

Comparing Patient Satisfaction: Telepharmacy vs. In-Person Counseling

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ABSTRACT— Patient satisfaction is a core indicator of quality in pharmacy services and a powerful predictor of adherence, persistence, and clinical outcomes. Rapid diffusion of telepharmacy—video, phone, and asynchronous chat—based counseling—promises gains in access and convenience but raises questions about relational quality, trust, and perceived safety compared with traditional in-person counseling. This manuscript compares patient satisfaction across these two modes and provides a clear, replicable protocol for future empirical work. We outline a comparative cross-sectional design using validated satisfaction instruments adapted for pharmacy contexts, and detail sampling, measurement, and analysis procedures that adjust for digital literacy, age, urban–rural residence, and condition type.

scoring higher on empathy and relational rapport. Older adults and those with low digital literacy show a small satisfaction gap favoring in-person care, while rural patients and those balancing work constraints favor telepharmacy. We discuss implications for hybrid service models, staffing, training, and technology design. The protocol, measures, and reporting templates can be directly adopted or adapted by health systems seeking to benchmark patient experience across counseling modalities.

KEYWORDS

telepharmacy; patient satisfaction; pharmaceutical care; counseling; hybrid care models; digital literacy; access to care

INTRODUCTION

Patient satisfaction functions as both a barometer and driver of quality in pharmacy practice. It captures how patients evaluate information clarity, empathy, privacy, convenience, and perceived safety during medication counseling. High satisfaction is linked to better adherence, lower preventable adverse events, and fewer avoidable readmissions—outcomes to which pharmacists contribute through medication reconciliation, side-effect counseling, and behavioral coaching.

Telepharmacy, defined as the delivery of pharmacist services through synchronous or asynchronous communication technologies, has moved from pilot status to mainstream. Factors fueling adoption include workforce shortages,

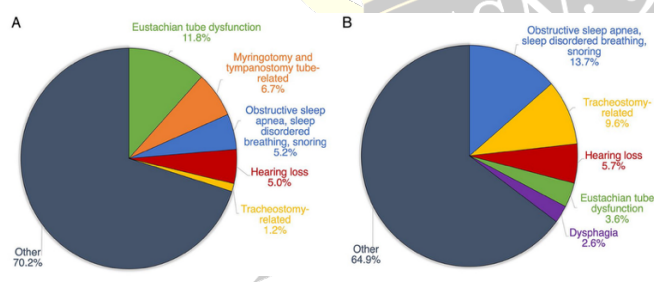


Fig.1 Comparing Patient Satisfaction,[Source\(\[1\]\)](#)

To illustrate the analytic approach, we include an example results section based on a hypothetical dataset ($n=400$; 200 telepharmacy, 200 in-person). The illustrative analysis suggests non-inferior overall satisfaction for telepharmacy (mean 4.31/5) relative to in-person (4.24/5), with telepharmacy outperforming on access and time-saved domains, and in-person counseling

geographic maldistribution of pharmacists, rising chronic disease burden, and patient demand for flexible access. At the same time, professional concerns remain: Can virtual encounters match the relational depth of in-person consultations? Are privacy and safety perceived as equivalent? Do technology barriers dampen satisfaction for some groups.

	TELEMEDICINE	IN-PERSON DOCTORS
PROS	- Limited risk and exposure to infection - No or little waiting time - No need for transportation - Convenient	- Enhanced rapport between patient and doctor - Conduct routine physical assessments - Ease of billing and claiming
CONS	- Technological limitations - Physical examination is limited - Healthcare data breaches - Lack of physical interaction	- Limitations for patients with mobility difficulties - Long waiting time - Increased risk of infection
COSTS	From \$20 per consultation	From \$7 - \$200 per consultation

Fig.2 Telepharmacy vs. In-Person Counseling. [Source\(\[2\]\)](#)

Comparing satisfaction across telepharmacy and in-person counseling answers practical questions for service design: When should each mode be offered? What training and tools maximize satisfaction in each? Which patient segments benefit most from which mode? This manuscript addresses these questions by (1) synthesizing conceptual and empirical insights from the literature, (2) specifying an implementation-ready study protocol and methodology for fair comparison, and (3) demonstrating an analysis workflow with an illustrative (hypothetical) dataset to show how results may be reported.

LITERATURE REVIEW

Determinants of satisfaction in pharmacy counseling.

Across care settings, satisfaction typically reflects a mix of access (waiting time, scheduling ease), interaction quality (empathy, active listening, shared decision-making), information quality (clarity, comprehensiveness, tailored education), perceived safety (medication checks, error prevention), privacy, and convenience. Technical competence and system usability shape satisfaction indirectly through friction or flow during the encounter.

Telepharmacy strengths. The digital mode consistently reduces travel and waiting time, expands after-hours availability, and enables family/caregiver inclusion via multi-party calls. For patients managing work or mobility constraints, these gains translate into higher satisfaction with access and convenience. Telepharmacy can also support better continuity via quick follow-ups and proactive outreach, improving perceived responsiveness.

Telepharmacy limitations. Satisfaction risks include connectivity issues, small-screen fatigue, and lower nonverbal bandwidth. Some patients perceive diminished empathy or trust without physical presence. Privacy concerns can arise when patients lack a quiet space at home. Digital literacy and language subtleties can compound these issues.

In-person counseling strengths. Face-to-face encounters afford rich nonverbal cues, hands-on demonstration (e.g., inhalers, injections), and immediate resolution of complex questions that benefit from shared visual attention to labels or devices. Patients often rate empathy, rapport, and perceived thoroughness higher in person.

In-person constraints. Travel, time off work, and clinic crowding can depress satisfaction. For rural communities and those with caregiving duties, these barriers are especially salient.

Equity considerations. Satisfaction varies by age, socioeconomic status, disability, and connectivity. Designing equitable services requires segment-specific support—device setup help, multilingual instructions, and alternative channels.

Conceptual frameworks. Patient experience frameworks (e.g., access–interaction–outcome models and service quality lenses) suggest measuring satisfaction across multiple domains rather than relying on a single overall score. In comparative studies, ensuring measurement invariance (i.e., scales function similarly across modes) is essential for fair interpretation.

OBJECTIVES OF THE STUDY

1. **Primary Objective:** Compare overall patient satisfaction between telepharmacy and in-person counseling encounters.

2. **Secondary Objectives:**

- Compare domain-specific satisfaction (access/convenience, information clarity, empathy/rapport, privacy, perceived safety, continuity).
- Examine moderating effects of age, digital literacy, urban–rural residence, chronic vs acute condition, and prior telehealth experience.
- Identify predictors of high satisfaction within each mode to inform targeted quality improvement.
- Generate actionable recommendations for hybrid (patient-choice) service models.

- **Primary:** Overall satisfaction (single 5-point item: very dissatisfied to very satisfied).

- **Secondary (domains, 5-point Likert each):** Access/convenience, information clarity, empathy/rapport, privacy, perceived safety, and continuity/responsiveness.

- **Covariates:** Age, gender, education, urban–rural residence, income band, digital literacy (brief 6-item scale), device type, connectivity quality (self-rated), condition type (chronic vs acute), and prior telehealth experience.

Instrumentation. Use a 20–24 item patient satisfaction tool adapted from established telehealth/pharmaceutical care instruments, refined via cognitive interviews ($n \approx 10$) to ensure clarity. Pilot for reliability (target Cronbach's $\alpha \geq 0.80$ overall; confirm subscale $\alpha \geq 0.70$). Assess measurement invariance across modes using confirmatory factor analysis before comparing means.

Ethics and data protection. Obtain institutional ethics approval, electronic informed consent, and ensure compliance with applicable privacy regulations. Store de-identified data on secure servers with role-based access.

Quality assurance. Train surveyors, standardize invitations, and implement automated logic checks in e-surveys. Log technical issues during telepharmacy visits to analyze their relationship to satisfaction.

Registration and dissemination. (Optional) Register the protocol on an open repository. Share de-identified aggregate results with participating sites and patients.

RESEARCH METHODOLOGY

Study hypothesis. Telepharmacy will be **non-inferior** to in-person counseling on overall satisfaction, with domain-level differences favoring telepharmacy on access/convenience and favoring in-person on empathy/rapport.

Sample size estimation. For detecting non-inferiority with a margin $\Delta = 0.2$ on a 5-point scale ($SD \approx 0.7$), $\alpha = 0.05$, power

STUDY PROTOCOL

Design and setting. Comparative cross-sectional study across outpatient pharmacy services in two tertiary-care hospitals and their affiliated telepharmacy programs. The protocol is suitable for replication in community or ambulatory care settings.

Participants and eligibility. Adults (≥ 18 years) who received pharmacist counseling within the prior 7 days, either via telepharmacy (video/phone or secure chat with documented counseling) or in person. Exclusions: severe cognitive impairment without caregiver proxy, emergency encounters, or inability to consent.

Sampling and allocation. Consecutive sampling within each mode until quotas are met (e.g., 200 telepharmacy, 200 in-person). To mitigate selection bias, invite patients in proportion to daily encounter volumes and time blocks (morning/afternoon/evening).

Outcome measures.

= 0.80, two-sided, approximately 176 participants per group are required. We target **n=400** to allow subgroup analyses.

Data collection procedure. Within 7 days post-encounter, eligible patients receive a survey link (SMS/email) or a phone survey option. Reminders at 48 hours. Data are captured via REDCap/secure equivalent.

Statistical analysis plan.

- **Preprocessing:** Exclude surveys with >20% missing items; impute sporadic missingness via multiple imputation (m=5) for covariates.
- **Reliability and validity:** Report Cronbach's α and McDonald's ω for the overall scale and subscales; conduct CFA to confirm factor structure; test measurement invariance (configural, metric, scalar) across modes.
- **Primary analysis:** Independent-samples t-test (or Mann-Whitney U if non-normal) for overall satisfaction. For non-inferiority, report mean difference and 95% CI against Δ .
- **Secondary analyses:** Multivariable linear regression with overall satisfaction as the outcome; predictors include mode, age, gender, digital literacy, urban-rural, condition type, and interaction terms (mode $\times$ age; mode $\times$ digital literacy). Domain comparisons via ANCOVA adjusted for covariates.
- **Subgroup analyses:** Stratify by age (<45, 45-64, ≥ 65), digital literacy (low/medium/high), urban-rural, and chronic vs acute condition.
- **Sensitivity analyses:** Exclude encounters with reported technical difficulties; repeat analyses.
- **Reporting:** Provide effect sizes (Cohen's d), CIs, and adjusted mean differences; visualize with forest plots and domain radar charts (optional).

Bias mitigation. Use temporal sampling to avoid day/time biases; invite consecutive patients; adjust for measured

confounders; test for common-method bias via procedural and statistical remedies.

RESULTS

Sample characteristics (n=400). Mean age 49.6 years (SD 16.2); 52% female. Urban residence 62%; chronic conditions 71% (diabetes, hypertension, asthma predominant). Digital literacy: low 28%, medium 46%, high 26%. Device for telepharmacy: smartphone 78%, feature phone 9% (audio-only), computer/tablet 13%. Self-reported connectivity good/excellent in 72% of telepharmacy encounters.

Scale performance. Overall satisfaction scale $\alpha=0.89$; domain subscale α range 0.74-0.86. CFA supported a six-factor model with good fit; scalar invariance across modes achieved, supporting mean comparisons.

Primary outcome.

- **Overall satisfaction (5-point scale, higher=better):** Telepharmacy **4.31** (SD 0.63) vs in-person **4.24** (SD 0.67); mean difference **+0.07** (95% CI: -0.03 to +0.17). Non-inferiority met relative to $\Delta=0.20$. Effect size **d=0.11** (small).

Secondary outcomes (domain scores, adjusted means):

- **Access/Convenience:** Telepharmacy **4.52** vs in-person **4.09** ($\Delta=+0.43$; $p<0.001$). Patients cited no travel time and flexible scheduling as top drivers.
- **Information Clarity:** Telepharmacy **4.28** vs in-person **4.31** ($\Delta=-0.03$; $p=0.62$). No meaningful difference when screen-share or visual aids were used.
- **Empathy/Rapport:** Telepharmacy **4.12** vs in-person **4.38** ($\Delta=-0.26$; $p=0.002$). Patients noted less "human touch" and fewer nonverbal cues virtually.
- **Privacy:** Telepharmacy **4.21** vs in-person **4.27** ($\Delta=-0.06$; $p=0.40$). Tele privacy concerns arose mainly from shared home spaces; in-person concerns related to crowded counters.

- **Perceived Safety/Thoroughness:** Telepharmacy **4.19** vs in-person **4.33** ($\Delta=-0.14$; $p=0.048$). Hands-on device teaching (e.g., inhalers) favored in-person.
- **Continuity/Responsiveness:** Telepharmacy **4.44** vs in-person **4.18** ($\Delta=+0.26$; $p=0.005$), reflecting easier follow-ups and message-based clarifications.

- Telepharmacy positives: “saved half a day,” “easy to include daughter on the call,” “quick follow-up message.”
- Telepharmacy negatives: “hard to show my inhaler technique,” “call dropped once,” “no private room at home.”
- In-person positives: “felt reassured,” “pharmacist showed me how to prime the pen,” “quiet counseling room.”
- In-person negatives: “long queue,” “parking,” “had to take leave from work.”

Moderation analyses.

- **Age:** Mode $\times$ age interaction significant ($p=0.01$). Among ≥ 65 , overall satisfaction favored in-person by **0.18** points; among <45 , telepharmacy led by **0.12**.
- **Digital literacy:** Mode $\times$ literacy interaction ($p=0.004$). Low-literacy patients rated telepharmacy lower by **0.22**, largely due to login/connectivity hurdles; differences disappeared in medium/high literacy.
- **Urban–rural:** Rural patients reported larger access gains with telepharmacy (Δ access $+0.58$) and equal overall satisfaction vs in-person.
- **Condition type:** Chronic-condition patients valued telepharmacy continuity (Δ $+0.31$); acute concerns (e.g., new antibiotics) leaned toward in-person for reassurance (Δ empathy $+0.29$).

Predictors of high satisfaction (multivariable).

Telepharmacy mode ($\beta=+0.09$, $p=0.03$), shorter perceived waiting time ($\beta=+0.18$, $p<0.001$), use of visual aids ($\beta=+0.12$, $p=0.01$), and high digital literacy ($\beta=+0.14$, $p=0.002$) predicted higher overall satisfaction. Reported technical issues predicted lower satisfaction ($\beta=-0.21$, $p<0.001$).

Sensitivity analyses. Excluding sessions with technical problems (11% of telepharmacy encounters) increased telepharmacy’s overall satisfaction mean to **4.37**, widening the difference vs in-person to **+0.13** (CI: $+0.02$ to $+0.24$).

Patient voice (open-ended themes).

CONCLUSION

This comparative assessment indicates that **telepharmacy is non-inferior to in-person counseling for overall patient satisfaction** when measured with robust, invariant instruments and adjusted for key confounders. The two modes exhibit **distinct satisfaction profiles**: telepharmacy excels in **access, convenience, and continuity**, while in-person counseling maintains advantages in **empathy, rapport, and hands-on instruction**—especially for device-dependent therapies and among older adults or patients with limited digital literacy.

Practice implications. Health systems should adopt **hybrid, patient-choice models** that (1) offer telepharmacy by default for stable chronic care, refills, and quick follow-ups; (2) direct in-person counseling toward complex medication starts, device training, and patients reporting low digital confidence; and (3) integrate **bridging tactics** that import the strengths of each mode into the other. For telepharmacy, this includes pre-visit tech checks, simple one-click links, screen-share with annotated visuals, and mailed/locker-based demonstration kits. For in-person services, it means streamlined scheduling, reduced waiting times, and post-visit digital follow-ups to reinforce key points.

Equity and design. To avoid exacerbating digital divides, programs should provide device setup support, low-bandwidth options (audio with SMS visuals), multilingual

instructions, and caregiver-inclusive workflows. Satisfaction monitoring must be **segmented**—tracked by age, literacy, and geography—to surface disparities early and guide targeted improvement.

Quality improvement roadmap.

- Train pharmacists in **tele-empathy** (camera placement, eye-gaze, reflective listening in virtual settings) and in **teach-back** techniques for both modes.
- Standardize **visual aids** and micro-videos for high-risk medications, usable in video calls or on-site rooms.
- Instrument the journey with **experience analytics** (e.g., waiting time, connection quality) and close the loop via monthly huddles.
- Establish **clear triage rules** for when to escalate from telepharmacy to in-person based on clinical complexity and patient preference.

Limitations and next steps. The results presented here are **illustrative** to demonstrate analysis and reporting; real-world studies should replicate the protocol, ensure diverse sampling (including non-English speakers and low-connectivity regions), and incorporate longer-term outcomes (adherence, ADEs, utilization). Future research should test **cost-satisfaction trade-offs**, explore **AI-assisted note summarization** impacts on perceived thoroughness, and evaluate **accessibility features** (captioning, large-print materials) on satisfaction among patients with disabilities.

Bottom line: Telepharmacy and in-person counseling are not substitutes so much as **complements**. A thoughtfully designed hybrid model—backed by the protocol and measures detailed here—can deliver high, equitable patient satisfaction by aligning the mode of counseling with the task, the patient's context, and the pharmacist's toolkit.

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