kelling and colleagues documented examples of community pharmacists contributing to clinical preventive services through education, screening, and referral, while Brown and colleagues' systematic review found evidence supporting pharmacy-based smoking-cessation interventions and identified community pharmacies as feasible settings for broader public-health interventions. A separate review of community-pharmacy public-health interventions reported potential population-health benefits while emphasizing uncertainty regarding effects on inequalities and variation across service types.

However, preventive communication delivered by one pharmacist in one encounter has inherent limitations. A patient informed about hypertension risk may require laboratory assessment, physician evaluation, dietary support, medication follow-up, or longer-term monitoring. A person advised about vaccination may require eligibility verification, supply availability, administration, documentation, or referral. Smoking-cessation counseling may require repeated behavioral support and pharmacotherapy. Preventive communication therefore gains practical value when information is connected with action pathways. Research on pharmacist–general practitioner collaboration has shown that effective collaboration depends on mutual understanding, regular communication, compatible technologies, professional relationships, and practical mechanisms that support coordinated care. Reviews of partnerships between community pharmacies and community-based organizations likewise suggest that collaboration can broaden preventive-care opportunities beyond the walls of individual pharmacies.

This paper therefore shifts attention from the individual pharmacist to the community pharmacist network. A network is defined here as a structured pattern of relationships through which community pharmacists exchange health information, coordinate preventive services, communicate with other healthcare professionals, connect patients with external resources, and reinforce consistent public-health messages. The concept does not imply that all pharmacies must belong to a single formal organization. Networks may involve local professional relationships, referral agreements, public-health campaigns,

digital information systems, community partnerships, vaccination programs, collaborative practice arrangements, or shared health-promotion initiatives. The importance of this perspective is reinforced by implementation research showing that community-pharmacy innovations are influenced by staff engagement, training, operational resources, external relationships, and acceptance by other healthcare professionals and patients.

2. Objectives of the Study

2.1 To Examine Network Connectivity as a Predictor of Preventive-Health Communication Reach

The first objective is to assess the proposed relationship between the degree of community-pharmacist network connectivity and preventive-health communication reach. Network connectivity refers to the extent to which a community-pharmacy unit maintains functional communication and referral relationships with other pharmacies, general practitioners, public-health authorities, community organizations, screening services, and preventive-care programs.

The underlying expectation is that a well-connected pharmacist can do more than communicate information. The pharmacist can connect an identified need with the next appropriate action. This distinction is essential because preventive-health communication achieves limited practical value when patients are advised to act but encounter unclear pathways afterward.

2.2 To Evaluate Communication Competence and Preventive-Service Integration

The second objective is to evaluate whether pharmacist communication competence and the integration of preventive services contribute independently to communication reach. Communication competence includes the ability to explain health risks accurately, use understandable language, assess patient understanding, tailor information to individual circumstances, encourage questions, and convert technical recommendations into practical action.

Preventive-service integration refers to the extent to which health promotion, screening, vaccination, behavioral counseling, disease-prevention education, and medication-related prevention are incorporated into routine community-pharmacy activity rather than being treated as occasional or disconnected services.

2.3 To Assess Referral Coordination as a Network-Level Communication Mechanism

The third objective is to examine referral coordination as a mechanism through which preventive messages become operationally meaningful. Referral coordination is defined as the capacity to identify when another service is necessary, communicate that recommendation clearly, direct the individual to an appropriate provider, and support continuity where feasible.

Research has shown that community pharmacists can contribute to screening and referral, but effective interprofessional collaboration requires professional recognition, regular communication, and systems that enable pharmacists and other professionals to understand each other's roles.

3. Review of Literature

3.1 Community Pharmacy as a Preventive and Public-Health Setting

Eades, Ferguson, and O'Carroll's systematic review represents an important early synthesis of attitudes toward pharmaceutical public health. Their work demonstrated growing interest in the public-health role of community pharmacists while identifying barriers associated with professional expectations, confidence, workload, privacy, and public perceptions. The significance of this work lies in showing that expanded pharmacy practice is not determined solely by formal scope of practice; behavioral acceptance by pharmacists and patients also matters.

Kelling and colleagues subsequently provided a clinically focused examination of preventive services that community pharmacists could support. Their review identified opportunities involving education, screening, and referral and emphasized that accessibility creates opportunities for partnerships between pharmacy, healthcare, and public-health professionals. The authors' framing is particularly relevant to the present study because preventive communication frequently functions as the first stage of a larger care pathway.

Brown and colleagues evaluated community-pharmacy interventions targeting smoking cessation, alcohol misuse, weight management, and multicomponent public-health priorities. Their systematic review included 24 studies and reported that community-pharmacy smoking-cessation interventions were effective, with a pooled odds ratio of 1.85 for smoking cessation compared with control conditions. Evidence for alcohol and weight-related interventions was less definitive, illustrating that community-pharmacy effectiveness varies by intervention rather than being universally established.

Steed and colleagues later evaluated health-promotion interventions in community pharmacy through a Cochrane review. The review synthesized pharmacy-based health-promotion interventions and considered effects on professional practice and health outcomes. Thomson and colleagues' review of reviews similarly concluded that community pharmacies possess substantial potential to contribute to public-health delivery but noted uncertainty regarding effects across intervention categories and on health inequalities.

Shirdel and colleagues' 2021 systematic review further categorized health-promoting services available in pharmacies, including vaccination, screening, disease prevention, lifestyle-related activities, and other public-health functions. Together, these reviews support a broad conception of community pharmacy as a preventive-health setting while simultaneously demonstrating why service organization and communication quality deserve closer examination.

3.2 Communication, Collaboration, and Community Partnerships

Preventive-health information is useful only when patients can understand and act upon it. Pharmacist counseling therefore represents a central component of preventive communication. Al Aqeel and colleagues' systematic review examined interventions intended to improve community-pharmacist counseling practice and identified 17 randomized controlled trials, although methodological limitations in the evidence base were also noted. The review underscores that communication competence cannot simply be assumed from professional knowledge; it is a behavior that can be trained, supported, and evaluated.

Preventive communication also becomes more effective when pharmacists function within broader professional networks. Bollen and colleagues' systematic review of collaboration between general practitioners and community pharmacists identified hierarchy, limited understanding of professional capabilities, and communication barriers as obstacles. Experience of collaboration, co-location, co-education, compatible technologies, and regular communication were identified as facilitators. This evidence directly supports the present study's emphasis on network connectivity rather than treating referral as an isolated administrative task.

The community network can extend beyond conventional healthcare professions. Lindell, Kelling, Azar, and Telega reviewed partnerships between community pharmacies and community-based organizations for preventive services. The partnerships included organizations such as community health centers, workplaces, local associations, schools, public-health departments, and other local entities, with preventive activities including cardiovascular-risk assessment, diabetes-related services, HIV testing promotion, influenza preparedness, and bone-health screening. Although the literature was limited, it demonstrated the feasibility of treating pharmacies as nodes in community-level prevention partnerships. Such partnerships are particularly relevant when preventive-health communication needs to reach people who interact inconsistently with conventional healthcare systems. A pharmacy can deliver a message at the point of medication collection, but network relationships allow that message to travel further by linking the patient to vaccination, screening, diagnostic assessment, lifestyle support, or medical review. Preventive communication thereby becomes a distributed service process rather than a one-time educational statement.

Community-pharmacy networks may also help standardize communication. When different pharmacies, primary-care clinicians, and public-health agencies communicate contradictory information, patient trust can be weakened. Shared guidance, referral criteria, training resources, and public-health messaging can reduce such fragmentation. This principle became especially visible during COVID-19, when pharmacists were required to communicate rapidly evolving information while preserving continuity of essential medication and preventive services. Visacri, Figueiredo, and Lima's scoping review documented diverse pharmacist roles during the pandemic, and Strand and colleagues highlighted pharmacists' contribution to public education, point-of-care testing, chronic-disease support, and vaccination-related activities.

3.3 Implementation, Accessibility, and Network Sustainability

Accessibility represents one of community pharmacy's major advantages, but accessibility alone does not guarantee effective preventive care. WHO reporting has emphasized that community pharmacies often function as convenient points of entry to healthcare and provide advice without the same appointment requirements found in many other settings. In the United States, CDC-authored work has additionally highlighted the geographic proximity of pharmacies to large proportions of the population, although this specific access pattern should not be generalized automatically to other national systems.

Implementation research demonstrates that expanded pharmacy services depend upon far more than geographic presence. Weir and colleagues' systematic review identified staff engagement, training, operationalization, external engagement, resources, and relationships with patients and other professionals as influential factors in national implementation of community-pharmacy innovations.

These factors suggest that network performance is an organizational capability rather than merely a count of professional contacts.

Preventive-health communication also requires role clarity. If patients view pharmacists primarily as product suppliers, they may not expect or seek preventive counseling. If physicians remain uncertain about pharmacist capabilities, referrals in both directions may remain weak. If pharmacists are trained to identify health risks but lack recognized referral routes, preventive conversations may terminate without follow-through. Network development must therefore address social and institutional legitimacy as well as technical connectivity.

The COVID-19 period provided an unusually clear demonstration of pharmacy-system resilience. Maidment and colleagues' 2021 rapid realist review examined how community pharmacy could deliver essential and advanced services, including vaccination, during the pandemic and beyond. The review emphasized context, mechanisms, and implementation conditions rather than assuming that service expansion occurs automatically. WHO guidance from 2020 similarly recognized the need to maintain community-pharmacy services during the public-health emergency.

Collectively, the literature supports three propositions. First, community pharmacies can contribute meaningfully to prevention and health promotion. Second, communication quality and service integration influence whether those opportunities are realized. Third, sustained preventive impact requires collaboration and implementation mechanisms extending beyond the individual pharmacy. The present research model integrates these propositions through the concept of the community pharmacist network.

4. Research Methodology

4.1 Research Design and Conceptual Framework

The present study adopts a simulation-based quantitative design supported by an integrative review of pre-2022 literature. Simulation was selected because no authentic pharmacist-network dataset was supplied. This approach makes it possible to illustrate the statistical relationships proposed by the conceptual model without inventing real pharmacies, pharmacists, communities, patient populations, or health outcomes.

The synthetic sample contains 420 hypothetical community-pharmacy units. A unit may be conceptually interpreted as an individual pharmacy, pharmacist-led service site, or local community-pharmacy node. No country, ownership structure, urban–rural status, patient volume, or workforce characteristics were fabricated.

The principal analytical model treats preventive-health communication reach as the dependent variable. Network connectivity, communication competence, preventive-service integration, and referral coordination serve as primary predictors. An interaction between network connectivity and communication competence was included to examine whether the relationship between professional connectivity and communication reach changes when pharmacist communication competence is stronger.

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Table 1: Proposed Operationalization of the Study Constructs

Construct	Conceptual Definition	Illustrative Measurement Approach	Analytical Role
Community Pharmacist Network Connectivity	Degree of functional connection between the pharmacy and other pharmacies, physicians, public-health services, community organizations, screening providers, and prevention programs	Proposed 1–5 composite covering frequency, diversity, and usefulness of professional connections	Primary predictor
Communication Competence	Ability to communicate preventive-health information accurately, clearly, responsively, and in a patient-centered manner	1–5 composite assessing explanation, listening, tailoring, confirmation of understanding, and action-oriented counseling	Positive predictor
Preventive-Service Integration	Degree to which prevention and health-promotion activities are incorporated into routine community-pharmacy workflow	1–5 composite covering vaccination, screening, lifestyle counseling, risk communication, medication prevention, and health promotion	Positive predictor
Referral Coordination	Capacity to identify referral needs and connect patients with appropriate medical, public-health, or community services	1–5 composite assessing pathway clarity, referral communication, follow-up capacity, and professional linkage	Network mechanism
Preventive-Health Communication Reach	Extent to which preventive information is consistently delivered to relevant community members and connected with meaningful preventive actions	Proposed 1–5 outcome composite	Dependent variable

4.2 Synthetic Data Generation and Model Specification

Network connectivity was generated on a bounded scale between 1 and 5 with sufficient variation to represent relatively isolated through highly connected pharmacy units. Communication competence and preventive-service integration were generated independently so that a pharmacy could theoretically

possess strong communication skills without extensive professional connections, or strong network connections without fully integrated preventive services.

Referral coordination was modeled as positively related to network connectivity and preventive-service integration. This relationship reflects the conceptual proposition that referrals become easier when pharmacies maintain functional relationships with external providers and routinely incorporate preventive activities into workflow.

The coefficients used for data generation were selected to produce theoretically plausible variation rather than to reproduce published population effects. Accordingly, they should not be interpreted as real-world estimates.

4.3 Statistical Procedures and Ethical Considerations

Descriptive statistics were first calculated for the five principal constructs. All predictor variables and the outcome were standardized before regression analysis so that coefficient magnitudes could be compared directly.

Multiple linear regression was used to estimate the independent associations of network connectivity, communication competence, preventive-service integration, referral coordination, and the network × communication interaction with preventive-health communication reach. Model performance was summarized using (R^2).

Pearson correlation was calculated between network connectivity and preventive-health communication reach. A scatter graph with a fitted linear trend was generated because both variables are continuous and the visualization communicates the distribution of individual synthetic pharmacy units rather than presenting only category averages.

No ethics approval or informed consent was required because the present analysis contains no real patient, pharmacist, pharmacy, health-record, prescription, or organizational data. A future empirical implementation should obtain appropriate ethics and institutional approvals where required and should protect patient confidentiality, commercial pharmacy information, and professional-network data. Network studies should be particularly cautious because seemingly anonymous professional-relationship patterns can sometimes permit identification of individuals or organizations.

5. Analysis

5.1 Descriptive Characteristics of the Synthetic Network

- The synthetic sample produced a mean network-connectivity score of 3.10 with a standard deviation of 0.79. Communication competence averaged 3.39 (SD = 0.68), while preventive-service integration averaged 3.06 (SD = 0.73).
- Referral coordination produced a mean score of 3.04 (SD = 0.63). Preventive-health communication reach averaged 4.18 (SD = 0.59).
- These values are characteristics of the simulated dataset rather than estimates of real pharmacy practice. The relatively high outcome mean reflects the model's assumption that multiple complementary communication resources can jointly support preventive reach.
- The bivariate correlation between community-pharmacist network connectivity and preventive-health communication reach was (r=.490). This represents a moderate positive relationship: more highly

connected synthetic pharmacy units generally displayed stronger preventive communication reach, but substantial variation remained.

5.2 Multivariable Prediction of Preventive-Health Communication Reach

Table 2: Simulated Standardized Regression Predicting Preventive-Health Communication Reach

Predictor	Standardized β	p-value	Direction	Analytical Interpretation
Community Pharmacist Network Connectivity	0.448	< .001	Positive	Strongest predictor; greater professional connectivity is associated with broader preventive communication reach
Communication Competence	0.373	< .001	Positive	Clear and responsive communication independently strengthens reach
Preventive-Service Integration	0.300	< .001	Positive	Routine integration of preventive services substantially supports communication reach
Referral Coordination	0.136	.001	Positive	Coordinated referral pathways make a smaller but independent contribution
Network Connectivity × Communication Competence	−0.012	.732	Nonsignificant	No reliable interaction is demonstrated in the synthetic model
Model (R^2)	0.489	—	—	48.9% of simulated variance explained

Note: N = 420 synthetic community-pharmacy units. All coefficients are standardized and should not be interpreted as empirical population estimates.

Network connectivity produced the strongest positive coefficient, β = .448. The result illustrates the principal theoretical proposition of the paper: preventive communication may become more extensive when pharmacists operate within functioning professional and community relationships rather than as isolated information providers.

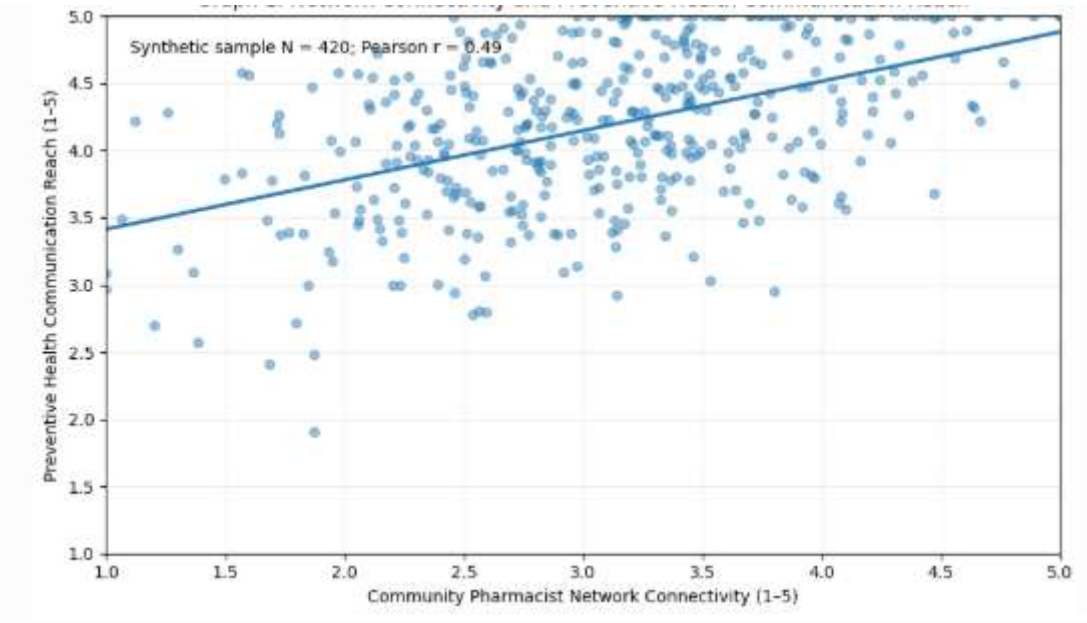
Communication competence remained strongly positive at β = .373. This coefficient demonstrates that network structure cannot compensate for weak communication. A pharmacist can be highly connected professionally yet still fail to achieve meaningful preventive communication if information is overly technical, poorly tailored, rushed, or disconnected from patient concerns.

Preventive-service integration produced another substantial positive contribution, β = .300. This result illustrates the importance of embedding prevention into routine practice. If preventive communication occurs only during occasional campaigns, reach will depend on a narrow set of encounters. When preventive-health identification becomes part of normal workflow, more opportunities can be recognized.

Referral coordination remained positive but smaller, β = .136. One interpretation is that referral serves as an important completion mechanism rather than the primary generator of communication reach. It becomes particularly valuable after a health need has already been identified.

5.3 Network Connectivity and Preventive Communication Reach

Graph 1: Community Pharmacist Network Connectivity and Preventive Health Communication Reach



The scatter distribution shows a clear positive overall relationship between community-pharmacist network connectivity and preventive-health communication reach. Pharmacy units represented at the lower end of network connectivity are distributed across a relatively broad range of communication outcomes, whereas highly connected units are more concentrated toward stronger preventive-health communication scores.

The fitted regression line slopes upward, consistent with the positive correlation of approximately (r=.49). Nevertheless, the dispersion around the line remains substantial. Network connectivity therefore does not function as a complete explanation of preventive communication.

This dispersion has practical significance. A highly connected pharmacy can still perform below expectations when preventive services are poorly integrated or communication quality is weak. Conversely, a relatively isolated pharmacist may achieve strong local communication through high competence and intensive preventive activity but may remain limited in referral and system-level reach.

Key Finding: Network connectivity is positively associated with preventive-health communication reach, but effective pharmacy-based prevention requires a combination of connections, communication competence, service integration, and coordinated pathways rather than connectivity alone.

6. Discussion

6.1 Community Pharmacists as Nodes in Preventive-Health Communication Systems

The principal contribution of the present study is to conceptualize the community pharmacist as a network node rather than solely an individual provider. Much of the pharmacy literature appropriately emphasizes pharmacist accessibility, but accessibility becomes more valuable when it is connected to a functional prevention system. WHO descriptions of community pharmacy emphasize its frontline and entry-point role, while preventive-service reviews demonstrate opportunities for education, screening, vaccination, behavioral intervention, and referral.

A network perspective changes the central research question. Instead of asking only whether a pharmacist provides preventive counseling, the relevant questions become: What happens after the counseling? Can an at-risk individual obtain the recommended screening? Can the pharmacist refer efficiently? Does the physician receive relevant information? Can vaccination eligibility be confirmed? Are public-health messages consistent across local providers? Does another community organization reinforce the same recommendation?

This distinction is critical because preventive-health communication should lead toward informed behavior rather than ending as information transfer. A pharmacist who recognizes elevated cardiovascular risk and explains it clearly has accomplished an important task, but the preventive pathway remains incomplete when there is no accessible mechanism for follow-up assessment.

The model's strong simulated coefficient for network connectivity reflects this system-level logic. Its purpose is not to argue that increasing the number of professional contacts mechanically increases health outcomes. Network quality matters as much as network size. A large set of inactive contacts may provide less value than a small number of trusted relationships with clear referral procedures.

6.2 Communication Quality and the Translation of Information Into Preventive Action

The second major implication concerns communication competence. Community pharmacists possess specialized knowledge of medicines and frequently encounter individuals managing chronic diseases, risk factors, preventive medications, and health concerns. Specialized knowledge alone, however, does not ensure effective public communication.

Preventive communication requires translation. Patients need to understand not only that a health action is recommended but why it matters, how urgent it is, what benefits and limitations are involved, what the next step requires, and how the recommendation relates to their own circumstances. Counseling research has demonstrated that pharmacist communication behavior can be targeted through interventions, although the evidence base has methodological limitations.

The positive simulated coefficient for communication competence therefore represents more than conversational ability. Communication competence should include listening, identifying

misunderstandings, checking comprehension, tailoring risk explanations, avoiding unnecessary jargon, respecting cultural and linguistic context, and helping patients convert recommendations into decisions. This issue becomes especially important for preventive care because benefits are often delayed while inconvenience is immediate. A healthy person may see little reason to pursue screening, vaccination, smoking cessation, or risk-factor control when no symptoms are present. Communication must therefore explain future-oriented benefit without exaggerating certainty or generating unnecessary fear.

Pharmacists may also encounter misinformation. During public-health emergencies, misinformation about treatments, vaccines, diagnostic tests, and disease transmission can spread rapidly. COVID-19 highlighted the importance of accessible professionals who could communicate credible health information while continuing routine care. Visacri and colleagues documented the expanded roles pharmacists performed during the pandemic, and Strand and colleagues described pharmacy contributions involving patient education, testing, chronic-disease support, and vaccination.

6.3 Designing Sustainable Community Pharmacy Prevention Networks

The third implication concerns implementation. Expanding preventive communication through pharmacy networks requires organizational design, not simply professional enthusiasm. Community pharmacists frequently operate under workload, time, staffing, commercial, and infrastructure constraints. Implementation research has shown that pharmacy innovations depend upon engagement, appropriate training, operational resources, whole-team involvement, external relationships, and real-world acceptability.

A sustainable network should therefore define which preventive activities are expected and which are optional, identify the training required, specify referral criteria, clarify documentation responsibilities, and determine how communication with external providers will occur. Without such clarity, preventive-health communication risks becoming inconsistent and dependent upon individual pharmacist initiative.

Digital interoperability may be especially important. A pharmacist who identifies a preventive-health need but cannot communicate efficiently with primary care may rely on the patient to carry the entire referral message. Compatible communication technologies were identified as facilitators in pharmacist–general practitioner collaboration research. Secure digital referral tools, where legally and operationally appropriate, could therefore convert preventive communication into trackable care pathways.

Network design should also consider public-health equity. Community pharmacies may serve groups whose interaction with conventional health services differs from the wider population. Brown and colleagues observed that people accessing pharmacy-based health-promotion interventions may differ from those accessing other settings, while Thomson and colleagues noted that the effect of pharmacy-based public-health interventions on health inequalities remains insufficiently resolved. Networks should therefore evaluate who is reached, who is missed, and whether service expansion reduces or inadvertently reproduces access inequalities.

7. Conclusion

Community pharmacists are well positioned to contribute to preventive-health communication because they occupy accessible locations within everyday community life and frequently interact with people who may benefit from vaccination, screening, lifestyle counseling, risk assessment, medication-related prevention, or referral. Evidence published through 2021 supports community-pharmacy involvement in multiple public-health and preventive-care functions, although effectiveness differs by intervention and implementation context.

The principal argument advanced in this paper is that preventive communication should not be conceptualized solely as an individual pharmacist activity. The potential value of community pharmacy increases when pharmacists are connected with other healthcare professionals, public-health programs, community organizations, and clearly defined referral pathways. Network connectivity allows communication to become part of a continuum from risk identification to explanation, referral, service uptake, and follow-up.

The simulation illustrates this proposed architecture. Network connectivity emerged as the strongest positive predictor of preventive-health communication reach, followed by communication competence and preventive-service integration. Referral coordination made an additional positive contribution, while the interaction between connectivity and communication competence was nonsignificant. These values are not empirical population estimates, but they provide a reproducible framework through which the network hypothesis can be tested using authentic pharmacy data.

The wider implication is that strengthening preventive pharmacy practice requires more than expanding pharmacists' list of permitted services. Sustainable preventive communication requires professional relationships, trustworthy information flows, patient-centered communication, integrated workflows, referral infrastructure, compatible technologies, appropriate training, public recognition of pharmacist roles, and evaluation of health-equity effects. A community pharmacist network designed around these principles could transform frequent pharmacy encounters from isolated points of advice into coordinated opportunities for population-level prevention.

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