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Patient Satisfaction in Telepharmacy vs Conventional Pharmacy: A SERVQUAL Analysis

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Artikel Penelitian

Abstract: *Telepharmacy offers a promising solution to overcome the geographical limitations of traditional pharmacies. However, concerns regarding the quality of services delivered through telepharmacy highlight the need for a comprehensive evaluation of patient satisfaction. This study aimed to compare patient satisfaction between telepharmacy and conventional pharmacy services and to identify areas for improvement. A cross-sectional study was conducted in March and April 2024, involving a sample of 136 customers from the Atma Jaya Teaching Pharmacy in North Jakarta. Patient satisfaction was measured using a validated questionnaire, and key satisfaction dimensions were identified through Importance-Performance Analysis (IPA). The analysis revealed that both telepharmacy and conventional pharmacy services demonstrated strengths in the dimensions of Assurance and Responsiveness, which are critical to customer satisfaction (quadrant II : keep up the good work). Meanwhile, Reliability and Empathy were perceived as less important in both service models (quadrant III : low priority). The Tangible dimension, however, was identified as an area requiring improvement (quadrant I : concentrate here). These findings suggest that telepharmacy can provide patient satisfaction comparable to conventional pharmacies, particularly in the dimensions of Assurance and Responsiveness. However, the Tangible dimension remains a key area for improvement.*

Keywords: *telepharmacy, patient satisfaction, servqual, importance-performance analysis*

Abstrak: Telefarmasi menghadirkan solusi yang menjanjikan untuk mengatasi hambatan geografis apotek tradisional. Namun, kekhawatiran terhadap kualitas layanan yang diberikan melalui telefarmasi menunjukkan perlunya evaluasi menyeluruh terhadap tingkat kepuasan pasien. Studi ini bertujuan untuk membandingkan kepuasan pasien antara layanan telefarmasi dan apotek konvensional serta mengidentifikasi area yang perlu ditingkatkan. Sebuah studi potong lintang dilakukan pada bulan Maret dan April 2024, dengan melibatkan 136 sampel pelanggan dari Apotek Pendidikan Atma Jaya di Jakarta Utara. Kepuasan pasien diukur menggunakan kuesioner yang telah divalidasi, dan dimensi kepuasan utama diidentifikasi melalui *Importance-Performance Analysis* (IPA). Analisis ini mengungkapkan bahwa layanan telefarmasi dan apotek konvensional menunjukkan kekuatan dalam hal Assurance dan Responsiveness, yang sangat penting bagi kepuasan pelanggan (kuadran II : *keep up the good work*). Di saat yang sama, Reliability dan Empathy kurang penting bagi layanan farmasi konvensional dan telefarmasi (kuadran III : *low priority*). Sedangkan dimensi Tangible masih harus ditingkatkan (kuadran I : *concentrate here*). Temuan ini menunjukkan bahwa layanan telefarmasi dapat secara efektif mencapai tingkat kepuasan pasien yang sebanding dengan apotek tradisional dalam dimensi kepuasan yang meliputi Assurance, Responsiveness, Reliability, Empathy, dan Tangible.

Kata kunci: telefarmasi, kepuasan pasien, *servqual*, *importance-performance analysis*

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Introduction

While established for an extended period, conventional pharmaceutical services exhibit several limitations that can adversely affect patient satisfaction. The requirement for physical pharmacy visits is often inconvenient due to time constraints, geographical barriers, and logistical challenges (1–3). Restricted accessibility can negatively impact medication adherence, particularly for patients with chronic conditions requiring regular medication regimens (4). Furthermore, prolonged waiting times and limited interaction between pharmacists and patients exacerbate the shortcomings of conventional pharmacy services (5,6). In this context, a patient's inability to access pharmaceutical services promptly can result in suboptimal medication adherence and poor health outcomes (7,8).

The emergence of telepharmacy presents a promising solution to many of these challenges. Telepharmacy leverages telecommunication technology to facilitate remote pharmaceutical services, enabling patients to consult with pharmacists and order medications online (9). By eliminating the need for in-person visits, telepharmacy enhances accessibility and convenience, ultimately improving treatment compliance. (10). Despite these advantages, telepharmacy faces several challenges, including ensuring secure information transmission, patient satisfaction, data privacy, establishing trust in remote consultations, and maintaining the quality of interactions between patients and pharmacists (11,12). The effectiveness of telepharmacy in maintaining patient satisfaction remains a subject of ongoing investigation. Some studies report that patients appreciate the convenience of telepharmacy but express concerns regarding the quality of remote consultations compared to face-to-face interactions (13–15).

This research aims to conduct a comparative analysis of patient satisfaction between telepharmacy and conventional pharmacy services. By examining key aspects of these services, the study aims to identify areas for improvement that can enhance overall patient satisfaction in both modalities.

Method

This study employed a cross-sectional design to assess patient satisfaction with drug purchases via telepharmacy and conventional systems. Before data collection, the research protocol received ethical approval from the Institutional Review Board of the School of Medicine and Health Sciences, Atma Jaya Catholic University (IRB approval number: 04/03/KEP-FKIKUAJ/2024). A validated customer satisfaction questionnaire was electronically administered to Apotek Pendidikan Atma Jaya customers between March and April 2024, utilizing a convenience sampling method. The questionnaire included patient identification information to ensure data integrity and prevent duplicate submissions. However, all identifying details were anonymized before data analysis to protect respondent privacy. Demographic data was also collected to contextualize the findings.

Pearson's correlation and Cronbach's Alpha coefficients were calculated to assess the questionnaire's validity and reliability. Descriptive statistics were employed to analyze respondent demographics. Satisfaction levels were determined by comparing importance scores with performance ratings. Satisfaction scores between telepharmacy and conventional groups were compared using the Mann-Whitney U test across five SERVQUAL dimensions. An Importance-Performance Analysis (IPA) plot was utilized to visualize the positioning of each satisfaction dimension (16,17). All data analyses were conducted using R version 4.4.0 (18).

Results and Discussion

Table 1 presents the demographic characteristics of respondents across two groups: those utilizing telepharmacy services and those using conventional pharmacy services. In both groups, most respondents were male, with a slightly higher percentage of males in the conventional pharmacy group (76.12%) compared to the telepharmacy group (72.46%).

The age distribution in both groups was skewed towards younger individuals, with the largest proportion of respondents falling within the 17-25 age range. This age group comprised 75.36% of telepharmacy users and 79.10% of conventional pharmacy users. Moreover, the

distribution of users between telepharmacy and conventional services is relatively balanced across all age groups.

The age distribution of respondents in both telepharmacy and conventional service groups was dominated by individuals aged 17–25 years, accounting for 75.36% and 79.10%, respectively. Participants aged 26–45 years comprised 13.04% in the telepharmacy group and 13.43% in the conventional group. Those aged 46–65 years made up 10.14% and 7.46% of the telepharmacy and conventional groups, respectively. Only one respondent (1.45%) in the telepharmacy group was over 65 years old, while no participants in this age category were found in the conventional group. This reflects the typical clientele of the teaching pharmacy, which primarily serves university students, lecturers, and staff who frequently visit the pharmacy after classes or teaching sessions due to its close proximity to campus. Although some senior faculty members over 65 years old (such as professors emeritus) may be familiar with the pharmacy's information systems, their representation in this study was minimal. Therefore, the findings may not be generalizable to older populations who may have different patterns of access or expectations regarding pharmacy services. Overall, both service models showed similar age group distributions, with a strong predominance of younger users

Income distribution also differed significantly between the groups. Telepharmacy users generally reported higher income levels, with 8.70% earning more than IDR 10,000,000 per month, in contrast to only 4.48% of conventional users. Conversely, in the income group earning 5 to 10 million rupiah, the telepharmacy group represented 8.70% of respondents, whereas the conventional group constituted 14.92%. Among the remaining income groups, respondent distribution was fairly even. These differences may be influenced by the timing and convenience of service access, as telepharmacy users may prefer remote services due to their professional schedules. However, among the remaining income categories, the distribution was relatively balanced. While income may influence service preference, further analysis is needed to determine its impact on satisfaction levels.

Regarding occupation, college students constituted the largest group in both categories. However, their representation was more pronounced in the conventional pharmacy group (73.13%) than in the telepharmacy group (68.12%). Telepharmacy was also more frequently used by healthcare personnel (10.14%) than conventional services, where this category was less represented (1.49%). The distribution of respondents among private employees or entrepreneurs was relatively balanced between the two groups. Meanwhile, a small proportion of respondents (5.80%) who identified their occupation as "other" were exclusively found in the telepharmacy group. Finally, the frequency of pharmacy visits was higher among telepharmacy users, with 85.51% reporting more than one visit compared to 79.10% of conventional users.

Tabel 1. Demographic characteristics of respondents

Characteristics	Telepharmacy (n=69)	Conventional (n=67)
Sex		
– Female	19 (27.53%)	16 (23.88%)
– Male	50 (72.46%)	51 (76.12%)
Age (year)		
– 17-25	52 (75.36%)	53 (79.10%)
– 26-45	9 (13.04%)	9 (13.43%)
– 46-65	7 (10.14%)	5 (7.46%)
– >65	1 (1.45%)	0 (0.00%)
Education level		
– Junior high school	1 (1.45%)	0 (0.00%)
– Senior high school	39 (56.52%)	45 (67.16%)
– Higher education	29 (42.03%)	22 (32.84)
Income per month		
– below IDR 3,000,000	42 (60.87%)	41 (61.19%)
– IDR 3,000,000-5,000,000	15 (21.73%)	13 (19.40%)
– IDR 5,000,000-10,000,000	6 (8.70%)	10 (14.92%)
– Above IDR 10,000,000	6 (8.70%)	3 (4.48%)
Occupation		
– College student	47 (68.12%)	49 (73.13%)

– Lecturer	1 (1.45%)	5 (7.46%)
– Health care personnel	7 (10.14%)	1 (1.49%)
– Private employees or entrepreneurs	10 (14.49%)	12 (17.91%)
– Other	4 (5.80%)	0 (0.00%)
Number of visits to the pharmacy		
– Once	10 (14.49%)	14 (20.90%)
– More than once	59 (85.51%)	53 (79.10%)

Customer satisfaction was evaluated across five dimensions: reliability, responsiveness, assurance, empathy, and tangibility. Each dimension was assessed using specific indicators, as outlined in Table 2. The Pearson correlation coefficient for each indicator score relative to the overall score was above the r-table (0.168), indicating satisfactory validity. Additionally, the Cronbach's alpha coefficient for the instrument exceeded 0.90, confirming its reliability.

Tabel 2. Service-quality dimensions of services in pharmacies

Dimension	Indicators
Reliability	Speed of medication service The medication provided by the pharmacy staff is accurate The label written on the medication is correct The staff provides information related to the benefits of the medication The staff provides information related to how to use the medication The staff provides information related to the dosage instructions The staff provides information about the side effects of the medication The staff provides information related to how to store the medication The staff provides information about foods/drinks/activities that should be avoided while taking the medication The staff asks about other medications the patient has previously consumed
Responsiveness	The staff is readily available to serve customers The staff has a friendly attitude toward customers The staff is able to respond to customers' questions regarding the medications they are using Customers and staff have good communication The staff offers alternative medications if the required medicine is out of stock
Assurance	The quality of the medication received is good The staff has adequate knowledge about medications Medication packaging includes the expiration date The staff delivers accurate and clear information to the patient The staff confirms that the patient has understood the medication information provided The staff verifies whether the medication received by the patient is appropriate Patients feel safe when purchasing medication
Empathy	The staff treats all customers fairly regardless of their social status The staff is able to provide information using language that is easy to understand Medication packaging includes the expiration date The staff is polite and friendly The staff patiently listens to customers' questions and complaints, and is able to provide appropriate solutions The staff is willing to repeat information if the customer does not understand

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Tangible	The pharmacy appears clean Patients feel comfortable while waiting in the waiting area Medications are arranged neatly The pharmacy staff appear well-groomed and clean Medications are adequately stocked The room/building design looks neat

Table 3 presents the average levels of importance, performance, and satisfaction across different dimensions of pharmacy customer satisfaction for two groups: telepharmacy and conventional pharmacy services. The dimensions assessed include reliability, responsiveness, assurance, empathy, and tangibility. The table provides scores for each dimension in both groups and an interpretation of customer satisfaction. Telepharmacy and conventional services perform well across all measured dimensions, with customers reporting high satisfaction levels. Overall, no statistically significant differences in satisfaction levels were detected between the telepharmacy and conventional pharmacy groups (p = 0.552). Although the responsiveness satisfaction level was significantly higher for telepharmacy (p = 0.019), both groups were still rated "very satisfied," suggesting the practical impact of this difference is minimal. However, telepharmacy outperforms conventional services slightly in several key dimensions, contributing to higher satisfaction among telepharmacy users. These findings are illustrated in the IPA plot.

Table 3. Average levels of importance, performance, and satisfaction across various dimensions of pharmacy customer satisfaction

Dimension	Telepharmacy				Conventional				p-value
	Importance	Performance	Level of satisfaction	Interpretation	Importance	Performance	Level of satisfaction	Interpretation	
Reliability	4.25	3.99	0.94	very satisfied	4.36	4.16	0.95	very satisfied	0.095
Responsiveness	4.33	4.32	1.00	very satisfied	4.51	4.41	0.98	very satisfied	0.019*
Assurance	4.31	4.27	0.99	very satisfied	4.45	4.39	0.99	very satisfied	0.207
Empathy	4.22	4.12	0.98	very satisfied	4.39	4.25	0.97	very satisfied	0.860
Tangible	4.34	4.11	0.97	very satisfied	4.48	4.25	0.95	very satisfied	0.930
General level of satisfaction			0.98	very satisfied			0.98	very satisfied	0.552

*The Mann–Whitney test revealed a statistically significant difference in the median satisfaction levels between the groups (p<0.05).

The IPA conducted in this study reveals a consistent pattern across both conventional and telepharmacy services. Five key service attributes (Responsiveness, Assurance, Reliability, Empathy, and Tangible) were evaluated based on customer perceptions of importance and performance.

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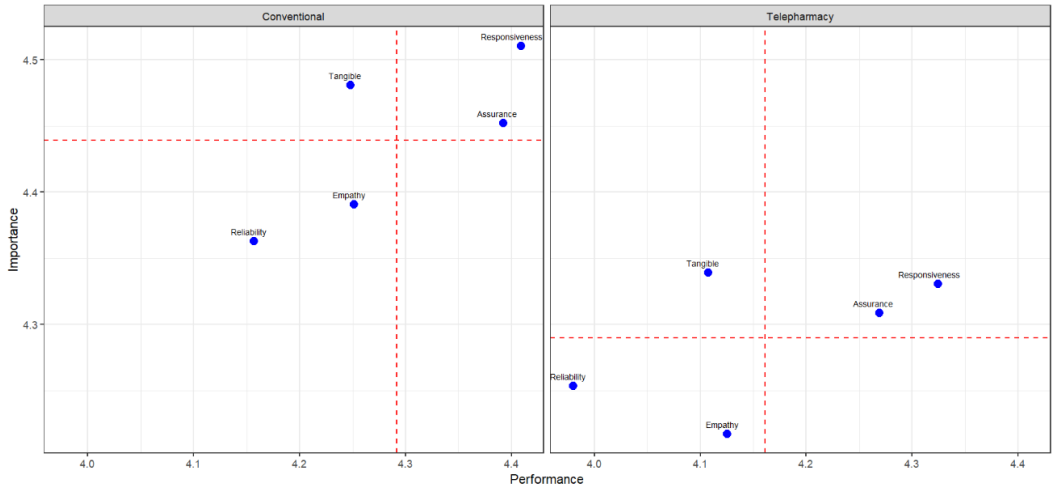

Figure 1. Importance-performance analysis plot from the respondents' perspective

In both service models, Responsiveness and Assurance were positioned within the "Keep Up the Good Work" quadrant, indicating that these attributes are perceived as highly important and well-performed. This reflects customers' appreciation for prompt service and the professionalism and trust conveyed by pharmacy staff, regardless of the service delivery mode.

Reliability and Empathy were located in the "Low Priority" quadrant in both conventional and telepharmacy settings. Although these attributes are essential in theory, their relatively lower importance and performance scores suggest that customers may not prioritize them as highly in their overall service evaluation. This trend could be attributed to the standardized nature of pharmaceutical transactions, where personalized attention and consistent follow-through are less visible or expected.

Tangible was placed in the "Concentrate Here" quadrant in both models, indicating a mismatch between its perceived importance and actual performance. Customers place higher importance on the physical aspects of service delivery, such as facilities, equipment, and visual presentation, but feel that these aspects are underperforming. The placement of the Tangible dimension in the "Concentrate Here" quadrant may be influenced by occasional delays in medication availability, where patients were required to wait up to 24 hours for restocking. Although pharmacies facilitated the ordering process efficiently, delays—especially when products were out of stock at the distributor or supplier level—could still affect customer perceptions of service tangibility, particularly in relation to inventory responsiveness.

It is important to note that the quadrant boundaries differ between the conventional and telepharmacy IPA charts. The conventional model uses higher thresholds (importance ~4.45, performance ~4.3), while the telepharmacy model applies slightly lower ones (importance ~4.35, performance ~4.2). As a result, an attribute with identical scores may fall into different quadrants depending on the service context. This highlights the need for contextual interpretation when comparing IPA results across different service models.

These findings align with previous research. Pathak *et al.* found that while telepharmacy services in rural areas maintained comparable medication use quality, they did not outperform traditional pharmacies, reinforcing the value of in-person service delivery (19). A systematic review by Pathak *et al.* reported that current literature shows no significant overall difference in medication safety and adherence between community pharmacy-based telepharmacy services and traditional pharmacies. However, findings on patient satisfaction are inconsistent, and evidence regarding inappropriate medication use remains limited. Due to the potential for high risk of bias in existing studies, definitive conclusions about the effectiveness of telepharmacy services cannot be drawn (20).

Conclusion

This study, conducted with a balanced proportion of participants in both telepharmacy and conventional pharmacy groups, revealed that overall patient satisfaction was consistently rated as "very satisfied" across both service models. The IPA demonstrated a similar profile between the two groups. Specifically, the dimensions of Responsiveness and Assurance were positioned in the "Keep Up the Good Work" quadrant, indicating that these attributes are both highly valued and well-performed. In contrast, Reliability and Empathy were placed in the "Low Priority" quadrant, suggesting that while present, these attributes are perceived as less critical to overall satisfaction. The Tangible dimension emerged as a weakness, likely due to operational factors such as delayed medication availability. These findings suggest that telepharmacy services can achieve comparable levels of patient satisfaction to conventional pharmacy services, with similar strengths and areas for improvement across key service dimensions.

Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding this study. Although both authors are affiliated with the university overseeing the educational pharmacy, there was no influence from the pharmacy's operations or stakeholders in conducting the study or interpreting the results.

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