Journal of Multidisciplinary Healthcare

Dovepress
Taylor & Francis Group

Open Access Full Text Article

ORIGINAL RESEARCH

Understanding Gaps in Pharmacist–Patient Role Perceptions: Implications for Collaborative Care

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Background: Pharmacists increasingly play clinical roles, yet patients often continue to view them primarily as dispensers. Misalignment in role expectations may undermine communication and the effective use of pharmacy services.

Aim: This study aimed to examine the extent to which pharmacists and patients in Jordan share similar perceptions of their respective roles in the pharmacist–patient relationship.

Methods: A cross-sectional survey was conducted from October 2024 to May 2025 with 403 pharmacists and 806 patients recruited from community pharmacies across Jordan. Participants completed parallel role perception questionnaires assessing multiple domains of pharmacist and patient roles, including information sharing and responsible behavior. Mann–Whitney *U*-tests were used to compare mean ranks between groups.

Results: Pharmacists generally assigned higher mean ranks to both pharmacist and patient roles than patients did. For example, pharmacists reported greater agreement than patients on discussing medication side effects (mean rank 669.50 vs. 572.75, $p < 0.001$), helping patients manage medications (672.84 vs. 571.08, $p < 0.001$), and greeting patients at the prescription counter and collecting prescription information (640.53 vs. 587.23, $p = 0.007$). Pharmacists also rated patients' willingness to collaborate in medication management more highly than patients rated themselves (704.63 vs. 555.19, $p < 0.001$), indicating a consistent perception gap across the assessed roles.

Conclusion: The findings highlight clear perceptual gaps between pharmacists and patients in Jordan regarding their respective roles, particularly in response behavior and information sharing. These gaps may influence pharmacist–patient interaction and collaboration, highlighting areas for further research and targeted interventions.

Keywords: patient, pharmacist, relationship, perceptions, roles, gaps, healthcare

Introduction

The pharmacist–patient relationship has significantly evolved, shifting from a traditional focus on medication dispensing to a more collaborative, patient-centered model that emphasizes individualized care and clinical engagement.[1,2] Consequently, pharmacists have become essential healthcare providers, taking on key roles in medication therapy management, chronic disease care, and health promotion.[3]

However, despite these advancements, notable discrepancies remain in how pharmacists and patients perceive their respective roles within this relationship.[4] These discrepancies can be understood through the role theory, which suggests that behaviors and expectations in professional relationships are shaped by perceived and negotiated role definitions.[5] Research consistently shows that pharmacists view themselves as occupying expanded professional roles, including those

https://doi.org/10.2147/JMDH.S605078
Received: 25 February 2026
Accepted: 14 April 2026
Published: 5 May 2026

of clinical advisors, educators, safety monitors, and care coordinators.[6] In contrast, while patients acknowledge pharmacists' accessibility and technical knowledge, they tend to hold more limited expectations. Many do not fully recognize pharmacists' broader responsibilities, such as managing medication therapy or preventing medication errors.[4,7] Patients often defer primarily to physicians and view pharmacy encounters as transactional, seeing pharmacists mainly as dispensers or providers of technical information.[2,8] Additionally, patients often have a limited understanding of their own roles in the relationship, focusing mainly on following instructions and occasionally seeking advice.[9] While pharmacists in the UAE, for instance, demonstrate positive attitudes toward pharmaceutical care and show confidence in their roles as advocates and educators within the healthcare system,[10] contextual barriers continue to hinder the full realization of these expanded roles. For example, patient awareness of pharmacists' responsibilities beyond medication dispensing remains limited; many are unaware that pharmacists can provide counseling on adverse drug reactions, medication management, or chronic disease care.[11,12] In the UAE, a recent cross-sectional study of 305 pharmacists found that while 77.1% reported engaging in patient counseling and 59.7% addressed adverse drug reactions, pharmacists' overall influence on practice remains limited.[13] This is primarily due to time constraints and low patient awareness of the pharmacist's clinical role. Only 9.2% of pharmacists reported active involvement in reducing prescribing errors and identifying drug-related problems, highlighting a gap between potential and actual clinical engagement.[13] Qualitative data from the UAE also indicates that most patients continue to rely on physicians for advice and do not fully recognize pharmacists as medication experts. This social underestimation is reinforced by limited pharmacist involvement in direct patient counseling, with many patients perceiving pharmacists primarily as dispensers rather than clinical advisors.[12] This misalignment is particularly pronounced across different international and regional contexts, including the UAE, where patients' understanding of pharmacists' full professional roles remains limited.[13] Such perceptual gaps hinder effective communication and ultimately undermine the quality of patient care.

Global research further highlights that alignment in role perceptions between pharmacists and patients is essential for fostering effective collaboration.[14] When both parties share a mutual understanding of their roles, trust is strengthened, communication improves, and patients become more empowered in managing their health.[15] For instance, studies show that patients who perceive pharmacists as knowledgeable and trustworthy are significantly more receptive to expanded pharmacy services, leading to better medication adherence and improved health outcomes.[8] Moreover, the relational dynamics within the pharmacist–patient interaction influence critical factors such as patients' willingness to engage in medication reviews, health education, and chronic disease management programs.[16] Conversely, patients who do not view pharmacists as credible healthcare professionals are often reluctant to engage openly or follow their advice.[2] This mismatch in role expectations can erode trust, reduce patient satisfaction, and contribute to poor medication adherence, ultimately increasing the risk of medication errors or hospitalizations.[2] Therefore, aligning role expectations, fostering trust, and ensuring clearly defined roles and robust communication are crucial for enhancing patient satisfaction, encouraging proper medication use, and improving health outcomes across various healthcare settings.[15]

Despite the rising global literature on pharmacist-patient role perspectives, research from Jordan and the Arab area remains scarce. Although workforce has grown significantly in recent decades, community pharmacy practice remains primarily a product-dispensing paradigm,[17] with limited patient-centered or collaborative care services in Jordan. In contrast to healthcare systems with established clinical pharmacy functions in North America and Western Europe, pharmacy practice in Jordan is shaped by unique cultural, economic, and regulatory factors that impact how pharmacists and patients perceive their roles. Professional and systemic limitations often restrict pharmacists' engagement in therapeutic activities. Pharmacist and patient role perceptions in Jordan have not yet been explicitly compared using parallel validated instruments. Closing this gap is crucial for designing interventions that enhance pharmacist-patient collaboration based on local realities rather than extrapolating from other healthcare systems. This study therefore aims to investigate whether pharmacists and patients hold similar perceptions regarding their respective roles in this relationship. By analyzing pharmacists' views of their own responsibilities and expectations of patients and comparing them with patients' self-perceptions and their views of pharmacists' roles, this research seeks to uncover key areas of agreement or discrepancy that may influence the quality, communication, and effectiveness of this clinical partnership.

Materials and Methods

Study Design and Participants

This cross-sectional study aimed to explore and compare the perceptions of pharmacists and patients regarding the roles of both parties within the pharmacist–patient relationship. The study was conducted in Jordan between October 2024 and May 2025 and included licensed community pharmacists working in community or outpatient hospital pharmacies, as well as adult patients visiting community pharmacies during the study period. A nonprobability convenience sampling approach was used. Trained data collectors visited community pharmacies in both urban and nonurban regions, including Amman and surrounding areas, where they distributed the questionnaires in either paper or digital format. To be eligible, pharmacists had to be licensed and currently in a community pharmacy or outpatient hospital pharmacy, which operates similarly to community pharmacies in terms of patient interaction and role responsibilities. Patients were eligible if they were 18 years or older and able to comprehend Arabic. All participants were informed about the study's purpose, and their consent was implied through voluntary participation. On average, completion of the survey took between 10 and 12 minutes.

Study Instrument

The pharmacist and patient role-perception questionnaires were adapted from a previously published English-language instrument developed by Worley et al[14] A seven-point agreement scale was utilized in the first published edition. A 5-point Likert scale, spanning from strongly disagree to strongly agree, was used as the response format in this study. This choice was made to make it easier for participants with different educational backgrounds to understand and complete a self-administered Arabic questionnaire. The original instrument's conceptual domains were not intended to change; rather, the modification was meant to streamline the response process.[18–20]

The original English items were translated into Arabic, and the Arabic version was back translated into English by two expert translators. The research team then compared the original, translated, and back-translated versions, and disagreements were settled through discussion to ensure semantic, linguistic, and conceptual equivalency while preserving natural, culturally appropriate, and understandable wording. A panel of pharmacy practice experts evaluated the pre-final Arabic version to evaluate content validity, including item clarity, relevance, and cultural suitability. In response to expert input, minor wording changes were made. In order to assess clarity, comprehensibility, and completion time, the revised version was then pilot-tested with ten pharmacists and fifteen patients; pilot responses were not included in the final analysis.

Confirmatory factor analysis (CFA) was performed in R using the Lavaan package on the original questionnaire structure to further investigate structural validity. The weighted least squares mean and variance adjusted (WLSMV) estimator was used to estimate the models because the questionnaire items were measured on 5-point Likert scales, which made them ordered categorical indicators. For both questionnaires, the CFA results demonstrated strong global model fit and high standardized factor loadings. In the pharmacist-role model, standardized loadings ranged from 0.664 to 0.923, with fit indices of CFI = 0.998, TLI = 0.998, RMSEA = 0.068, and SRMR = 0.033. In the patient-role model, standardized loadings ranged from 0.782 to 0.902, with fit indices of CFI = 0.998, TLI = 0.998, RMSEA = 0.067, and SRMR = 0.033. These results show that the modified questionnaire had a good overall model fit and strong item-factor relationships.

Internal consistency and reliability of the adapted Arabic questionnaire was assessed using ordinal alpha based on polychoric correlations. The pharmacist-role scale showed excellent internal consistency in both pharmacists and patients (ordinal $\alpha = 0.959$ and 0.962, respectively), and the patient-role scale also demonstrated excellent internal consistency (ordinal $\alpha = 0.967$ and 0.966, respectively). For the pharmacist-role subdomains, ordinal alpha values were 0.819 and 0.814 for information sharing, 0.954 and 0.943 for responsible behavior, 0.894 and 0.922 for patient-centeredness, and 0.808 and 0.863 for interpersonal communication among pharmacists and patients, respectively. For the patient-role subdomains, ordinal alpha values were 0.944 and 0.945 for information sharing and 0.940 and 0.931 for engagement-related behaviors among pharmacists and patients, respectively. The full pharmacist and patient questionnaires are provided in the Supplementary Material.

Pharmacist Questionnaire

This tool gathered demographic and job-related information, including age, gender, nationality, academic qualifications, type of pharmacy, such as independent, chain, or hospital-based, pharmacy location, primary job role, experience level, number of patients served and prescriptions dispensed per day, and the availability of counseling space and internet access. Additional items addressed participation in professional workshops, such as communication skills, pharmacy practice, and health services, in addition to sources of drug information, such as Internet resources, Lexicomp, and Martindale. A core section of the survey assessed pharmacists' perceptions of their own roles (11 items) and patients' roles (8 items), using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Patient Questionnaire

This tool collected demographic and health-related information, including age, gender, nationality, marital status, educational level, employment status, current field of work, monthly income, health insurance status, and medical background, such as family history of chronic diseases.

Patients also reported their primary source of pharmaceutical care, such as community, chain, or outpatient hospital pharmacy, the frequency and purpose of pharmacy visits, such as obtaining over the counter or prescription medications, or seeking first aid advice; and existing health conditions, such as headache, depression, digestive issues, or cancer.

Additional items assessed the participant's relationship with the community pharmacist, the length of that relationship, satisfaction with community pharmacy services, and whether a family member worked in the pharmaceutical sector. Role perceptions were measured using the same 5-point Likert scale as the pharmacist questionnaire, with parallel items assessing the patient's view of their own role (8 items) and their perception of the pharmacist's role (11 items) in the care relationship.

Sample Size Calculation

Sample size was estimated using Cochran's formula[21] for cross-sectional studies, assuming a 95% confidence level, 5% margin of error, and a 50% response distribution. The minimum required sample size was 384 participants per group. The final sample included 403 pharmacists and 806 patients, which exceeds the minimum required sample helps strengthen the results validity.

Ethical Approval

The study received ethical approval from the Institutional Review Board at King Abdullah University Hospital in Jordan [reference number: 7/174/2024] in September 2024. All procedures were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki.

Statistical Analysis

All analyses were conducted using SPSS version 28 (IBM Corp., Armonk, NY, USA). Continuous variables were tested for normality using Q–Q plots and the Kolmogorov–Smirnov test, which revealed a non-normal distribution. As a result, continuous demographic variables were summarized using medians and interquartile ranges (IQR) and questionnaire responses were presented as medians and interquartile ranges (IQR) and mean ranks while categorical variables were reported as frequencies and percentages. Mann–Whitney *U*-tests were used to compare mean ranks between pharmacist and patient perceptions of their respective roles and effect size was assessed by computing rank-biserial correlation. Statistical significance was set at $p < 0.05$.

Results

Table 1 presents the sociodemographic profiles of the pharmacists in this study, which included 403 participants with a median age of 27 years (25–33). The majority were female (71.2%), Jordanian (91.8%), and held a bachelor's degree in pharmacy (67.7%). Approximately 69.5% worked in independent community pharmacies, and 31.3% had junior-level experience. Most pharmacists had a designated area for patient counseling in the pharmacy (70.2%) and internet access (95.3%). Moreover, about 38% of the pharmacists served 21 to 40 patients per day. The most attended workshop type was communication skills' (63.8%), followed by pharmacy practice and pharmaceutical care' (56.6%), patient

Table 1 Socio-Demographic Characteristics of Participating Pharmacists

		Count (%) or Median (25–75 Percentiles)
Age		27 (25–33)
Gender	Female	287 (71.2%)
	Male	116 (28.8%)
Nationality	Jordanian	370 (91.8%)
	Others	33 (8.2%)
Educational background	Diploma	36 (8.9%)
	Bachelor's degree in pharmacy	273 (67.7%)
	Doctor of Pharmacy (PharmD)	66 (16.4%)
	Master or PhD	28 (6.9%)
Pharmacy type	Chain Community Pharmacy	93 (23.1%)
	Outpatient Hospital Pharmacy	30 (7.4%)
	Independent Community Pharmacy	280 (69.5%)
Location of pharmacy	Amman	177 (43.9%)
	Others	226 (56.1%)
Primary position in the community pharmacy	Employee Pharmacist	200 (49.6%)
	Owner Pharmacist	36 (8.9%)
	Owner Pharmacist and Pharmacist-in-charge	37 (9.2%)
	Pharmacist Assistant	40 (9.9%)
	Pharmacist-in-charge	90 (22.3%)
Experience Level	Entry-Level	92 (23.2%)
	Junior	124 (31.3%)
	Mid-Level	65 (16.4%)
	Senior	53 (13.4%)
	Advanced	33 (8.3%)
	Expert	29 (7.3%)
Patients served per day	20 patients or less	103 (25.6%)
	21-40 patients	153 (38.0%)
	More than 40 patients	147 (36.5%)
Prescriptions dispensed per day	10 prescriptions or less	167 (41.4%)
	11-20 prescriptions	128 (31.8%)
	More than 20 prescriptions	108 (26.8%)
Counseling space available	No	120 (29.8%)
	Yes	283 (70.2%)

(*Continued*)

Table 1 (Continued).

		Count (%) or Median (25–75 Percentiles)
Workload rating	Low	37 (9.2%)
	Average	211 (52.4%)
	High	155 (38.5%)
Internet access	No	19 (4.7%)
	Yes	384 (95.3%)

interviewing skills (38.7%) and health services provision (32.8%). The most frequently used source of information was the Internet (78.7%), followed by Lexicomp (46.9%), research articles (42.7%), Drug Index (40.9%), Ministry of Health Website (29.5%), British National Formulary (16.6%), and Martindale (3.5%).

Table 2 displays the demographic characteristics of the 806 patients involved in this study. More than half of the patients were female (64.8%), worked in non-medical fields (66.9%), and reported a monthly income below 500 JOD (71.1%). Regarding marital status, 23.7% were married. Most patients indicated that they had a good relationship with pharmacists at their community pharmacies (74.1%), and more than half reported having health insurance (59.2%).

Table 2 Sociodemographic Characteristics of Participating Patients

		Count (%) or Median (25–75 Percentiles)
Age		23 (21–29)
Gender	Female	522 (64.8%)
	Male	284 (35.2%)
Nationality	Jordanian	622 (77.2%)
	Other	184 (22.8%)
Marital status	Married	191 (23.7%)
	Other	615 (76.3%)
Educational level	Diploma degree or less	168 (20.8%)
	Bachelor's degree	587 (72.8%)
	Graduate studies (Master's/PhD)	51 (6.3%)
Current job position	Business owner	51 (6.3%)
	Student	408 (50.6%)
	Unemployed	139 (17.2%)
	Retired	33 (4.1%)
	Employee	175 (21.7%)
Current field of work	Medical field	267 (33.1%)
	Non-medical field	539 (66.9%)

(*Continued*)

Table 2 (Continued).

		Count (%) or Median (25–75 Percentiles)
Monthly income level (Jordanian Dinars [JOD])	Less than 500 JOD	573 (71.1%)
	500-1000 JOD	144 (17.9%)
	More than 1000 JOD	89 (11.0%)
Health insurance	No	329 (40.8%)
	Yes	477 (59.2%)
Community pharmacy visits per month	Less than 5 times	347 (43.1%)
	5-10 times	201 (24.9%)
	More than 10 times	258 (32.0%)
Good relationship with pharmacist	No	209 (25.9%)
	Yes	597 (74.1%)
Length of relationship with community pharmacist	Less than one year	409 (50.7%)
	1-5 years	254 (31.5%)
	5-10 years	84 (10.4%)
	More than 10 years	59 (7.3%)
Satisfaction with community pharmacy services	Completely dissatisfied	12 (1.5%)
	Dissatisfied	27 (3.3%)
	Neutral	247 (30.6%)
	Satisfied	332 (41.2%)
	Very satisfied	188 (23.3%)
Family member(s) working in the pharmaceutical sector	No	483 (59.9%)
	Yes	323 (40.1%)
Family history of chronic diseases	No	462 (57.3%)
	Yes	344 (42.7%)

Approximately 40.6% visited the pharmacy fewer than five times per month, and 42.7% had a family history of chronic disease. Finally, 40.1% of participants reported having a family member working in the pharmaceutical sector.

Table 3 presents a comparative analysis of pharmacists' roles and patient interactions, categorized into four dimensions: information sharing, responsible behavior, patient-centeredness of the relationship, and interpersonal communication. The findings reveal a consistent and significant difference in perceptions between the two groups, with pharmacists generally rating their roles and responsibilities more highly than patients did.

Regarding information sharing, pharmacists perceived themselves as more proactive in providing medication-related information than patients acknowledged. They showed higher mean ranks for discussing medication side effects (669.50 vs. 572.75; $p < 0.001$). Pharmacists were also more likely to indicate that they engage with patients even when no specific medication inquiry is made (674.98 vs. 570.01; $p < 0.001$). A notable difference was observed in discussions about the compatibility of prescribed medications with over-the-counter products (685.08 vs. 564.96; $p < 0.001$).

Table 3 Aspects of the Pharmacist's Role in the Pharmacist-Patient Relationship

Code	Item	Pharmacists Md (IQR)	Patients Md (IQR)	Pharmacists Mean Rank	Patients Mean Rank	r_rb	P value
Information Sharing							
Q1	Talk with patients about how to watch for medication side effects	5 (4–5)	4 (4–5)	669.50	572.75	0.160	<0.001
Q2	Talk with patients even if the patients do not have any medication questions	4 (3–5)	4 (3–4)	674.98	570.01	0.174	<0.001
Q3	Talk with patients about whether it is OK to take their medications with over-the-counter products	4 (4–5)	4 (4–5)	685.08	564.96	0.199	<0.001
Responsible behaviour							
Q4	Show an interest in working with patients to meet their health care needs	4 (4–5)	4 (4–5)	661.15	576.93	0.139	<0.001
Q5	Communicate a desire to help patients manage their medications	4 (4–5)	4 (4–5)	672.84	571.08	0.168	< 0.001
Q6	Ensure patients understand how to use their medications before leaving the pharmacy	5 (4–5)	4 (4–5)	664.69	575.15	0.148	< 0.001
Q7	Communicate a desire to help patients with their medication concerns	4 (4–5)	4 (4–5)	664.60	575.20	0.148	< 0.001
Patient-centeredness							
Q8	Listen to patients when they have a medication question	5 (4–5)	5 (4–5)	635.70	589.65	0.076	0.017
Q9	Be easily approachable to discuss medication concerns	5 (4–5)	4 (4–5)	645.51	584.74	0.101	0.002
Interpersonal communication							
Q10	Greet patients at the prescription counter and collect prescription information	4 (4–5)	4 (4–5)	640.53	587.23	0.088	0.007
Q11	Say " hello " to patients when they visit the pharmacy	4 (4–5)	4 (4–5)	626.87	594.07	0.054	0.094

Notes: Md (IQR) values are reported as median (25th–75th percentile). Mean rank columns indicate direction; higher mean ranks reflect a tendency toward higher ratings in that group. r_rb = rank-biserial correlation; positive values indicate higher ratings among pharmacists than patients. p values are two-sided. Group sizes were pharmacists n = 403 and patients n = 806.

In terms of responsible behavior, the data suggest that pharmacists view themselves as more engaged in ensuring patient understanding and addressing patient needs. They assigned higher mean ranks to their interest in collaborating with patients to meet healthcare goals (661.15 vs. 576.93; $p < 0.001$). Similarly, pharmacists reported a stronger commitment to helping patients manage their medications than patients perceived (672.84 vs. 571.08; $p < 0.001$). Ensuring that patients understand how to use their medications before leaving the pharmacy was also rated significantly higher by pharmacists (664.69 vs. 575.15; $p < 0.001$). With respect to patient-centeredness, both groups agreed that pharmacists listen to patient concerns and are approachable. However, pharmacists consistently rated themselves higher in these behaviors. They perceived themselves as more attentive to patient questions (635.70 vs. 589.65; $p = 0.017$) and rated their approachability more favourably (645.51 vs. 584.74; $p = 0.002$). Differences also emerged in interpersonal communication, particularly regarding routine interactions. Pharmacists reported

a higher likelihood of greeting patients and collecting prescription information (640.53 vs. 587.23; p = 0.007). Reliability for the pharmacist role scale was assessed for both pharmacists and patients.

The most frequently selected location for pharmaceutical care was the community pharmacy (62.3%), chain pharmacy (46.7%) while the hospital pharmacy was selected less often (37.7%).

Figure 1 shows the reasons patients reported for visiting community pharmacies; multiple responses were allowed. The most cited reason was to obtain over-the-counter medications (75.9%), followed by obtaining prescribed medications (62.4%). The least frequently reported reason was to seek first aid information (5.6%). Health conditions reported by patients showed that the most frequently reported condition was headache (63.6%), followed by depression (13.3%) and digestive disorders (10.9%). The least commonly reported condition was cancer (1.0%).

The goal of this study was to investigate if pharmacists and patients report similar views about selected pharmacist and patient roles in the pharmacist-patient relationship.

Table 4 evaluates aspects of the patient's role in the pharmacist–patient relationship. The results indicate that pharmacists consistently rated patient engagement higher than patients did, suggesting a perception gap regarding patient participation in medication management and communication. In the domain of information sharing, pharmacists believed that patients are more proactive in discussing medication-related issues than patients themselves reported. Pharmacists rated patients' willingness to discuss medication problems higher than patients did (679.86 vs. 567.57; $p < 0.001$). Similarly, pharmacists perceived that patients are more likely to inform them about changes in health conditions (681.86 vs. 566.57; $p < 0.001$). Discrepancies were also noted in patient disclosure of herbal medication use (671.99 vs. 571.51; $p < 0.001$) and over-the-counter medication use (672.63 vs. 571.19; $p < 0.001$). While both groups agreed that patients report medication side effects (642.37 vs. 586.32; $p = 0.004$) and drug allergies (659.07 vs. 577.96; $p < 0.001$), pharmacists perceived greater patient disclosure than patients self-reported. Pharmacists also believed patients were more likely to inform them about prescriptions obtained from other pharmacies (651.98 vs. 581.51; $p < 0.001$).

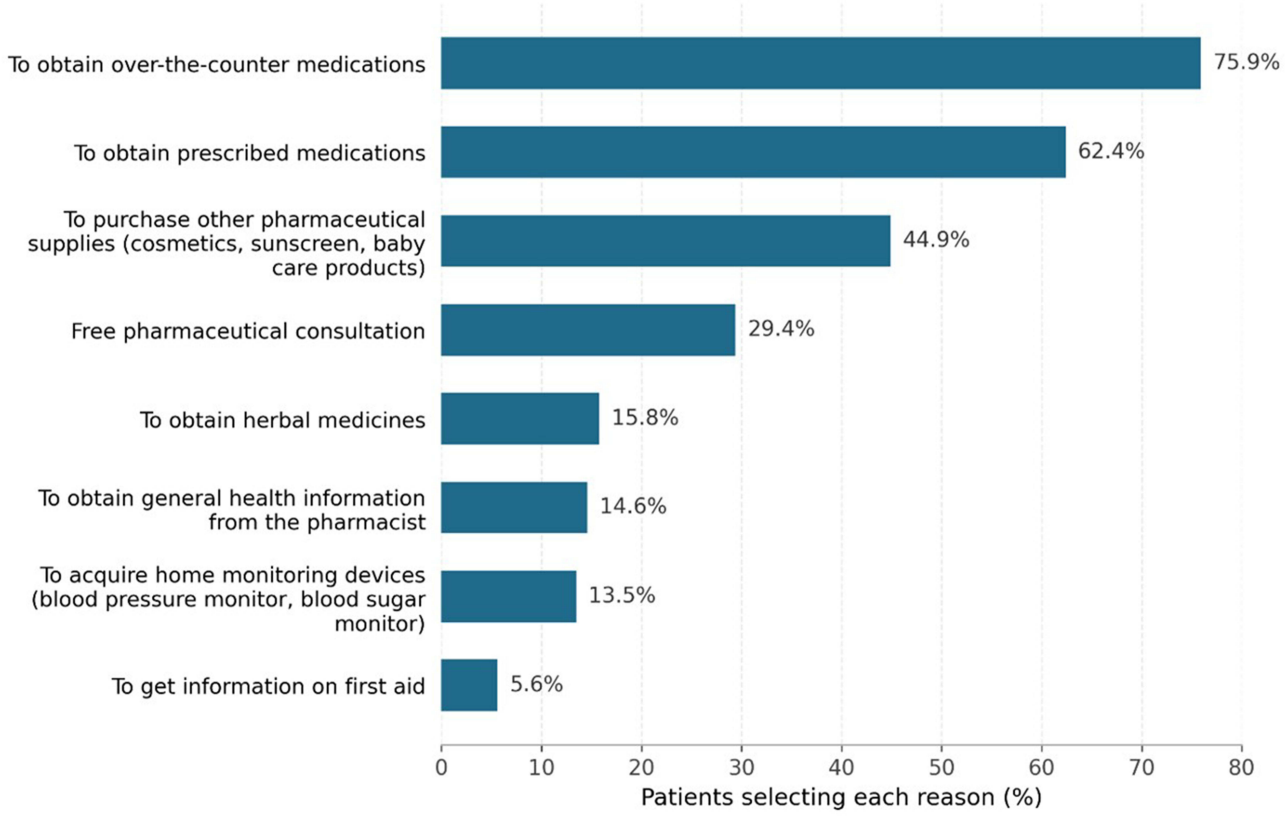

Figure 1 Reasons for visiting community pharmacies Percentages represent the proportion of respondents selecting each reason; multiple responses were allowed.

https://doi.org/10.2147/JMDH.S605078

Table 4 Patient Role Aspects in the Pharmacist-Patient Relationship

Code	Item	Pharmacists Md (IQR)	Patients Md (IQR)	Pharmacists Mean Rank	Patients Mean Rank	r_rb	P value
Information Sharing							
Q1	Discuss medication problems with the pharmacist	5 (4–5)	4 (4–5)	679.86	567.57	0.186	< 0.001
Q2	Inform the pharmacist of changes in their health condition(s)	4 (4–5)	4 (3–5)	681.86	566.57	0.191	< 0.001
Q3	Disclose herbal medications taken with prescriptions	5 (4–5)	4 (4–5)	671.99	571.51	0.166	< 0.001
Q4	Disclose over-the-counter medications taken with prescriptions	5 (4–5)	4 (4–5)	672.63	571.19	0.168	< 0.001
Q5	Report any medication side effects	5 (4–5)	4 (4–5)	642.37	586.32	0.093	0.004
Q6	Report drug allergies	5 (4–5)	5 (4–5)	659.07	577.96	0.134	< 0.001
Q7	Inform the pharmacist if obtaining prescriptions from another pharmacy	4 (4–5)	4 (4–5)	651.98	581.51	0.117	<0.001
Responsible behavior							
Q8	Collaborate with the pharmacist to manage medications	4 (4–5)	4 (3–5)	704.63	555.19	0.247	< 0.001

Notes: Md (IQR) values are reported as median (25th–75th percentile). Mean rank columns indicate direction; higher mean ranks reflect a tendency toward higher ratings in that group. r_rb = rank-biserial correlation; positive values indicate higher ratings among pharmacists than patients. p values are two-sided. Group sizes were pharmacists n = 403 and patients n = 806.

Regarding responsible behavior, pharmacists perceived patients as more collaborative in managing medications than patients reported. Pharmacists rated patients' willingness to work with them on medication management significantly higher than patients did (704.63 vs. 555.19; $p < 0.001$). Pharmacists also believed that patients were more consistent in refilling prescriptions on time (656.47 vs. 579.27; $p < 0.001$) and more likely to express a desire for pharmacist involvement in healthcare management (666.84 vs. 574.08; $p < 0.001$). A smaller yet significant difference was observed in how often patients ask pharmacists for medication explanations (645.86 vs. 584.57; $p = 0.002$), suggesting pharmacists view patients as more engaged in clarifying medication concerns than patients report. In terms of communication behavior, pharmacists perceived patients as more proactive and patient when seeking assistance. They rated patients' willingness to wait for the pharmacist's availability to discuss medication concerns higher than patients did (665.48 vs. 574.76; $p < 0.001$).

Discussion

This study investigated the alignment between pharmacists' and patients' perceptions of their respective roles within the pharmacist–patient relationship in Jordan. The findings reveal a consistent and statistically significant divergence across all examined domains. Pharmacists rated themselves higher on key professional behaviors such as information sharing, patient-centered communication, and responsible engagement in care. Similarly, pharmacists rated patients more positively than patients rated themselves in terms of communication, medication adherence, and active participation. These discrepancies point to a two-way gap in perceptions that may hinder effective collaboration and optimal use of pharmacy services.

The finding that pharmacists perceive themselves as engaging more actively in patient communication than patients report is consistent with international literature. Studies across diverse healthcare settings have found that pharmacists often believe they are fulfilling expanded clinical roles, yet patients frequently retain a more traditional view of pharmacists as dispensers of medication rather than as providers of clinical advice or care coordination[5,22] For instance, in a national survey conducted in the United States, only 16% of patients identified pharmacists as healthcare providers, despite the growing prevalence of pharmacist-led interventions such as medication therapy management and immunizations.[23] Similarly, in Saudi Arabia, Al-

Arifi[7] found that while pharmacists expressed confidence in their ability to provide patient-centered care, less than one-third of patients expected or sought clinical counseling during pharmacy visits. These studies, alongside the present findings, highlight the persistence of a limited public understanding of pharmacists' broader professional capabilities, even in countries were pharmacy education and regulation support clinical engagement.

The present study also sheds light on patients under recognition of their own roles in pharmaceutical care. Pharmacists perceived patients as active and communicative, but patients reported less confidence in asking questions, reporting issues, or discussing medication regimens. This gap suggests that pharmacists may overestimate patient health literacy and willingness to engage. Previous research suggests that many patients, especially those with limited education, complex health conditions, or cultural deference to authority, feel uncomfortable questioning healthcare professionals or initiating dialogue.[24,25] These relational dynamics can undermine shared decision-making and result in suboptimal treatment outcomes. Encouragingly, studies have shown that when patients are explicitly invited to participate, their engagement increases significantly.[26]

These perceptual gaps may have important implications for practice. First, they highlight the need to reframe the pharmacist–patient relationship as a co-produced partnership rather than a one-sided service encounter. Health promotion campaigns at nationally and community level, may be developed to educate the public about the evolving role of pharmacists. These campaigns could include public service announcements, social media content, or targeted leaflets distributed at pharmacies that explain pharmacists' expertise in medication safety, chronic disease management, and drug interaction monitoring. Second, pharmacists themselves may benefit from greater institutional support to provide visible, proactive clinical care. In many low- and middle-income settings, including Jordan, constraints such as heavy workloads, limited staffing, and lack of private consultation areas make it difficult for pharmacists to fulfil these roles consistently[13,27] Addressing these barriers through structural investment, such as establishing consultation rooms, staffing reforms, and digital record integration, may enhance both pharmacist capacity and patient trust.

Furthermore, the findings suggest that expanding pharmacist-led services through policy mechanisms may be a worthwhile direction, though longitudinal studies are needed to confirm this. Evidence from Canada and the United Kingdom has shown that formal integration of pharmacists into primary care teams improves medication adherence, reduces prescribing errors, and increases patient satisfaction.[28] For example, the introduction of pharmacist independent prescribers in the UK has not only improved access to timely medication reviews but also elevated public perceptions of pharmacists as care providers.[29] Additionally, a core set of clinical skills have been developed for prescribing pharmacists to ensure that they have the required skills needed for patient-facing responsibilities.[30] In the Jordanian context, policies that could potentially recognize and remunerate pharmacist-led medication reviews, chronic disease counseling, and minor ailment management could promote service uptake while reinforcing pharmacists' legitimacy as first-line healthcare professionals.

Finally, professional development and undergraduate curricula could benefit from placing greater emphasis on interpersonal communication, patient-centeredness, and behavioral counseling strategies. These "soft skills" are often underemphasized in pharmacy training but are crucial for navigating role misalignments and building rapport, particularly in settings where trust in non-physician providers remains low. Research suggests that pharmacist-led training in motivational interviewing and cultural competence may improve patient engagement and adherence outcomes.[31,32]

Strengths, Limitations, and Future Directions

This study has several strengths. It is one of the few to simultaneously assess pharmacist and patient perspectives in a Middle Eastern context using parallel measurement instruments. The large, diverse sample enhances the generalizability of findings across urban and semi-urban settings in Jordan. The use of validated items and strong internal consistency scores further support the robustness of the data.

Nevertheless, some limitations must be acknowledged. The cross-sectional design limits causal interpretation, and self-reported responses may be subject to recall bias or social desirability, particularly among pharmacists rating their own behavior. The use of convenience sampling restricts representativeness, particularly for patients in rural or under-resourced areas. Additionally, the study did not assess outcomes such as adherence, satisfaction, or health literacy, which may mediate the relationship between perceptions and real-world behaviors.[25,26]

Future research should adopt mixed-methods or longitudinal designs to explore how role expectations evolve over time or in response to targeted interventions. Qualitative studies could illuminate the nuanced interpersonal, cultural, or

systemic factors that shape pharmacist–patient dynamics, especially in under-researched contexts such as Jordan and other Arab countries. Furthermore, intervention studies assessing the impact of pharmacist-led consultations, communication training, or public awareness campaigns on role alignment and health outcomes are urgently needed. Such work would provide the evidence base needed to guide national policy and training reform.

Conclusion

This study identified clear differences between how pharmacists and patients in Jordan perceive their respective roles in the pharmacist–patient relationship. Pharmacists reported higher levels of engagement, communication, and support than patients perceived, and viewed patients as more active in managing their care than patients reported themselves. These findings highlight a mismatch in role expectations that may influence pharmacist–patient interactions. In particular, the largest differences were observed in the domains of responsible behavior and information sharing, with the widest single gap found in patients' willingness to collaborate in medication management. These findings highlight specific areas that may warrant further attention in practice, including potential system-level interventions, such as policy support or remuneration for pharmacists' clinical services Further longitudinal and interventional studies are needed to examine whether addressing these perceptual gaps leads to improved collaboration and patient outcomes.

Data Sharing Statement

The data that supports the findings of this study are available from the corresponding author, upon reasonable request.

Ethics Approval and Informed Consent

The study received ethical approval from the Institutional Review Board at King Abdullah University Hospital in Jordan [reference number: 7/174/2024] in September 2024. All participants, pharmacists and individuals, were informed about the study's purpose, and their consent was implied through voluntary participation.

Acknowledgments

The authors would like to thank all the pharmacists and individuals who completed the study questionnaire.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Disclosure

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication for this article.

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