



Original article

Patient Satisfaction with Private Community Pharmacies versus Pharmacies in Primary Health Care Centers in Saudi Arabia

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ABSTRACT

Introduction: Saudi Arabia has begun reforming its government-run health care system to increase efficiency and reduce costs. One effort is the adoption of an electronic prescribing system (Wasfaty) and outsourcing pharmaceutical services from government-run clinics to community pharmacies (CP). This study aims to compare satisfaction with pharmaceutical services offered in the two systems.

Materials and methods: This cross-sectional observational study used existing survey data collected from patients (≥ 15 years of age) visiting government primary health care centers from January 2022 to June 2022. Satisfaction with three pharmaceutical services (availability of medications, pharmacist's explanation of the prescription, and waiting time to get medications) were the main outcomes.

Results: The study comprised 91,317 participants, 74.06 % of them were CP/Wasfaty users. CP/Wasfaty patients had lower odds of satisfaction with the three pharmaceutical services: availability of medications (OR = 0.49, 95 % CI = 0.47–0.51), pharmacists' explanation of prescription (OR = 0.55, 95 % CI = 0.53–0.58), and waiting time to get medications (OR = 0.81, 95 % CI = 0.75–0.88). Additional findings showed variations in satisfaction levels based on demographic factors and clinic types.

Conclusions: The significant differences observed in satisfaction levels based on demographic characteristics and type of clinics visited emphasize the importance of tailoring pharmaceutical services to meet the specific needs and expectations of different patient populations.

1. Introduction

The Saudi Arabian health care system has historically been operated by the Ministry of Health (MOH). Citizens could access services free of charge in government-run primary health care centers (PHCs), community hospitals, central hospitals or referral hospitals (medical cities) based on the health care services they needed (Albejaidi, 2010; Almalki et al., 2011). Private health care services were also available for those who had health insurance or were able to pay out of pocket (Albejaidi, 2010; Almalki et al., 2011). The Saudi Arabian health care system has faced many recent challenges including increasing demand, increasing rates of chronic diseases, and the high cost of delivery of health care services, among others (Almalki et al., 2011; Asmri et al., 2020).

Starting in 2016, Saudi Arabia began efforts to reform its health care delivery system, with particular focus on the primary health care system (Al Khashan et al., 2021). Reform goals and initiatives were encapsulated in a strategic plan called Vision 2030. One initiative of the plan was the outsourcing of pharmaceutical services. Although community pharmacies (CPs) existed, most patients obtained their prescriptions from the pharmacies located in government-run PHCs. To accomplish the outsourcing, Wasfaty, an electronic prescribing system, was adopted that allow physicians to send prescription orders electronically to participating private CPs near patient's homes and that meet other certain program eligibility criteria (e.g., had a valid license to practice, used approved Wasfaty suppliers, had a computer with Internet access, among other requirements) (Wasfaty, 2022; Almaghaslah et al., 2022).

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It was anticipated that the new electronic prescribing system would increase efficiency and reduce costs (Wasfaty, 2022; Almughaslah et al., 2022). As of June 2023, 4,000 CPs were participating in the Wasfaty program, serving 2,168 PHCs in 172 communities across Saudi Arabia (Wasfaty, 2022).

A recent study assessed patients' (n = 400) satisfaction with Wasfaty (Almughaslah et al., 2022). Across twelve items for which satisfaction was assessed, the overall average score was 3.3 (on a scale of 1 to 5, with 5 being very satisfied) (Almughaslah et al., 2022). The lowest satisfaction score was 2.9 for availability of prescribed medications, and two items scoring the highest at 3.6: availability of pharmacists and friendliness of pharmacists and staff (Almughaslah et al., 2022). A 2016 study evaluated satisfaction with pharmaceutical services received in PHCs (Alomi et al., 2016). Overall satisfaction across fourteen items was 3.6 (on a scale of 1 to 5, with 5 being very satisfied) (Alomi et al., 2016). The lowest satisfaction score was 1.59 for receiving a medication list from the pharmacy and the highest was 4.6 for receiving all medications prescribed (Alomi et al., 2016). On the surface, it appears the level of satisfaction with Wasfaty and PHCs pharmacies is about the same (3.3 versus 3.6); however, the two studies used different questionnaires and measured different items, employed different recruitment methods, and the second study was undertaken prior to the launch of Wasfaty (Almughaslah et al., 2022; Alomi et al., 2016).

To truly assess the two pharmacy systems, we undertook this study to assess and compare satisfaction levels with the pharmaceutical services among patients who received medications through pharmacies within PHCs with those who received medications through CPs using Wasfaty.

2. Materials and methods

2.1. Study design

This study used a cross-sectional survey design.

2.2. Data sources

The study used data from the Patient Experience Measurement Program (PXMP) launched by the Saudi MOH. The PXMP is one of the initiatives of the Saudi health transformation plan that aims to improve patient experience and quality of care through engaging patients and their families in the quality improvement process by measuring their satisfaction with the health care services provided in MOH facilities (Ministry of Health, 2023). The Saudi MOH uses surveys designed by Health.Links/Press Ganey, a third-party consultancy company, that also administers the surveys on behalf of the MOH. The patient experience surveys are designed to capture key information about the patient's journey and experience as they navigate through the health care system. To ensure robustness, the survey development process undergoes several key stages, all in collaboration with key stakeholders to ensure that all patient experience touchpoints are considered, from registration to discharge/leaving the clinic or hospital, within multiple specialties. The surveys are also tested for validity and reliability, with studies showing good internal consistency and validity (Malott et al., 2017; Presson et al., 2017; Rasudin et al., 2019).

This study reports results from the Pharmacy domain of the modified Medical Practice Survey administered to patients attending MOH PHCs between January 2022 to June 2022. The full survey consists of 35 rating questions divided into 9 domains based on a typical patient journey within a PHC. These domains include access, moving through your visit, nurse/assistant, care provider, lab tests, radiology, pharmacy, personal issues and overall assessment. Individual questions associated with each domain are provided in [supplementary material](#) (SP1). The survey is administered through SMS and is shared with all patients visiting MOH PHCs through their registered mobile phone numbers within 24 h of their visit. The survey link shared with patients is unique and can only be accessed by the patient that received the link. Once the

patient submits their responses, they do not receive any further survey links for the same service for a period of 30 days which might help to avoid response duplications.

Participation in the survey is completely voluntary and patients can choose whether to complete the survey after understanding the objectives of the survey. Additionally, the survey questions are not mandatory therefore, patients can submit incomplete surveys. For this study, only completed surveys were included in the analysis. Demographic information about the respondents (such as age, sex and nationality) were provided by the Saudi MOH through their unified data repository which is matched with the patient's registered phone number used for sending unique SMS links by Health.Links/Press Ganey.

2.3. Measures

2.3.1. Dependent variables

Satisfaction with the pharmaceutical services: satisfaction with the pharmaceutical services was measured by assessing patient satisfaction with three services (availability of medications, pharmacist's explanation of the prescription, and waiting time to get medications). Each service was measured separately with a single-item question with five response options (very poor, poor, fair, good and very good). A dichotomous satisfaction variable was created for each outcome by coding the question as 0 = very poor, poor, and fair; and 1 = good and very good.

2.3.2. Independent variables

The independent variables included patients' demographic characteristics: age (continuous), sex (Male and Female), and nationality (Saudi and Non-Saudi); clinics visited by patients (family medicine clinic, chronic diseases clinic, dental clinic, obstetrics and gynecology (OB/GYN) clinic, preventive clinic, and other specialty clinics such as ear/nose/throat, eye, and orthopedic clinics; and use of CPs using Wasfaty (No = 0 and Yes = 1).

2.3.3. Statistical analysis

Summary statistics (frequency distribution and percentages) were employed to characterize participants in this study and describe their responses to the survey questions. Comparisons were made using t-tests (for continuous variables) and chi-square (for categorical variables) between participant groups (CP/Wasfaty patients versus PHCs pharmacy patients) for the three outcomes of interest (availability of medications, pharmacist's explanation of the prescription, waiting time to get medications). A multivariable logistic regression analysis was conducted for each outcome to identify characteristics associated with each outcome separately. Stata/BE 17.0 (Stata Corp, College Station, TX) was used to prepare the data and perform the statistical analyses. The alpha was set at 0.05.

3. Results

3.1. Overall satisfaction with the pharmaceutical services

The study comprised 91,317 participants (Table 1), with the mean age of 42.6 years (Standard deviation (SD): 14.6 years), and a slightly higher representation of males (n = 46,414; 50.83 %). Of the total participants, 84,287 (92.30 %) were Saudis, 67,628 (74.06 %) were CP/Wasfaty users, and 75,404 (82.57 %) visited Family Medicine clinics. Table 1 also presents the distribution and comparison results of satisfied patients across study variables by the type of pharmacy utilized, CP/Wasfaty or PHC pharmacy. The table shows significant differences in age, sex, nationality, and type of clinics visited among satisfied patients with CP/Wasfaty and PHC pharmacies. Across all outcome variables (satisfaction with availability of prescribed medications, pharmacist's explanation of the prescription, and waiting time to get medications), significantly higher proportions of females ($p < 0.001$), non-Saudis ($p <$

Table 1
 Characteristics of Respondents, Overall and By Satisfaction with Availability of Prescribed Medications, Pharmacist's Explanation of the Prescription, and Waiting Time to Get Medications.

Variables	Overall		Satisfied with Availability of Prescribed Medications				P-Value	Satisfied with Pharmacist's Explanation of the Prescription				P-Value	Satisfied with Waiting Time to Get Medications				P-Value
	N	%	Wasfaty/CP (n = 67,628)		PHC Pharmacy (n = 23,689)			Wasfaty/CP (n = 67,628)		PHC Pharmacy (n = 23,689)			Wasfaty/CP (n = 67,628)		PHC Pharmacy (n = 23,689)		
			N	%	N	%		N	%	N	%		N	%	N	%	
Total	91,317	100.00	49,517	73.22	20,023	84.52	–	55,545	82.13	21,091	89.03	–	57,303	84.73	21,326	90.02	–
Sex																	
Male	46,414	50.83	24,150	48.77	10,883	54.35	<0.001*	26,977	48.57	11,485	54.45	<0.001*	28,325	49.43	11,690	54.82	<0.001*
Female	44,903	49.17	25,367	51.23	9,140	45.65		28,568	51.43	9,606	45.55		28,978	50.57	9,636	45.18	
Nationality																	
Non-Saudi	7,030	7.70	4,225	8.53	1,334	6.66	<0.001*	4,688	8.44	1,405	6.66	<0.001*	4,781	8.34	1,417	6.64	<0.001*
Saudi	84,287	92.30	45,292	91.47	18,689	93.34		50,857	91.56	19,686	93.34		52,522	91.66	19,909	93.36	
Clinics																	
Family Medicine	75,404	82.57	41,386	83.58	15,851	79.16	<0.001*	46,440	83.61	16,668	79.03	<0.001*	47,909	83.61	16,871	79.11	<0.001*
Chronic Diseases	5,160	5.65	2,428	4.90	1,564	7.81		2,779	5.00	1,671	7.92		2,903	5.07	1,689	7.92	
Dental	5,666	6.20	2,711	5.47	1,743	8.70		2,982	5.37	1,850	8.77		3,059	5.34	1,864	8.74	
Ob/Gyn	2,917	3.19	1,665	3.36	498	2.49		1,870	3.37	522	2.47		1,894	3.31	525	2.46	
Preventive	1,491	1.63	850	1.72	330	1.65		936	1.69	338	1.60		968	1.69	340	1.59	
Specialty	679	0.74	477	0.96	37	0.18		538	0.97	42	0.20		570	0.99	37	0.17	
Wasfaty/CP Users																	
No	23,689	25.94	–	–	–	–		–	–	–	–		–	–	–	–	
Yes	67,628	74.06	–	–	–	–		–	–	–	–		–	–	–	–	
Age (continuous)	Mean	SD	Mean	SD	Mean	SD		Mean	SD	Mean	SD		Mean	SD	Mean	SD	
	42.64	14.60	43.36	14.28	41.17	14.95	<0.001*	43.36	14.28	41.44	15.03	<0.001*	43.48	14.29	41.44	15.04	<0.001*

Notes: CP = Community Pharmacy, N = Number, OB/GYN = Obstetrics and Gynecology, PHC = Primary Healthcare Centers, SD = Standard Deviation. Satisfaction is defined as a combination of survey responses very good and good.

* $p < 0.05$.

0.001), and visitors of family medicine, Ob/Gyn, specialty, and preventive clinics ($p < 0.001$) were satisfied with CP/Wasfaty than males, Saudis, and visitors of chronic diseases and dental clinics, respectively. See Table 1.

3.2. Satisfaction with availability of prescribed medication

The multivariable results in Table 2 revealed, after controlling for other characteristics, a significant negative association between use of CP/Wasfaty and satisfaction with the availability of prescribed medications (OR: 0.49; 95 % CI: 0.47–0.51). Age, sex, type of clinics, pharmacy type, and nationality were all associated with satisfaction with availability of prescribed medications. Age was positively associated with satisfaction with the availability of prescribed medications (Odd Ratio (OR): 1.00, 95 % Confidence Interval (95 %CI): 1.00–1.01). In terms of sex, female patients had higher odds of satisfaction with the availability of prescribed medications (OR: 1.14; 95 % CI:1.10–1.17) compared to male patients. The type of clinic visited also influenced satisfaction with the availability of prescribed medications. Compared to patients who visited the family medicine clinics, those who visited the dental and preventive clinics had higher odds of satisfaction (OR: 1.13; 95 % CI: 1.05–1.20 and OR: 1.19; 95 % CI: 1.05–1.35, respectively), while those who visited the Ob/Gyn clinic had lower odds of satisfaction (OR: 0.91; 95 % CI: 0.83–0.99). Nationality was also significantly associated with satisfaction. Compared to non-Saudi patients, Saudi patients had significantly lower odds of satisfaction with the availability of prescribed medications (OR:0.80; 59 % CI: 0.75–0.85).

3.3. Satisfaction with pharmacist's explanation of the prescription

The multivariable results in Table 2 for satisfaction with the explanation of the prescriptions from the pharmacists showed similar results as the previous outcome variable. CP/Wasfaty users also had significantly lower odds of satisfaction with pharmacist's explanation of the prescription (OR:0.55; 95 % CI: 0.53–0.58) compared to PHCs users. Age and being female were positively associated with satisfaction with pharmacist's explanation of the prescription. A one-year increase in age increased the odds of satisfaction with the pharmacists' explanation by 1 % (OR = 1.01, (95 % CI: 1.01–1.02). Females also had higher odds of satisfaction with pharmacists' explanation of the prescription (OR:1.27; 95 % CI: 1.22–1.31) compared to males. Regarding clinic types, patients of chronic diseases clinics (OR:1.09; 95 % CI: 1.01–1.18), dental clinics (OR:1.13; 95 % CI: 1.05–1.22) and specialty clinics (OR:1.24; 95 % CI:

1.01–1.54) had higher odds of satisfaction with pharmacists'; explanations, while patients of Ob/Gyn clinics had lower odds of satisfaction (OR: 0.86; 95 % CI: 0.79–0.96) compared to visitors of family medicine clinics. Regarding nationality, Saudis had lower odds of satisfaction with pharmacist's explanation of the prescription (OR: 0.76; 95 % CI: 0.71–0.81) compared to non-Saudis.

3.4. Satisfaction with waiting time to get medications

The multivariable results in Table 2 for satisfaction with the waiting time to get medications were also similar to the other outcome variables. CP/Wasfaty users had significantly lower odds of satisfaction with the waiting time to get medications (OR: 0.81; 95 % CI: 0.75–0.88). Older patients (OR: 1.01; 95 % CI: 1.01–1.01), being female (OR: 1.07; 95 % CI: 1.03–1.11), and patients of chronic diseases (OR: 1.13; 95 % CI: 1.03–1.24), dental (OR: 1.12; 95 % CI: 1.03–1.21), specialty (OR: 1.51; 95 % CI: 1.18–1.93), and preventive (OR: 1.19; 95 % CI: 1.02–1.39) clinics had higher odds of satisfaction with the waiting time to get medications. However, Saudis, and patients of Ob/Gyn clinics had lower odds of satisfaction with the waiting time to get medications (OR: 0.60; 95 % CI: 0.57–0.63; OR: 0.87; 95 % CI: 0.79–0.96, respectively).

4. Discussion

As part of its efforts to improve efficiency and reduce cost of its health care delivery system, Saudi Arabia has been shifting pharmaceutical services from government-run PHCs to CPs using an electronic-prescribing system called Wasfaty. To the best of our knowledge, this national-level survey study is the first to explore and compare patient satisfaction with pharmaceutical services provided in the two systems. The outcomes of satisfaction with pharmaceutical services were measured by assessing patient satisfaction with three key aspects: availability of medications, pharmacist's explanation of the prescription, and waiting time to get medications. The results of the study, which included a total of 91,317 participants, indicated that overall, after controlling for other characteristics, patients in Saudi Arabia are more satisfied with the pharmaceutical services available in government-run PHCs than they are with private CPs using Wasfaty. Similarly, Alghamdi et al. (2023) stated that approximately 56 % of survey study participants in Saudi Arabia had resistance to using CPs due to ineffective communication with pharmacists (Alghamdi et al., 2023). Additionally, 45 % of participants highlighted the absence of interprofessional collaboration between physicians and community

Table 2

Factors Associated with Satisfaction with Availability of Prescribed Medications, Pharmacist's Explanation of the Prescription, and Waiting Time to Get Medications.

Variables	Satisfaction with Availability of Prescribed Medications			Satisfaction with Pharmacist's Explanation of the Prescription			Satisfaction with Waiting Time to Get Medications		
	OR	95 % CI	P-Value	OR	95 % CI	P-Value	OR	95 % CI	P-Value
Age (continuous)	1.00	1.00–1.01	<0.001*	1.01	1.01–1.02	<0.001*	1.01	1.01–1.01	<0.001*
Sex									
Male	Ref			Ref			Ref		
Female	1.14	1.10–1.17	<0.001*	1.27	1.22–1.31	<0.001*	1.07	1.03–1.11	0.001*
Nationality									
Non-Saudi	Ref			Ref			Ref		
Saudi	0.80	0.75–0.85	<0.001*	0.76	0.71–0.81	<0.001*	0.81	0.75–0.88	<0.001*
Clinics									
Family Medicine	Ref			Ref			Ref		
Chronic Diseases	0.99	0.92–1.06	0.782	1.09	1.01–1.18	0.043*	1.13	1.03–1.24	0.010*
Dental	1.13	1.05–1.20	0.001*	1.13	1.05–1.22	0.002*	1.12	1.03–1.21	0.007*
Ob / Gyn	0.91	0.83–0.99	0.026*	0.86	0.79–0.96	0.005*	0.87	0.79–0.96	0.008*
Preventive	1.19	1.05–1.35	0.006*	1.14	0.99–1.32	0.077	1.19	1.02–1.39	0.027*
Specialty	1.10	0.92–1.31	0.282	1.24	1.01–1.54	0.047*	1.51	1.18–1.93	0.001*
Wasfaty/CP Users									
No	Ref			Ref			Ref		
Yes	0.49	0.47–0.51	<0.001*	0.55	0.53–0.58	<0.001*	0.60	0.57–0.63	<0.001*

Notes: OR = Odds Ratio, CI = Confidence Interval, OB/GYN = Obstetrics and Gynecology, Ref = Referent Group, CP = Community Pharmacy.

* $p < 0.05$.

pharmacists as a hindrance to using CPs (Alghamdi et al., 2023). Although pharmacists themselves held positive attitudes towards private CPs, they expressed the need for additional training to effectively engage in providing services in CPs (Alghamdi et al., 2023).

Our study's findings contrast with those of a previous study, which found a moderate to high level of satisfaction with Wasfaty. However, it is important to note that the previous study was a descriptive study and did not examine the relationship between patient satisfaction and the CPs using Wasfaty (Almaghaslah et al., 2022). In fact, it was previously documented that electronic prescription services were associated with information inaccuracy related to prescriptions and delay in providing prescriptions (Almaghaslah et al., 2022; Al Aloom et al., 2020). Adopting electronic-prescription services may be overwhelming for community providers, causing long patient waiting times, and therefore low satisfaction. Therefore, it is essential to make sure that electronic prescribing is easily incorporated into community providers' everyday practices and is accessible, inclusive, and addresses the specific needs of various patient groups. Moreover, it is essential to acknowledge that there may be justifications for the observed differences between our results and those from other studies. Factors such as cultural differences, convenience of access, customer service, and pricing policies can vary in different health care settings and regions (Mensa Sorato et al., 2020). These variations could potentially contribute to the differences in patient satisfaction levels with pharmaceutical services between this study and previous research.

Support of CP over PHC pharmacies may require additional intervention by the government before benefits can be achieved. One study reported that nearly all of the studies (n = 30) included in the review found deficiencies in quality of current professional (private) pharmacies (Smith, 2009). Moreover, Saudi patients were unsatisfied with the availability of medications in CPs. Lack of needed prescriptions may impact patients' ability to adhere to medication regimens. Furthermore, overall low satisfaction with services available in CPs may lead Saudi patients to forgo filling prescriptions. Both lack of medications and not filling prescriptions can impact patient health and lead to greater health care costs for future treatment if patients' condition deteriorates.

A workforce study of pharmacists in Saudi Arabia found that most are foreign nationals, with less than 20 % being Saudi nationals (AlRuthia et al., 2018). Saudi patients may be less satisfied with or have difficulty understand foreign pharmacists. Increasing training of Saudi nationals to be pharmacist has therefore been recommended (AlRuthia et al., 2018). However, one study found that pharmacy students least favored employment in CPs while preferring employment in government hospital pharmacies (Almaghaslah et al., 2021). Increasing the number of Saudi pharmacists will also require making CPs more attractive as a workplace. Recommendations made by a review of 36 studies from Arab-speaking Middle Eastern countries (11 studies in Saudi Arabia) included providing diagnostic, screening and monitoring services; maintaining patient records in the pharmacy, providing advice on minor illness, and providing a private area for consultation (El Hajj et al., 2021). International efforts have focused on equipping community pharmacists to manage chronic diseases and provide public health programs in developed and developing countries like Canada, England, the United States, China, Ghana, and Pakistan (Alghamdi et al., 2023; Okoro and Nduaguba, 2021; Pantasri, 2022). Although our study did not examine the range of services provided by community pharmacists, the findings indicate a need for training, education, and collaboration between the public and private sectors to enhance the readiness of community pharmacies to expand services and achieve improved health outcomes for beneficiaries.

There were also significant differences in demographic characteristics and type of clinics visited among satisfied patients with CP/Wasfaty and PHC pharmacies. These differences were observed in terms of age, sex, nationality, and type of clinics visited. Specifically, significantly higher proportions of females, non-Saudis, and visitors of family medicine, Ob/Gyn, specialty, and preventive clinics expressed satisfaction

with the CP/Wasfaty pharmacies compared to males, Saudis, and visitors of chronic diseases and dental clinics.

Older patients, females, and non-Saudis were more likely to be satisfied with the CP services. Aligned with our study, the literature showed that patient satisfaction with health care services, in particular, pharmaceutical services was assessed in terms of the availability of medications, access to services, waiting time, and patient-provider communications (Almaghaslah et al., 2022; Senitan et al., 2018). The findings of this study tie well with previous studies wherein demographic factors are associated with patient satisfaction toward health care services (Batbaatar et al., 2017). The study found that age was positively associated with satisfaction with availability of medications. This finding is in line with Khudair & Raza (Khudair and Raza, 2013); who reported that older patients were more satisfied with the availability of medications (Khudair and Raza, 2013). It may be accounted for by the fact that senior patients are less demanding and may have experienced challenges in accessing medications prior to the health care transformation era. Furthermore, previous studies pointed out that race/ethnicity influences patient satisfaction with health care services (Batbaatar et al., 2017; Al Zaidan et al., 2022). This is consistent with what has been found in our study, in which we found that nationality is associated with patient satisfaction. Interestingly, this study found that non-Saudis were more satisfied with CP services than Saudis. This result may reflect the role of the Saudi government in implementing the cooperative health insurance system, which ensures access to health care services and treatment for non-Saudis in Saudi Arabia (Council of Health Insurance, 2023), or the fact that there are mostly non-Saudis running the CPs (AlRuthia et al., 2018).

Additionally, sex was found to be a significant predictor of satisfaction with availability of medications; females reporting higher satisfaction levels when compared to their male counterparts, which is consistent with previous studies (Alotaibi et al., 2021). Generally, higher satisfaction among females was associated with the physical environment, e.g., cleanliness and comfort and patient-provider communication style (Batbaatar et al., 2017). Compared to patients who visited Ob/Gyn clinics, patients in dental and preventive clinics had a higher satisfaction level. These findings agree with previous studies that found that the patients' satisfaction with the pharmaceutical services in PHCs was high (Alomi, 2016). This can be attributed to varying demand patterns, supply chain complexities, and resource allocation decisions within the health care system. Understanding these factors is crucial for policy makers and health care providers to address the challenges faced by Ob/Gyn clinics and ensure that medication availability is improved for the betterment of women's reproductive health in the country.

Regarding the satisfaction with the pharmacist's explanation of the prescription, patients in chronic diseases, dental and specialty clinics had higher odds of satisfaction while patients in Ob/Gyn clinics had lower odds of satisfaction. These findings agree with previous studies that found chronic diseases clinics have better pharmacy services than other clinic types (Khudair and Raza, 2013; Naqvi et al., 2019). It should be emphasized that the majority of the health care delivery system that has diverse specialties continue to have cutting-edge equipment, highly trained staff, and superior control systems (Rivers and Glover, 2008), which may contribute to the higher satisfaction rating of pharmacy services. Several factors contribute to this disparity; for example, Janssen and colleagues, reported that the satisfaction of female patients with services, in particular, in Ob/Gyn clinics, was determined by providers' sex (more satisfaction with female providers), providers' race/ethnicity, and patient-centered communication style (Janssen and Lagro-Janssen, 2012). This suggests that female satisfaction with pharmacy services i.e., explanation and providing more information about medication use in Saudi Arabia may be influenced by the pharmacists' sex and patient-provider communication style (Alghamdi et al., 2023; Bawazir, 2004). Further studies should examine factors affecting satisfaction with health care services among female patients, especially among those who visit Ob/Gyn clinics, to improve patient-reported outcomes in Saudi Arabia.

Furthermore, the low satisfaction due to long waiting times may reflect the high expectations of patients, the high demand for services, and the limited workforce available to meet this demand. Thus, the study finding suggests increasing pharmacists' supply and supporting the localization of pharmacy jobs in Saudi Arabia since workforce data indicated that 30,840 pharmacists, of whom > 90 % non-Saudis, work in private and CPs (World Health Organization, 2023; Alawwd, 2022).

5. Limitations

Our study has some limitations. First, the cross-sectional design does not allow for causal inferences to be made. This is because cross-sectional studies only measure the association between variables at a single point in time, while causal inferences require the ability to track changes in variables over time. It is recommended for future research to use better study designs, such as a longitudinal cohort study, that allow for an assessment of casual relationships (Caruana et al., 2015). Second, nonresponse bias and incomplete records are among the limitations of the survey research. In this study, only a few records were found to be incomplete, and they were excluded from the analysis. Third, the number of variables/predictors available for the analysis was limited in the dataset used. This is because only several demographic characteristics were collected by the Saudi MOH and were available to be included in the analysis. As a result, our study was unable to assess the influence of other individual characteristics, such as education level, on satisfaction with pharmaceutical services.

Despite these limitations, this study has made significant contributions to the disciplines of health and pharmaceutical services research in Saudi Arabia. To the best of our knowledge, this is the first study that used a large sample collected by the government through a well-known and commonly used patient-reported survey vendor (Health.Links/Press Ganey) survey to explore and compare patient satisfaction with pharmaceutical services provided in two systems: pharmacies within PHCs and CPs using Wasfaty in Saudi Arabia.

6. Conclusions

The present study provides valuable insights into patient satisfaction with pharmaceutical services in the context of PHCs and CPs accessed using Wasfaty. The significant differences observed in satisfaction levels based on demographic characteristics and type of clinics visited emphasize the importance of tailoring pharmaceutical services to meet the specific needs and expectations of different patient populations. Further research and implementation of targeted interventions may be warranted to enhance satisfaction levels and overall patient experience with pharmaceutical services. It is therefore recommended that additionally training be offered to CP pharmacists to ensure electronic prescribing is integrated into everyday CP practice as well as additional training between private and public pharmacies to improve overall collaboration between the two. Moreover, increasing the number of Saudi nationals with pharmaceutical training to serve in CPs may help improve satisfaction among CP patients.

CRediT authorship contribution statement

Ali M. Alzahrani: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Software, Supervision, Validation, Writing – original draft, Writing – review & editing. **Abdulrhman A. Alzhrani:** Conceptualization, Data curation, Formal analysis, Writing – original draft, Writing – review & editing. **Holly C. Felix:** Conceptualization, Validation, Writing – original draft, Writing – review & editing. **Khulud K. Alharbi:** Validation, Writing – original draft, Writing – review & editing. **Muhammad Waseem Shahzad:** Methodology, Validation, Writing – original draft, Writing – review & editing. **Turky J. Arbaein:** Validation, Writing – original draft, Writing – review & editing. **Sarah S. Monshi:** Conceptualization,

Validation, Writing – original draft, Writing – review & editing.

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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Ethical approval

The study protocol was reviewed and approved by the Central Institutional Review Board (IRB) at Saudi MOH (IRB Log No: 22-59 E; Dated 27/11/2022).

Data availability

The data used in this study, Medical Practice Survey Data, was obtained from the Patient Experience Center at Saudi Ministry of Health. The access researchers had was only for research purposes, and the data could be accessed upon request which should be sent to Saudi Ministry of Health.

Financial disclosure

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jsps.2024.102091>.

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