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Community pharmacist's preparedness to provide patient-centred care in Saudi Arabia

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ABSTRACT

Background: Community pharmacy practice in Saudi Arabia is evolving and needs to be at par with the developed world. Community pharmacists can play a vital role in bridging gaps in the delivery of healthcare services by providing patient-centred care to patients and contributing toward the healthcare transformation plan of vision 2030 of Saudi Arabia. The present study is aimed at evaluating the knowledge, attitude, and practices of community pharmacists in delivering patient-centred care services.
Method: A nationwide cross-sectional survey using a validated and pre-tested 27-item self-reported questionnaire was conducted amongst 301 (86.4% male, 13/6% female) community pharmacists from all regions of Saudi Arabia. Both descriptive and inferential analysis was employed using the SPSS version, with 0.05 as the level of significance.
Results: Community pharmacists from chain pharmacy groups, female gender and staff community pharmacists had statistically better overall practice standards, knowledge, and attitude to conduct patient-centred care services (p less than 0.01). The majority of community pharmacists would expect extra remuneration and participation in structured professional skills development programs to provide patient-centred care efficiently. Inaccessibility of patient data from healthcare facilities, the unavailability of informative literature, and administrative workload were among the barriers cited in delivering patient-centred care.
Conclusion: The study findings show that community pharmacists could play a significant role in providing patient-centred care and contribute to the achievement of the healthcare reform agenda of Saudi Arabia. However, some obstacles must be overcome before this practice can be shifted, including the introduction of a formalized continuing professional development program, financial incentives, and a decrease in the administrative burden on pharmacists. The results of this study may help policymakers in Saudi Arabia better comprehend the country's existing approach to community pharmacy practice.
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1. Introduction

Saudi Arabia has an extensive healthcare network of primary, secondary, and tertiary healthcare centres, which provide entirely free-of-cost healthcare services and medicines to all citizens (Almalki, FitzGerald, and Clark 2011). Healthcare in Saudi Arabia is facing challenges from an increasing prevalence of diabetes mellitus, cardiovascular diseases, asthma, and obesity in the population, which contribute to two-thirds of all mortality in the country (Alkhenizan, 2014; Alrasheedy et al., 2017; Rasheed et al., 2019; 2017). With the popularity of social media, demand for preventive healthcare, and well-being has increased in society, which adds to the already burdened government-run healthcare facilities (Rasheed et al. 2020; Health 2022). Healthcare consumers often complained about the unavailability and inaccessibility of medicines in outpatient pharmacies of hospitals and primary healthcare centres, long waiting times for appointments,

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inadequate quality of healthcare delivery, ineffective monitoring and follow-up of chronic diseases and a lack of medication counselling and healthcare education from healthcare professionals (Almalki, FitzGerald, and Clark 2011; Al-Ahmadi and Roland 2005). In addition, inadequacy in the delivery and governance of providing equitable healthcare services is a significant concern of healthcare policymakers to achieve healthcare indicators in the country (Ahmed 2017).

The healthcare transformation plan of Saudi vision 2030 emphasized strengthening the role of private healthcare providers to achieve healthcare indicators in the country (Health 2022). After the initiation of the electronic prescribing and medication dispensing program called "Wasfaty" in Arabic, a majority of patients from primary and secondary healthcare facilities are getting their prescriptions from a community pharmacy (Health 2022; Rasheed et al. 2020). There are 11,597 privately owned and highly accessible community pharmacies, which could play a vital role in bridging gaps in the delivery of healthcare services by providing patient-centred pharmaceutical care services to patients (Health 2022). In addition, there is an opportunity for community pharmacies to lessen the burden on government-run healthcare facilities through early disease detection, preventive care, medication counselling and monitoring of therapeutic outcomes (Alrasheedy et al. 2017; Rasheed et al. 2020; Rasheed, Hasan, and Babar 2019).

Shared-decision making between providers and patients to develop and deliver a patient-centric comprehensive care plan is termed as patient-centered care (Catalyst 2017). To provide effective patient-centred care services, community pharmacists in Saudi Arabia should adopt practices followed in developed countries with established patient-centred care practices (Rasheed, Hasan, and Babar 2019). Therefore, there was a need to conduct a nationwide survey to assess if community pharmacists in Saudi Arabia possess adequate knowledge and attitudes to deliver patient-centred care services and evaluate their opinion about the challenges in the current practice of community pharmacy to conducting patient-centred care.

2. Methods

This quantitative study follows the STROBE reporting requirements, which were developed by the National Institutes of Health (Von Elm 2008).

2.1. Study design, population, and settings

This was an observational cross-sectional study using a self-reported online questionnaire built on Qualtrics. The study population consisted of practising community pharmacists in Saudi Arabia. The sample size was 367 community pharmacists calculated by the population size of 11,000 community pharmacists in Saudi Arabia, with a 5% error margin and a 95% confidence interval.

2.2. Development, validation and administration of the study questionnaire

The questionnaire was prepared after a detailed literature survey of previously published relevant studies in Saudi Arabia (Al Jumah et al. 2014; Almalki et al. 2021; Hadi et al. 2016; Rasheed et al. 2020). The final survey questionnaire contains twenty-seven items divided into four sections. Section A consist of the demographics and Section B is related to the practices of community pharmacists toward providing patient-centred care services.

In Section C of the questionnaire, the attitude of community pharmacists was measured on a 5-point Likert scale, which was scored; accordingly, (1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree and 5 = strongly agree). However, there was reverse scoring in items 1 and 7 to check if respondents were giving consistent answers and to lessen response biases (Mazor et al. 2002). There was a maximum score of 40 for the eight statements in the attitude section. A mean score of less than 20 was considered an overall lower attitude, 20–33 a medium attitude, and a score of 33–40 was considered a higher attitude of the community pharmacist in delivering patient-centred care.

Section D of the questionnaire measured the therapeutic knowledge of community pharmacists through ten questions, which "yes", "no", or "not sure" options as appropriate. There was 1 mark for each correct answer and 0 marks for each wrong answer. A score of 7 or below indicates poor knowledge, and a score of 8 and above shows a good knowledge of community pharmacists toward patient-centred care.

The face and content validation of the survey was performed by three professionals. One of the professional was the practicing hospital pharmacist and academician, while two professionals had PhDs in social and administrative pharmacy, with vast experience of developing survey instruments and cross-sectional studies. The panel also assesses and rates the clinical sensibility of the questionnaire against seven statements (Burns et al. 2008). All experts gave a good assessment of the questionnaire regarding clinical sensibility. To ensure the validity of the questionnaire, twenty community pharmacists who were not included in the research population were asked to complete a pilot test. The pharmacists were asked to evaluate the tool in terms of its relevancy, flow, layout, the convenience of use, and question stem that was difficult to understand (Burns et al. 2008; Collins 2003). Subsequently, changes were made to the questionnaire after feedback was received from the panel and the pharmacists. The questionnaire had three scales measuring practice, attitude and knowledge. All three scales had acceptable reliability of 0.58, 0.62 and 0.57 respectively.

Chief executive officers and regional managers of chain community pharmacies were contacted via email and/or WhatsApp to get their consent to participate in the study and requested to distribute the questionnaire among community pharmacists via their social media groups through the survey link provided previously. Individual community pharmacies were visited personally by the lead researcher (MKR) to give them the online survey link.

2.3. Data analysis

All completed questionnaires were coded by the lead author, re-verified for correctness, and placed into a database in SPSS for descriptive and inferential statistical analysis. Descriptive analysis, including study participant demographic data, was measured using frequencies and percentages for categorical variables. The scores of knowledge and attitudes of community pharmacists were calculated as the mean (SD) or frequency. The influence of study participant demographic information on the attitude and knowledge scores was tested using the Mann-Whitney, Kruskal-Walis and Chi-squared tests. A p-value of 0.05 was considered statistically significant.

2.4. Ethical approval

Ethical approval was taken from the regional Research Ethics Committee of the Qassim region of Saudi Arabia (1442–1459719). All research participants were also made aware that their participation was completely anonymized and optional and that all information about them would be kept strictly confidential.

3. Results

The demographic data of the study participants are shown in Table 1. A total of 301 community pharmacists completed the demographic part of the survey, which showed a response rate of 82%.

3.1. Practices of community pharmacist toward patient-centred care

A total of 298 community pharmacists completed the practice (Section B) part of the questionnaire (Table 2). The survey findings showed that female community pharmacists have fewer challenges (n = 18, 44%) than male community pharmacists when it comes to asking women about pregnancy and lactation status (n = 57, 21%). The findings also showed that young and comparatively inexperienced community pharmacists (n = 14, 25%) needed to use reference books more than older and experienced pharmacists (n = 9, 11%). Most community pharmacists favoured establishing pharmacist-run clinics to manage and monitor chronic diseases in community pharmacies (n = 241, 81%). The results showed that community pharmacists from other nationalities tend to believe less than Saudi community pharmacists that vaccination drives from community pharmacies can increase the vaccination rates in Saudi Arabia (p = 0.006).

Table 1
Demographic characteristics of community pharmacists in the cross-sectional nationwide study.

Demographic characteristics	n = 301
Gender	
Male	260 (86.4)
Female	41 (13.6)
Country of Graduation	
Egyptian	140 (46.5)
Saudi	103 (34.2)
Pakistani	31 (10.3)
Yemen	13 (4.3)
Sudan	1 (0.3)
India	8 (2.6)
Syria	5 (1.7)
Age group	
18–24	9 (3)
25–35	220 (73)
36–45	65 (21.6)
More than 45	7 (2.3)
Total years of experience	
Less than 1 year	56 (18.6)
1–5 years	73 (24.2)
6–10 years	90 (29.9)
More than 10 years	82 (27.2)
Highest educational qualification	
Bachelor's in pharmacy	168 (55.8)
Doctor of Pharmacy	119 (39.5)
Master of Pharmacy	12 (4)
PhD in Pharmacy	2 (0.6)
Years of experience in the community pharmacy of Saudi Arabia	
Less than 1 year	77 (25.6)
1–5 years	103 (34.2)
6–10 years	75 (24.9)
More than 10 years	46 (15.3)
Pharmacy affiliation	
Chain pharmacy group (more than 4 pharmacies)	240 (79.7)
Individual pharmacies (less than 4 pharmacies)	61 (20.2)
Current position in Pharmacy	
Staff Pharmacist	96 (31.9)
Pharmacy Manager	159 (52.8)
Trainee Pharmacist	46 (15.2)
Location of Pharmacy (Regions)	
North	21 (7)
Central	222 (73.7)
Eastern	21 (7)
Southern	10 (3.3)
Western	27 (9)

The study findings also documented that many community pharmacists do not have access to patient's data from healthcare centres despite the initiation of the "Wasfaty program" (n = 215, 72%). The study results showed that 77% of the surveyed community pharmacists find it easier to educate healthcare consumers if the drug information is available in the Arabic language. The study results also showed that most community pharmacists (n = 230, 77%) favoured a professional pharmacy technician in community pharmacy to lessen their administrative responsibilities. According to the findings of the survey, the majority of community pharmacists (n = 278, 93%) would expect extra remuneration for providing patient-centred care services. Nearly all surveyed community pharmacists (n = 285, 96%) would like to participate in professional training and skills development programmes and courses offered by professional pharmacy organizations in Saudi Arabia.

3.2. Attitude of community pharmacists toward patient-centred care services

The attitude part of the survey received 289 responses from community pharmacists across Saudi Arabia (Table 3). The mean attitude score of 32.5 out of 40, showed that most community pharmacists have an average attitude in providing patient-centred care services. Table 4 shows the mean attitude scores of the study participants and the p values.

The study results showed that compared to independent pharmacies, community pharmacists from chain pharmacies are more likely to review a patient's medication history before dispensing any medicine (p less than 0.05). The results of the survey also showed that many community pharmacists (n = 192, 66.5%) find it challenging to explain adverse drug reactions to patients. The overwhelming majority (n = 278, 93%) of community pharmacists support that pregnant women need to be educated about drugs which are contraindicated or used with caution during pregnancy. The study results showed that community pharmacists from independent pharmacies are less likely to establish smoking cessation clinics, educate pregnant women about which drugs to avoid during pregnancy, suspect any medication error and discuss the importance of medication adherence than community pharmacists from chain pharmacy groups (p less than 0.05). Contrary to that nearly all pharmacists are willing to educate patients about selecting a herbal product. However, study results showed that community pharmacists are less likely to advise asthmatic patients to monitor their peak expiratory flow rate at home.

3.3. Knowledge of community pharmacists toward patient-centred care services

A total of 278 responses were received from community pharmacists in the knowledge section of the questionnaire. The study results showed a mean knowledge score of 6.2 among community pharmacists, depicting an overall inadequate knowledge to deliver patient-centred care services. Only (n = 144, 51.8%) of the community pharmacists could correctly understand the administration instructions of insulin glargine. Contrary to that, many community pharmacists showed good knowledge (n = 214, 77%) of patient education regarding ciprofloxacin administration.

Table 5 represents the overall knowledge of community pharmacists toward patient-centred care services. Table 5 shows that only one third of the surveyed community pharmacists knows the contraindication of the hepatitis B vaccine (n = 88, 31.6%) and only 51.8% of the community pharmacists could correctly understand the administration instructions of insulin glargine, which showed their poor knowledge about this therapeutic area. Contrary to that, many community pharmacists showed good

Table 2
Responses of community pharmacist's practice toward patient-centred care services.

Questions of Practice	Strongly agree n (%)	Agree n (%)	Uncertain n (%)	Disagree n (%)	Strongly disagree n (%)
Identifying women's status (pregnancy, breastfeeding) in community pharmacy practice can be challenging	50 (16.8)	124 (41.6)	49 (16.4)	57 (19.1)	18 (6)
The unavailability of reference books and guidelines is an obstacle to providing medication counselling to healthcare consumers	64 (21.4)	140 (46.9)	30 (10)	50 (16.8)	16 (5.3)
Pharmacist-run clinic in the community pharmacy for the monitoring and management of chronic diseases is underutilized in Saudi Arabia.	130 (43.6)	111 (37.2)	38 (12.8)	16 (5.4)	3 (1)
Pharmacist-led vaccination services at community pharmacies can help support the vaccination rates in Saudi Arabia	152 (51)	94 (31.5)	25 (8.4)	20 (6.7)	7 (2.3)
It is difficult to access patient's medical records from primary healthcare centres	87 (29.1)	128 (42.9)	36 (12.1)	35 (11.7)	12 (4)
Pharmacy information software in the Arabic language is necessary for effective patient counselling	123 (41.3)	107 (35.9)	25 (8.4)	29 (9.7)	14 (4.7)
Community pharmacies need a trained pharmacy technician to perform administrative tasks	109 (36.5)	108 (36.2)	46 (15.4)	20 (6.7)	15 (5)
Community pharmacists need extra remuneration to provide patient-centred care services (clinics, awareness programmes, vaccination)	196 (65.8)	82 (27.5)	15 (5)	3 (1)	2 (0.6)
Professional training programmes for community pharmacists should be offered by pharmacy colleges and professional organizations.	207 (69.5)	78 (26.2)	9 (3)	1 (0.3)	3 (1)

Table 3
Response rates of community pharmacist's attitude toward patient-centred care services.

Questions of Attitude	Strongly agree n (%)	Agree n (%)	Uncertain n (%)	Disagree n (%)	Strongly agree n (%)
A pharmacist should check the medication history of a person whenever they buy any pharmaceutical product (OTC, drugs, herbals, supplements)	167 (57.7)	92 (32)	14 (4.8)	14 (4.8)	2 (0.7)
Explaining adverse drug reactions to the patient often decreases the patient's interest and compliance with drug therapy	76 (26.3)	116 (40.1)	41 (14.2)	38 (13.1)	18 (6.2)
Community pharmacists should educate pregnant women about the dangers of taking drugs during pregnancy	211 (73)	67 (23.1)	8 (2.7)	3 (1)	0
Smoking cessation programmes offered by community pharmacists can help in reducing the number of smokers in Saudi Arabia	163 (56.4)	78 (27)	30 (10.4)	14 (4.8)	4 (1.4)
It is important to guide healthcare consumers on choosing a suitable supplement (multivitamins, herbal products)	161 (55.7)	110 (38)	11 (3.8)	5 (1.7)	2 (0.7)
Discussing the importance of medication adherence with patients having chronic diseases can result in better therapeutic outcome	197 (68.1)	79 (27.3)	9 (3.1)	3 (1)	1 (0.3)
It is not important to advise asthmatic patients to monitor their peak expiratory flow rate at home	32 (11)	47 (16.3)	83 (28.7)	58 (20)	69 (23.9)
Community pharmacists should call the physician immediately after suspecting an error in the prescription	182 (62.9)	69 (23.8)	26 (9)	12 (4.1)	0

knowledge (n = 214, 77%) of patient education regarding ciprofloxacin administration.

Table 6 demonstrates the demographic comparison of the knowledge scores of community pharmacists toward patient-centred care services. Female community pharmacists showed a better mean knowledge score (7.14 ± 1.91) compared to male community pharmacists (6.05 ± 2.08). The overall knowledge of staff pharmacists (6.96 ± 1.72) was also found to be better than pharmacy managers and trainee pharmacists (p less than 0.05).

Table 6 also shows that the community pharmacists from chain groups of pharmacies in Saudi Arabia are found to have better overall knowledge than community pharmacists from independent pharmacies (p less than 0.05). Similarly, community pharmacists with more than ten years of experience in community pharmacy settings demonstrated insufficient knowledge about patient-centred care services than those with less than ten years of experience (p less than 0.05).

4. Discussion

Over the last four decades, Saudi Arabia has made tremendous improvements to its healthcare infrastructure, resulting in well-developed healthcare facilities and infrastructure (Almalki, FitzGerald, and Clark 2011). However, Saudi healthcare system is facing challenges of rising chronic illnesses, escalating healthcare expenses, and inadequate delivery and governance of healthcare services (Alrasheedy et al. 2017). The Saudi government has prepared a healthcare transformation plan in line with vision 2030 of the country to overcome these challenges (Chowdhury et al. 2021). One of the main attributes of this plan is to privatize healthcare services by promoting public–private partnerships (Chowdhury et al. 2021; Rasheed et al. 2020). This new development in the healthcare setup of Saudi Arabia has brought the largely privatized and highly accessible community pharmacy to the forefront of public healthcare in the country. Published studies in Saudi Arabia showed that healthcare consumers and professionals expect community pharmacy practice in Saudi Arabia to be at par with the developed world (Rasheed et al. 2020; Rasheed, Hasan, and Babar 2019). Therefore, community pharmacy practice is expected to contribute toward the achievement of the healthcare transformation initiatives by delivering effective patient-centred pharmaceutical care.

The findings of this nationwide cross-sectional study document that the overall knowledge and attitudes of community pharma-

Table 4
Mean attitude scores of community pharmacists toward patient-centred care services.

Variable	Characteristics	Median Score /40	±SD	p-value
Gender	Male	32.53	3.61	0.63
	Female	32.84	4.46	
Age	Less than 35	32.39	3.83	0.14
	More than 35	33.14	3.32	
Total years of Experience	Less than 1 year	32.01	3.48	0.71
	1–5 years	32.68	4.31	
	6–10 years	32.67	3.67	
	More than 10 years	32.68	3.42	
Highest education qualification	Bachelors in Pharmacy	32.29	3.67	0.31
	Pharm. D	32.88	3.82	
	Post-graduation	33.39	3.57	
Country of origin	Egypt	32.88	3.3	0.07
	Saudi Arabia	32.48	4.16	
	Pakistan	33.47	3.02	
	Others	30.37	4.17	
Years of experience in community pharmacy in Saudi Arabia	Less than 1 year	31.78	3.83	0.17
	1–5 years	33.02	3.56	
	6–10 years	32.83	4.0	
	More than 10 years	32.40	3.36	
Pharmacy affiliation	Chain pharmacy group	33.17	3.44	0.001
	Individual pharmacy	30.46	3.86	
Current position in Pharmacy	Staff Pharmacist	32.9	3.66	0.36
	Pharmacy Manager	32.58	3.70	
	Trainee Pharmacist	31.9	3.96	
Location of Pharmacy	North-eastern region	32.8	3.13	0.04
	Central region	32.76	3.61	
	Southwestern region	31.03	3.73	

*Mann-Whitney (2 categories) and Kruskal-Wallis (more than 2 categories) tests were used to obtain p-values.

Table 5
Knowledge of community pharmacist's towards of patient centred care services.

Questions of Knowledge	Yes n (%)	May be n (%)	No n (%)
The Hepatitis B vaccine is contraindicated in pregnant women	88 (31.6)	95 (34.2)	**95 (34.2)***
Insulin glargine should be administered 15 min before every meal	94 (33.8)	40 (14.4)	**144 (51.8)***
The most common side effect of Amlodipine is peripheral oedema	**205 (73.7)***	41 (14.7)	32 (11.5)
Patients can consume dairy products (milk, yoghurt, cheese) 2 h before or 6 h after taking ciprofloxacin	**214 (77)***	39 (14)	25 (9)
An adult person can take a maximum of 10 tablets of paracetamol (5000 mg) in a day	56 (20.1)	18 (6.5)	**204 (73.4)***
If a generic medicine is bio-equivalent to a branded medicine, it means it is also therapeutically equivalent	**143 (51.4)***	57 (20.8)	78 (28.4)
The amoxicillin-clavulanate suspension can be stored at room temperature for 3 days	141 (50.7)	43 (15.4)	**94 (33.8)***
Vitamin D supplements can be taken with high-fat food for better absorption	**217 (78)***	35 (12.6)	26 (9.3)
The asthmatic patient should rinse their mouth with water and spit after using a steroid inhaler	**211 (75.9)***	39 (14)	28 (10.1)
Dextromethorphan syrup can be given safely to a 3-year-old child with a cough and cold	63 (22.7)	42 (15.1)	**173 (62.2)***

*Correct answers.

cists are inadequate to conduct effective patient-centred care services.

The findings of the survey showed that community pharmacists belonging to the chain group of pharmacies possess better practice, knowledge, and attitudes to conduct patient-centred care services than those belonging to independent pharmacies. These findings are important to acknowledge because it is estimated that 50% of the community pharmacies in Saudi Arabia belong to independent owners (Rasheed, Hasan, and Babar 2019). Similar findings have been observed in China, where community pharmacists from chain pharmacy groups had a better understanding of pharmaceutical care (Xi et al. 2019). In contrast, in Poland, no significant difference has been found between pharmacists of chain and independent pharmacies in providing patient-centred care services (Bratkowska et al. 2020).

The results also showed that community pharmacists find it difficult to provide medication counselling and patient education because of the inaccessibility of patient data from healthcare centres, limited access to online pharmacy literature, unavailability of medication information in the Arabic language and administrative workload. Similar findings have been observed in community pharmacy practices in the USA, where lack of access to the health records of patients has adversely impacted medication therapy management interventions (Roberts, Reeves, and Divine 2019).

The establishment of pharmacist-led clinics in community pharmacies has proven to improve clinical outcomes and medication adherence in a wide array of chronic diseases (asthma, diabetes, cardiovascular diseases) throughout the developed world (Newman et al. 2020; Brett, Yeung, and Ford 2019; Watkins et al. 2020; Babar and Practice 2021). However, except few of the chain pharmacy groups, pharmacist-led clinics are non-existent in community pharmacy practice in Saudi Arabia (Rasheed et al. 2020). The survey findings document that community pharmacists in Saudi Arabia are willing to conduct pharmacist-led clinics to help in the prevention, management, and monitoring of chronic diseases such as asthma, and diabetes and to promote medication adherence and safety if provided administrative, technical, and financial support by their management.

Community pharmacies are well placed as the first point of contact to create awareness about vaccinations and help in the pre-

Table 6
Demographic comparison of the knowledge scores of community pharmacists toward patient-centred care services.

Variable	Characteristics	N (%)	Mean Score/10	±SD	p-value
Gender	Male	245 (89.1)	6.05	2.08	0.63
	Female	30 (10.9)	7.14	1.91	
Age	Less than 35	216 (78)	6.21	2.14	0.14
	More than 35	61 (22)	6.16	1.95	
Total years of Experience	Less than 1 year	54 (19.4)	5.92	2.36	
	1–5 years	70 (25.2)	6.60	2.08	0.36
	6–10 years	81 (29.1)	6.16	1.96	
	More than 10 years	73 (26.2)	6.10	2.07	
Highest education qualification	B.Pharmacy	156 (56.3)	5.94	2.05	0.07
	Pharm. D	112 (40.4)	6.52	1.98	
	Post-graduation	9 (3.3)	6.58	3.17	
Country of origin	Egypt	128 (46.5)	5.88	3.3	0.07
	Saudi Arabia	100 (36.4)	5.48	4.16	
	Pakistan	27 (9.8)	6.47	3.02	
	Others	20 (7.3)	5.37	4.17	
Years of experience in community pharmacy in Saudi Arabia	Less than 1 year	53 (19.2)	5.83	2.38	**0.02**
	1–5 years	68 (24.6)	6.73	1.73	
	6–10 years	83 (30.1)	6.10	2.1	
	More than 10 years	72 (26.1)	5.8	2.13	
Pharmacy affiliation	Chain pharmacy group	231 (83.1)	6.41	2.01	**0.001**
	Individual pharmacy	47 (16.9)	5.43	2.25	
Current position in Pharmacy	Staff Pharmacist	90 (32.5)	6.96	1.72	**0.001**
	Pharmacy Manager	145 (52.3)	6.09	2.1	
	Trainee Pharmacist	42 (15.2)	5.07	2.20	
Location of Pharmacy	North-eastern region	35 (12.7)	6.4	1.83	0.26
	Central Region	212 (76.8)	6.2	2.11	
	Southwestern region	29 (10.5)	5.6	2.26	

P < 0.05 considered as statically significant

*Mann-Whitney (2 categories) and Kruskal-Wallis (more than 2 categories) tests were used to obtain p-values.

vention of viral infections and epidemics such as COVID-19 (Karasneh et al. 2021; Bacci et al. 2019). Pharmacist-led vaccination services are still controversial and not fully developed in Saudi Arabia, although majority of community pharmacists have shown their willingness to provide vaccination services (Alshahrani et al. 2022). However, our research showed that community pharmacists need to update their knowledge about vaccines and their contraindications to provide better patient education.

The findings of this study showed that most of the surveyed community pharmacists possess good knowledge about the patient conselling regarding use of antibiotics and the commonly prescribed drug paracetamol. However, community pharmacists showed inadequate knowledge about the storage condition of the amoxicillin-clavulanate suspension and the use of cough and cold medications in children. Similar findings have been observed in China, where community pharmacists had good knowledge and attitude about antibiotic use (Hayat et al. 2019). In contrast, community pharmacists from Indonesia possessed inadequate knowledge about cough and cold medications (Brata et al. 2019).

Our results also showed that community pharmacists agreed with administrative gaps in the delivery of patient-centred care services, such as the lack of structured national-level skills and knowledge development programmes and centralized remuneration structure in offering patient-centred care services.

Although we believe that our study showed promising results, we also observed some limitations of the study. One of the limitations is that the results could not truly reflect all the community pharmacists in the country. In addition, community pharmacists in this study might not have felt encouraged to provide accurate and honest answers, because of a lack of memory on the subject or boredom, which could be another limitation of this study.

5. Conclusion

The study found inadequate knowledge, attitudes, and practices of community pharmacists in delivering effective patient-centred care services to healthcare consumers in Saudi Arabia. Linking patient data with community pharmacies, an Arabic version of pharmacy dispensing software, availability of a professional pharmacy technician, a structured Continuing Professional Development program for pharmacists and establishment of private consulting rooms were the capacity gaps highlighted by community pharmacists to deliver patient-centred care services. In addition, pharmacists would like to be paid extra and provide administrative support to run pharmacist-led clinics to manage and monitor chronic diseases and promote health and wellness in the community. The study findings are useful for policymakers, regulators, pharmacy educators and researchers in Saudi Arabia to understand the need for a change in the current community pharmacy practice in the country to achieve the strategic objectives of the national healthcare transformation program.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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