







Attitudes of community pharmacists towards extending their professional roles in Oman

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ABSTRACT

Background: Over the last few decades, the pharmacy profession has witnessed a substantial evolution accompanied by the developing role of community pharmacists (CPs). Evidence indicates that extending the role of CPs contributes to fostering public health outcomes. However, in many countries, their role is still underused. To extend the role of CPs in Oman, it is crucial to understand their perception and determine the influences.

Aim: This study determines the willingness of CPs in Oman to extend their role and assess their perception towards barriers.

Method: A cross-sectional study was conducted across Oman using an online self-administered survey targeting CPs working in the private sector.



Result: Generally, respondents welcomed broadening their professional role. However, among the top perceived barriers were shortage of staff, insufficient training, lack of interconnection between CPs and physicians, and regulation constraints. Different socio-demographic characteristics of respondents showed a noticeable impact on their responses.

Conclusion: CPs welcomed extending their role. However, several obstacles were raised that need to be tackled to enable CPs to advance their role.

KEYWORDS Community pharmacists (CPs); community pharmacy services (CPS); extended pharmacy services (EPS); Oman

Introduction

Over the last few decades, the pharmacy profession has witnessed a significant evolution accompanied by shifting the role of pharmacists from products towards more patient care. This advancement in the pharmacy sector has been driven by numerous challenges, among them; the growing demand for healthcare services (Eldooma et al., 2023) and the escalating

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burden of chronic diseases among the elderly accompanied by the overload of healthcare organisations. CPs are skilful health experts and have a unique potential that can directly affect public health (DiPietro Mager & Bright, 2023). They constitute the third largest healthcare profession following physicians and nurses (Mossialos et al., 2015). As they are easily accessed by the public (Lindsey et al., 2016), they are the first point to be contacted by them (Bell et al., 2016). Therefore, CPs have the potential to provide health services to the public aiming to promote their health (Department of Health, 2008). In the same context, the World Health Organisation WHO has acknowledged that healthcare promotion is a key role of CPs (Koudmani Diala et al., 2023). Berenbrok et al. stated that the interaction of patients is twice as much with pharmacists than with doctors (Berenbrok et al., 2020). A newly released Canadian report stated that expanded pharmacy services would directly save the cost for the government and prevent chronic disease and earlier deaths, the health system can save up to 25.7 billion dollars in the coming years if the pharmacists play a greater role (Tatelman Sara, 2017; Freeman et al., 2012). A British study indicated that 13% of GPs and 5% of emergency department hours were spent on minor ailments consulting that could be managed in a community pharmacy (Fielding et al., 2015). Moreover, abundant studies have shown the benefits of extending the role of CPs towards patients; optimising the quality of healthcare, optimising medication use (Smith et al., 2011) lessening the workload of GPs, and positively impact on healthcare expenditure (Dunlop & Shaw, 2002; Giberson et al., 2011), further it will enhance their job satisfaction (Bryant et al., 2009; Edmunds & Calnan, 2001; Inch et al., 2010; Paudyal et al., 2011). However, CPs are a relatively underutilised resource (Albassam et al., 2020), and their professional role has been shown by the literature to vary between different regions. For instance, in America, Australia, Canada UK and other European countries, the role of a pharmacist is well recognised as a drug expert. Whereas in developing countries including Arabian Gulf Countries, the role of a pharmacist is seen to be as a dispenser (Alsaeedi Wafa et al., 2020) and there is an inadequate utilisation of their knowledge and skills. Another study from the UAE stated that the role of CPs towards patient care is still ambiguous (Abduelkarem, 2014). A Canadian study indicated that pharmacists are professional caregivers and can provide high-quality care that improves patients' outcomes, yet these beneficiary services are not widely available to patients (Ross & Theresa, 2008). Another recent study called for urgent action to introduce an effective healthcare system, that allows CPs to utilise their knowledge and skill towards expanding their role (Jovičić-Bata et al., 2021). The World Health Organisation (WHO) and the International Pharmaceutical Federation (FIP) are aware that there is a necessity for global concerted action to develop the pharmacy profession (WHO, 2011). To make the required development for the forecast future, it

is crucial to comprehend the perception of CPs towards extending their role in the community health arena, highlighting the possible areas of quality of care that can be improved and knowing the missing gaps that should be identified and filled (Chan & Wuliji, 2006).

In the Middle East pharmacy practice is a mirror of the status of the region itself. In quiet and stable countries, the pharmacy has witnessed a growth like other parts of the world (Kheir et al., 2008). The healthcare systems in Gulf countries are in continuous development. However, the pharmacy profession is still in its infancy and the role of CPs is still seen as a drug dispenser (Alsaedi Wafa et al., 2020). In Oman, the private pharmacy sector has witnessed rapid growth. According to the MoH statistics, the number of community pharmacies has risen from 309 in 2002 to 2050 in 2022, and the number is still escalating. Moreover, most community pharmacies are privately owned, and chain pharmacies are the most dominant type of pharmacies in Oman and the other Gulf regions (Al-Ghananeem et al., 2018). According to the National Statistic Centre and Information in Oman, more than 70% of the total pharmacists in Oman are practising in the private sector compared to less than 30% in the government sector (National Center for Statistics and Information, 2013). Despite the supporting initiatives, the provision of pharmaceutical care in Oman is still a new area for practice – particularly in community pharmacies – and the main focus of CPs is medication dispensing (Al Abdullatif, 2014). In this concern, Obaid et al. stated that healthcare services can only be promoted by applying the concept of evidence-based practice which necessitates robust research to assist in enriching the practice. Furthermore, the study raised the issue of paucity of research in pharmaceutical care in the Arab region, particularly in Oman (Obaid et al., 2021). In the same context, one of the utmost aims of the Omani Health Vision 2050 is to prioritise health research towards improving the current healthcare services and to develop the healthcare system (Al Mawali et al., 2017). This study is a pioneer study as it is the first of its type to be conducted in Oman.

Aim of study

The aim of the study is to assess the willingness of CPs in Oman towards extend their roles and address influences.

Methodology

A cross-sectional survey was carried out from August 2022 to March 2023. The study involved pharmacists working in community pharmacies in Oman. The study was approved by the Ministry of Health/ Directorate General of Pharmaceutical Affairs and Drug Control in Oman (MH/DGPA&DC/DPLD/486). A self-administered questionnaire was developed after extensive reviewing of

similar studies and pre-validated by senior pharmacists to ensure the clarity and appropriateness of its content. The survey was developed in English and involved a set of questions assessing the perception of community pharmacists towards various issues related to their preparedness to extend their professional role and to identify potential hindrances. In addition, there were questions related to demographic characteristics, for instance, age, gender, qualifications, duration of practising, location of pharmacy and other issues. The online survey (Google form) was disseminated through email to all private pharmacies across Oman with the assistance of the health authority. To enhance the response rate, a reminder was sent to participants after one week after receiving the email. The objective of the study was explained to all respondents, and they consented before participation. According to the Rao soft calculator, the required sample size is 324 to obtain a confidence level of 95%. The number of participants recruited in this study is 335 CPs. Collected data were analysed using Statistic Package for the Social Science (SPSS) software. Data are presented in percentages (%). Descriptive statistics including mean and percent were used for statistical analyses. The results were presented as numbers with percentages or graphic representations for categorical variables. Incomplete questionnaires were excluded from the study. The reliability test showed that survey items were well-correlated, and Cronbach's alpha coefficient is 0.919. All the required official approvals were obtained before commencing the survey.

Results

I. Demographic data

The total number of those who responded was 335, about 87% of them were non-Omani. The ratio of genders was close; Male: Female (52%:48%). The age of about 55% of respondents fell into the age group 31–40 years followed by 30% for those aged in the range between 21 and 30 years. Most respondents (66%) are working in the governorate of Muscat, mainly in chain pharmacies (52%), and to a lesser extent in hospital-attached pharmacies (28%) and individual pharmacies (21%). The practising duration of 36% of the sample was 5–10 years followed by 34% for those practising <5 years and 17% for those practising 11–15 years. The majority of respondents (54%) are B. Pharm holders and working in the absence of assistant pharmacist staff (53%). Whereas 55% of respondents are working in the presence of ≤ 2 pharmacists. The rest (45%) are working in the presence of 3 or more pharmacists. Further details are clarified in [Table 1](#).

II. Willingness of participants towards extending their professional role

Generally, participants welcomed extending their role. The sociodemographic characteristics of respondents showed a noticeable impact on their responses.

Table 1. Demographics of participants.

Demographic characteristics	Variable	Frequency	Percentage
Gender	Male	175	52.2%
	Female	160	47.8%
Age	21–30	100	29.9%
	31–40	183	54.6%
	>40	52	15.5%
Years practising in pharmacy	< 5	113	33.7%
	5 –10	121	36.1%
	> 10	101	30.2%
Qualification	B. Pharm	181	54%
	B.Sc.	71	21.2%
	M. Pharm	36	10.7%
	Pharm. D, M.Sc., Ph.D.	47	14.1%
	Job designation	Employee	301
Type of pharmacy	Manager	29	8.7%
	Owner	5	1.5%
	Individual	70	20.9%
Location of pharmacy (government)	Chain	173	51.6%
	Attached to hospital	92	27.5%
	Muscat governorate	220	65.7%
No. of pharmacists working in your pharmacy	Other governorates	115	34.3%
	1	77	23%
No. of assistant pharmacists working in your pharmacy	2	108	32.2%
	≥3	150	44.8%
	0	177	52.84%
	1	90	26.87%
	≥2	68	20.3%

For instance, males showed a higher willingness ($52.5 \pm 3.5\%$) towards broadening their role compared to females ($47.5 \pm 3.5\%$). Similarly, B. Pharm holders exhibited the higher interest ($56 \pm 6\%$) to extend their role followed by B.Sc. holders ($12.5 \pm 2.5\%$) and the least were M. Pharm holders ($14.5 \pm 4.5\%$). Those working in the Muscat governorate showed the highest willingness ($66 \pm 5\%$) compared to those working in other governorates ($34 \pm 5\%$). Respondents whose age ranged between (31–40) years showed the top willingness ($54 \pm 2\%$) and the least ($3 \pm 1\%$) was for those whose age was above 50 years. In the presence of (≤ 2) accompanied (supporting) pharmacists, respondents showed the top willingness $54.5 \pm 1.5\%$ compared to $45 \pm 5\%$ in the presence of (≥ 3) pharmacists. Whereas the presence of assistant pharmacists showed a different influence on their willingness. i.e. in the presence of one, two and ≥ 3 assistant pharmacists, the willingness was $26.5 \pm 2.5\%$, $10\text{--}13\%$ and $8\text{--}11\%$ respectively. Respondents practising for ≤ 10 years exhibited the top preparedness to extend their role ($73 \pm 4\%$) compared to ($30 \pm 2\%$) those with longer practising duration (> 10 years). CPs working in the chain pharmacies, showed the top willingness ($55.5 \pm 3.5\%$) followed by ($25.5 \pm 3.5\%$) and ($19.5 \pm 1.5\%$) for those practising in hospital-attached pharmacies and individual pharmacies, respectively. In the absence of patients' medical records respondents showed the top willingness ($63.5 \pm 3.5\%$) compared to ($36.5 \pm 3.5\%$) in their presence. Lastly, the

willingness of CPs is inversely proportionate with the smaller number of customers. The top willingness (48–53%) was observed with fewer customers (<100/day) compared to (26 ± 6%) and (22 ± 5%) in the presence of (100–300) and (300<) customers/day respectively. In parallel CPs who filled the least prescriptions (<50 prescriptions/day) showed the top willingness (50.5 ± 2.5%), compared to (26 ± 6%) and (22 ± 5%) for those filling (100–300) and (>300) prescriptions/day. The association between demographic characteristics and the response of respondents is shown in [Table 2](#).

III. Perception of participants towards barriers to extending their role

Respondents expressed their perception towards various barriers ($N = 29$) that might influence broadening their role, as shown in [Table 3](#). Males indicated the top agreement towards (16/29) barriers related to shortage of time and staff, lack of training, inability to access patient medical records, regulation restrictions, customers not regularly visiting the same pharmacy, not listening to CPs and not paying for potential extended pharmacy services. In addition, some GPs prescribe brand names. Whereas females indicated the highest agreement (compared to males) towards different barriers (12/29), such as lack of confidence/skills, fewer incentives, pressure of sell, communication barriers with patients, customers not trusting them not listening to their advice, pharmacy work oriented more towards business, and underestimation of pharmacists by other healthcare providers. Four (4) barriers were equally perceived by both genders, i.e. lack of private area to deliver extended pharmacy services (EPS), labelling of medicines by handwriting, difficulty in understanding poor handwriting of prescriptions of some physicians, and communication barrier between different genders (when CP is female, and customer is male). Significant associations were observed between different genders and their perception towards five (5) barriers to extending their role, i.e. language barrier (P value = 0.024), less confidence (P value = 0.015), public do not trust CPs for EPS (P value = 0.036), lack incentives/ remunerations (P value = 0.02) and underestimation of CPs role by other healthcare providers ($P = 0.054$). In all the mentioned significances, females showed higher agreement towards barriers compared to males.

Discussion

This is the first study of its type to be conducted in Oman. The results are discussed below.

I. Willingness of participants towards extending their professional role.

Respondents aged between 21 and 40 years showed the top willingness towards extending their role (compared to those aged above 40 years). On

Table 3. Association between the perception of respondents towards barriers to extending their role and sociodemographic characteristics.

No.	Barriers to extending the role of community pharmacists	P-value	
		Gender	Monthly income
1	Some GPs write the brand name of the medicine on prescriptions. and not giving the chance for CPs to change to the other substitution	0.237	0.703
2	CPs don't have the time to deliver the proper counselling	0.101	0.673
3	CPs need more training to offer effective and proper counselling	0.981	0.184
4	CPs lack the appropriate skills to extend their professional role	0.247	0.093
5	Some community pharmacists are uncertain about their knowledge	0.188	0.054
6	Some CPs lack the confidence to extend their professional role	0.015	0.079
7	Shortage of community pharmacists' staff	0.895	0.172
8	Shortage of assistants' pharmacists' staff	0.291	0.965
9	Language barriers between CPs and patients (i.e. the patients who don't understand the English language).	0.024	0.050
10	Extended pharmacy services are not part of community pharmacists' job	0.831	0.155
11	Some community pharmacists are unwilling to take the risk to extend their roles	0.536	0.694
12	GPs might not welcome the expansion of community pharmacists' roles	0.754	0.193
13	Laws and regulations restrict the role extension of community pharmacists	0.759	0.082
14	Lack of private area to offer counselling to maintain patients' privacy	0.4	0.786
15	Medication shortage is one of the barriers to providing extended pharmacy services	0.5	0.233
16	Current curriculum educations (i.e. universities) don't provide adequate training before graduation.	0.5	0.241
17	Underestimation of community pharmacist's role by other healthcare providers	0.054	0.711
18	Labelling of medicines by handwriting is an obstacle, and the printed instructions label should be introduced to all community pharmacies	0.4	0.117
19	The difficulties in understanding handwriting prescriptions prescribed by some doctors.	0.4	0.345
20	There is no appropriate waiting area for customers in the community pharmacy, especially for pregnant and elderly patients.	0.5	0.439
21	Customers are usually in a rush and can't wait to listen to pharmacists counselling	0.3	0.353
22	Customers won't pay for pharmacy services if it is extended	0.8	0.075
23	Customers are not willing to listen to community pharmacists' advice	0.542	0.112
24	Patients do not regularly visit the same community pharmacy, and it's not possible for pharmacists to follow up on their health.	0.7	0.150
25	The public do not trust community pharmacists if they extend their professional role	0.036	0.150
26	The pharmacists cannot access patient medical records as there is no interconnection between doctors and pharmacists.	0.951	0.309
27	The owner of the pharmacy is not interested in extending the pharmacy services, as this might decrease the number of customers and affect business.	0.8	0.445
28	Gender barrier. Gender differences influence counselling and role extension. talking or discussing between different genders might be embarrassing for females.	0.6	0.365
29	Lack of incentives/remuneration for community pharmacists	0.020	0.274

Note: P-value obtained from the Pearson's Chi-squared test or Fisher exact test; p-value of (0.05 \geq) is considered statistically significant and is signified in bold.

the other hand, older respondents whose age is above 40 years showed more disagreement concerning the presence of other pharmacists' staff to enable them to extend their role (compared to younger ones). This result might be attributed to the longer experience of older CPs – which makes them more confident to manage their work alone without the assistance of others. However, younger CPs ($40 \geq$ years) showed the top willingness towards extending their role – compared to older ones – and that might be attributed to their enthusiasm to develop their role compared to older respondents who tend to stick more to their classical dispensing role. Several significant associations were observed between the readiness of respondents to extend their role and various demographic characteristics. For instance, males, working in a chain pharmacy setting, in Muscat governorate, whose ages between (30 and 40) years, practising (3–10) years, in the presence of (2–3) CPs staff, and the absence of assistant pharmacists, filling less than 50 prescription/day, seeing 50–100 customers/day, indicated the higher willingness to extend their role compared to others. Surprisingly, respondents showed the lowest willingness to extend their role in the presence of patients' medical records. This response might be attributed to the possibility of CPs working in hospital pharmacy settings – who are the only ones who can access patients' records as their system is interconnected with prescribers – to access patients' medical records. However, they are working under a high workload due to the huge number of customers/day. Also, prescriptions from hospitals tend to contain several specialised medications which need more time to be prepared and more counselling for patients. Adding to that, the number of pharmacy staff is limited, and pharmacies are opening 24 h which exert extra load on staff rendering them reluctant to extend their role.

In this regard, Brühwiler et al stated that CPs have limited access to patient records which impedes delivering appropriate pharmaceutical care (Brühwiler et al., 2017). Moreover, Keller et al. concluded that sharing patient records between the two professions would increase the chance of collaboration between them, develop patient care and improve workflow efficiency (2015). The benefit of interconnection would not be achieved without minimising the impact of staff shortage. A study done in Dubai recognised that staff shortage is an obstacle to delivering and optimising pharmaceutical services (Rayes et al., 2015). Moreover, a recent Qatari study recommended future interventions to boost CPs' well-being by decreasing their stress and preventing burnout (Samir AlKudsi et al., 2022). A couple of studies recommended promoting the concept of resilience among CPs, and even to other healthcare providers, which would reduce work-related burnout and increase pharmacists' job satisfaction and ultimately their productivity (Cline & Mehta, 2022; Weiss et al., 2024).

On the other hand, CPs working in chain – pharmacies showed the top readiness towards extending their role. Such a response might be attributed

to the presence of more staff and customers visiting such settings usually requiring medications for minor ailments which offer CPs the chance to utilise their knowledge and skills. However, CPs working in individual (solo) pharmacies showed the least willingness to broaden their role. The reason for that might be attributed to the negative preoccupied impression of customers – who visit such types of pharmacies – that they will not get the items they are looking for. Adding to that, staff shortage in such types of pharmacies (is more likely) as such types of pharmacies are usually operated by the least number of staff due to economic reasons. The reason beyond the variation in respondents' willingness to extend their role might be attributed to the higher chance of CPs working in chain – pharmacy to practice more clinical activities and utilise their knowledge (i.e. patients' care activities) compared to those working in individual pharmacies. Moreover, the availability of a wider range of medications in chain pharmacies. On the contrary, individual pharmacies offer more OTC medicines, which means from the perspective of patients that there is less need for professional pharmacists, which reduces the chance for CPs to practice professional counselling and consequently less willingness of respondents (Suleiman, 2013). A similar study indicated that CPs working in independent pharmacies face more challenges – compared to those working in chain pharmacies – towards delivering advanced pharmaceutical care (Xi et al., 2019).

II. Perception of participants towards potential barriers to extending their role.

Males and females showed comparable perceptions towards numerous barriers. Males showed the highest agreement towards barriers related to the nature of the profession like shortage of time/staff, lack of training/counselling area, inability to access patient medical record, some GPs prescribe brand name, regulation restrictions, customers not consistently visiting the same pharmacy, not listening to CPs counselling, and not being prepared to pay for potential EPS. Females indicated the highest concern for barriers linked to 'gender-differences' which might affect their interaction with customers with a consequent negative impact on customers' perception towards their role and value. Moreover, several significances were observed between gender differences of respondents and their perception towards barriers. Females indicated the top agreement – compared to males – towards lack of confidence, lack of incentives, communication barriers, customers not listening to their advice, and underestimation of CPs' role by other healthcare providers. The mentioned barriers are also highlighted by other similar studies (Reyes et al., 2020; Jahangard-Rafsanjani et al., 2017). Significant associations were observed between income and response towards communication barriers (i.e. language barrier). Those earning less salary showed the top agreement concerning communication barriers

compared to those earning more. Such a relationship can be attributed to the greater satisfaction of the higher paid respondents and hence less agreeing towards such barrier compared to the lower paid ones. A recent publication indicated that inadequacy of wages is the most common and the major factor influencing the job satisfaction of pharmacists (Al-Jumaili et al., 2023). Other barriers are regulation constraints, lack of a patient record system, absence of designated areas for counselling and customer waiting areas, insufficient collaboration between CPs and GPs, shortage of staff/ some medications, work overload, and time constraints. Similar barriers were indicated in similar studies from other Gulf countries like Qatar, UAE, KSA, Kuwait and other Arab countries (Abu Assab et al., 2022; Al-Jumaili et al., 2023; Makhlouf et al., 2023; Rasheed et al., 2023). The absence of a designated counselling area was highlighted as a barrier to extending the role of CPs. Saramunee et al. concluded that the lack of privacy makes patients and CPs reluctant to engage in conversation. Consequently, CPs would not utilise their knowledge to deliver the required counselling service (Saramunee et al., 2014). Some barriers showed a significant association with different genders; for instance, females showed more agreement towards barriers related to; less confident feelings, communication/ language barriers, and less respect by the public and increasing incentives. The reasons behind that might be related to the embarrassment/discomfort that they might face when dispensing medication for male customers. Such practice might be linked to their perception concerning underestimation by the public. Al-Jumaili et al concluded that the underappreciation of pharmacists' role by society is the top factor associated with pharmacists' job satisfaction in Arab countries (2023). Good communication is an essential element in fostering trust between CPs and patients and would favourably impact the willingness of patients towards treatment, share their personal information and enhancing medication compliance (Yoon et al., 2021). A study done in the UK indicated that the trust level of patients depends on the type of service delivered by CPs (Humphrys & O'Brien, 1986). If customers perceived that patient-centred services are a part of CPs' responsibilities, then the trust between them would be synergised (Gregory & Austin, 2021). In this regard, Altman et al. highlighted the importance of re-professionalising the role of CPs in a way to make the public more aware of their integral contribution to healthcare services (Altman et al., 2019). Concerning incentives, the reason might be attributed to the preference of females to occupy lower positions which are associated with lower income – compared to males – which is described as a 'gender pay gap' (Gidman et al., 2012). In this regard, Melanie et al. highlighted the importance of improving factors influencing the work pattern of female CPs (Dodd et al., 2022). Meanwhile, other similar studies respondents agreed that university curriculum influences the perception of graduates to extend their role (Cline & Mehta, 2022; Weiss et al., 2024). Respondents urged to update the pharmacy curriculum and directing those studies towards more patient care. Universities have

a remarkable role in preparing future pharmacists who would be mentally prepared to expand their role beyond dispensing – towards more patients care – by reshaping their curriculum. Studies from the UAE and Saudi indicated the importance of tailoring the curriculum and the study program towards more patient care (Abduelkarem, 2014; Palaian et al., 2022; Ali et al., 2024). Developing and redesigning pharmacy curricula should not merely be based on trends but also on how to adapt during difficult times (i.e. during the COVID-19 pandemic) (Tokumar et al., 2022). Finally, enhancing the education of physicians concerning the advantages of prescribing generics and avoiding handwriting prescriptions is crucial. In this concern, a Saudi study recommended implementing e-prescriptions and educating all health stakeholders regarding the importance of prescribing generics (Alqahtani, 2021).

Conclusion

The findings in this study were consistent with results found in similar studies from other Gulf countries. This study would provide valuable guiding information to the healthcare authority to develop the community pharmacy sector in Oman. CPs have the potential to enhance health services. Expanding their role would maximise the utilisation of their knowledge and enhance healthcare service assuming that barriers are overcome. Hence, the obstacles highlighted in this study need to be tackled to enable CPs to broaden the orbit of their practice. Improvement can be achieved through various strategies, starting from revising and developing the pharmacy curriculum and directing it towards more patient care. Also, health authorities need to work further towards broadening the role of CPs by enhancing their training to improve their skills and raise public awareness towards the unique role of CPs. Also, it is necessary to raise the awareness of GPs regarding the capabilities of CPs and enhance collaboration between them. Enhancing the continuity of patient information by sharing patient records between the two professions would contribute to consolidating the tie between them, improving workflow and enhancing patient care. All the mentioned strategies would – undoubtedly – maximise the professional utilisation of CPs and ultimately optimise healthcare service. Future studies should focus on investigating the impact of sociodemographic characteristics of CPs towards their willingness to extend their role. Also, it is paramount to explore reasons behind the negative perception of CPs towards the presence of assistant pharmacists to support them in extending their role.

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