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Research Article

A GLOBAL PICTURE OF EXTENDED PHARMACY SERVICES, PERCEPTIONS, AND BARRIERS TOWARD ITS PERFORMANCE: A SYSTEMATIC REVIEW

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ABSTRACT

Objective: The aims of this review were to observe extended services performed in the community pharmacy settings, perceptions among community pharmacists (CPs), general practitioners (GPs), and customers of these extended services and barriers toward its performance.

Methods: A literature search was conducted, using Google Scholar as database, searching for full access texts. The inclusive texts fulfilled the inclusion criteria.

Results: A total of 22 texts had been systematically reviewed, noting a wide range of extended services performed in community pharmacy settings. Medication counseling or review and promoting health educations were noted as the most extended services performed. It is also noted that CPs indicated that these extended services could establish working relationship with other health-care professionals. However, it is noted that among the barriers toward extended services were lack of knowledge, skills, and time to perform.

Conclusion: As a conclusion, the community pharmacy practice is evolving, transforming into more patient-oriented even though there are some negative perceptions among the customers and GPs toward these extended services. Barriers to the performance of these extended services should be intervened.

Keywords: Extended roles, Community pharmacist, Perception, Barriers, Review.

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INTRODUCTION

Industrial revolutions have introduced synthetic organic chemistry knowledge as the source of modern medicine which its ingredients are compounded in huge bulks, sweeping away the age-old role of pharmacists to compound medicine for individual patients [1]. This scenario has influenced the pharmacy practice to evolve into dispensing readymade products [2]. Nevertheless, the role to dispense the products in some developed and developing countries is shared with the general practitioners (GPs) [3,4] and pharmacy technicians (PTs) [5]. As a result, the role of community pharmacists (CPs) in the health-care system like Malaysia is tremendously decreased until CPs has to sustain their existence through business-oriented service. Nowadays, CPs in Malaysia are also selling non-medical oriented products such as cosmetics, toiletries, and perfumes or else to fulfill the need of the local people. Such a practice is actually deteriorating the image as a professional health-care practitioner. In contrast, the CPs in developed countries like the United Kingdom and Australia are given the main right to distribute the products. In addition, they are collaborating with GPs to develop and monitor drug therapy regimen [6-8]. The scenario in the United Kingdom and Australia reflects some extended services can be performed in the community pharmacy settings. What are other extended services performing in the community pharmacy settings? What are the perceptions among CPs, GPs, and customers of these extended services? What are the barriers toward its performance? It is a rationale to explore other extended services performed in the community pharmacy settings because it can highlight some ideas for CPs in Malaysia to improve their current practice. Therefore, the aims of this review are to identify previous studies which addressing actual or potential extended services performed in the community pharmacy settings globally, perceptions among CPs, GPs, and customers of these extended roles as well as barriers to its performance.

METHODS

A systematic search of international literature reviews and studies was carried out using Google Scholar as an electronic database, searching for abstracts in English from January 2005 till January 2017. The search terms used were: Extended role; expanded pharmacy services; pharmacist care services; enhanced pharmacy services; private pharmacies; future services; public health; health-care systems; review; pharmacy; community pharmacy; CP; patient counseling; continuing pharmacy education (CPE); disease management; intervention; roles; health care. The abstracts were evaluated by the researcher, searching for relevant materials that fitted with the inclusion criteria as depicted in Table 1. The abstracts' concordance with the inclusion criteria was assessed for full texts. Then, another two researchers evaluated in detail the contents of each text, searching for materials that concordance with the criteria as depicted in Table 1. These inclusive texts were reflected in this review.

RESULTS

Literature search

A total of 4610 titles and abstracts were assessed against the inclusion criteria which depicted in Table 1, led to 111 titles and abstracts. The researcher assessed these shortlisted titles and abstracts for full access texts which led to 58 texts. Then, two researchers evaluated these texts to identify inclusion criteria which led to 22 texts out of 58 texts and these texts were reflected in this review. The flow of the searching process was depicted in Fig. 1.

Description of the included texts

The characteristic of the inclusive texts was depicted in Table 2. These texts were reflecting studies and article reviews conducted all around the world: Three in Europe (United Kingdom, Netherlands, Belgium),

Table 1: Criteria for inclusion of studies in the review

Population	Community pharmacists, customers, and GPs
Phenomenon of interest	Extended services performed in community pharmacy settings outside Malaysia, perceptions among the community pharmacists, customers, and GPs of these extended services and barriers toward its performance
Primary outcome measures	The outcome measures but not restricted to it were To describe extended services performed in community pharmacy settings outside Malaysia To identify perceptions or attitudes among community pharmacists, customers, and GPs of these extended services To identify barriers toward the performance of these extended services
Types of studies	Quantitative and qualitative studies as well as article reviews

GPs: General practitioners

two in Africa (South Africa, Sudan), fourteen in Asia (Hong Kong, Japan, United Arab Emirates, Nepal, China, Pakistan, Jordan, Russia, Singapore), two in Australia, and one in Canada. The studies and article reviews were intervention studies (n=2), survey studies (n=5), survey with an interview session (n=1), focus group discussion (n=1), semi-structured interviews (n=3), and situation analysis based on other research papers and paper works (n=10).

The inclusive texts as depicted in Table 2 were describing about the impact of extended services toward the pharmacy practice (n=4) [6,7,20,22], perception among CPs and customers of extended services and barriers toward its performance (n=4) [8,12,15,25], perception among CPs and other health-care providers of extended services (n=3) [19,21,23], GPs' perception of extended services (n=1) [16], the current pharmacy practice (n=2) [9,10], the role of pharmacists in community pharmacy settings (n=4) [13,14,17,18], and an advanced extended services (n=4) [3,5,11,24].

In Singapore, the extended service performed by CPs was lagging from developed countries like the United Kingdom, Canada, and German [3]. CPs' knowledge and skills were underutilized due to lack of time, funding as well as a relationship with GPs. The GPs' dispensing role was still becoming the main issue to be intervened as it inhibited CPs from performing the philosophy of pharmaceutical care.

In Russia, CPs were in dilemma since their role to dispense medications was shared with other PTs [5]. As a result, the community pharmacy setting was not reflected as an ideal setting to perform extended services. Different clinical knowledge and skills between CPs and PTs might have potential to influence the performance of these extended services.

In the United Kingdom, under the enactment of Section 63 of the Health and Social Care Act 2001, the pharmacists were given the right to prescribe some exclusive medications and collaborate with doctors to develop a patient-specific clinical management plan [6]. However, the pharmacists have to attend an accredited supplementary prescribing course which was supervised by the Royal Pharmaceutical Society. Those who managed to complete the course would be awarded a practice certificate. Afterward, the pharmacists could perform their knowledge and skills in community pharmacy settings.

In Netherlands, CPs had performed medication review and cognitive behavior therapy services in the community pharmacy settings [7]. Both services were able to reduce numbers of drug-related problems (DRP) among discharge patients. As a result, GPs would like to collaborate with CPs to develop a drug therapy plan for their patients.

In Australia, CPs had performed a wide range of extended services in the community pharmacy settings [8,11]. Currently, CPs have been encouraged to be a prescribing pharmacist and serve the local population with a higher standard of practice.

In Jordan, CPs were focusing more on business-oriented than patient-oriented services [9]. Furthermore, it was noted that the local law

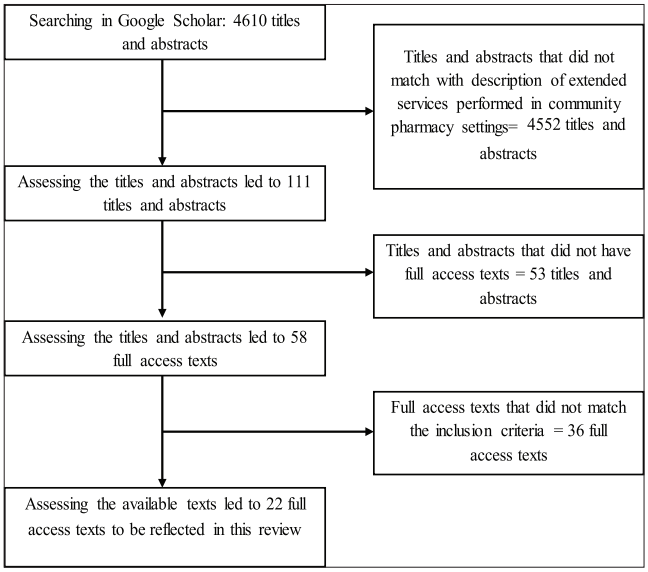

Fig. 1: Flow diagram of searching and inclusion criteria

was not strictly enforced allowing the people to have an access to all medications available in the community pharmacy settings including prescription drugs, except for narcotics and major tranquilizer. Therefore, the local universities had reviewed and improved their undergraduate program so that CPs could perform more patient-oriented based services.

In China, the profession of CPs was promoted to be a primary health-care provider [10]. As a result, the pharmaceutical care concept had been introduced for those CPs to perform this higher standard of practice in the community pharmacy settings. It was to ensure that its population could assess into a quality health-care services.

CPs in Canada had also performed a wide range of extended services in community pharmacy settings as depicted in Table 2 [12]. However, some barriers were noted as factors that inhibit the performance of these extended roles.

In South Africa, CPs were not allowed to dispense some most common medication from Schedule 3 of the South Africa Medicines Act 101 of 1965 [13]. As a result, the South African Pharmacy Council had introduced a Diploma in Pharmacy for Authorised Pharmacist Prescriber to teach the pharmacists to diagnose and treat their patients using the medications listed in the primarily health-care Essential Medicines List. The main purpose of this extended service was to improve the current pharmacy practice.

In the United Arab Emirates, CPs were not given the right image as a professional health-care practitioner. Therefore, the Health Authority Abu Dhabi was encouraging CPs to enhance their knowledge and skills

Table 2: Literature review

Authors/location	Study objective/outcome measure	Method of data collection	Principal findings	Conclusion
Al-Wazaify and Albsoul-Younes Location: Jordan	To describe the current pharmacy practice in Jordan	Situation analysis through paperwork and research papers	CPs were the most accessible primarily health-care facilities. However, the consumers rarely considered it as a health-care center. Customers could access to most medications without prescription. Patient care service was lesser. Laws were not strictly enforced in community pharmacies	CPs should focus on diagnosing DRP among their customers. The pharmacy program has to focus more on clinical knowledge for undergraduate students
Warchal *et al.* Location: United Kingdom (UK)	To view whether those who successfully complete the supplementary prescribing course can empower their practice	Postal questionnaire and telephone interview were conducted, involving 38 supplementary prescribers (pharmacist) in UK	Participants indicated their confident to start new roles and involved in a wide range of clinical practices. Main barriers were lack of time and access to patient medical profile	Supplementary prescribers can empower the pharmacy practice
Yamamura *et al*. Location: Japan	To describe pharmaceutical care and community pharmacy practice in Japan	Situation analysis through paperwork and research papers	Health-care services at community pharmacy settings were undergo reformation to meet increasing aging population. There was opportunity for CPs to provide pharmaceutical care services	Currently, the pharmacists are not fully capable to provide pharmaceutical care services
Berbatis *et al*. Location: Australia	To report the frequency of 27 EPS performed by CPs as well as to investigate barriers and facilitators to its performance	Questionnaires were mailed to owners or managers of a stratified community pharmacies	88% of respondents (n=1131) offered≥1EPS. ≥40% offered EPS for asthma, diabetes, methadone, herbal medicines, hypertension, and wound care. Predictors for providing≥1 EPS were pharmacies with higher turnover and younger owners. Predictor for diabetes care was higher turnover. Predictor for hypertension care was enclosed counseling area. Predictor for diabetes and hyperlipidemia services was owner and managers committed for continuous education. Significant barrier was lack of confidence to provide diabetes care and did not think it was their duties to provide diabetes, asthma, hypertension, and weight management care	EPS in Australia demonstrates a future extension role for CPs
Scheerder *et al.* Location: Belgium	To view CPs attitudes, current practices, and barriers toward their role in depression care	A survey was conducted in Belgium, involving CPs who provided care to patients with depression compared with patients who had other physical conditions, using a constructed questionnaire which had to be rated using a Likert scale	69 CPs responded to the study. Majority of respondents were positive about providing care to patients with depression. However, their attitude was not reflected with their current practice and had difficulty to fulfill this role compared with patients with other conditions. Among the barriers were lack of mental health training and collaboration with other GPs	CPs can take the role to provide care to patients with depression. Nevertheless, the barriers must be intervened
Saira Azhar *et al*. Location: Pakistan	To view the role of pharmacists in developing countries, especially in Pakistan	A literature review was performed to evaluate the pharmacy practice in other countries and Pakistan. In addition, it also identified about population socioeconomic and health status	Pharmacist's role was varied from country to country. In developing countries, the pharmacists were struggling for role's recognition as they were not fully performing their knowledge and skills	Lack of government's interest to improve the pharmacy practice is the main barrier to enhance pharmacy profession
Poudel *et al*. Location: Nepal	To view CPs perceptions of patient counseling and continuing pharmacy education programs	A prospective study was conducted in six major cities in Nepal, involving randomly selected 10 community pharmacies from each city whom CPs were interviewed with formulated questionnaire	Most of the respondents (31% [n=34]) indicated that patient counseling was part of their own duty. However, majority of the respondents indicated some problems during patient counseling. All respondents (100% [n=60]) agreed for continuing pharmacy program	CPs are positive about patient counseling. Nevertheless, they need to enhance their knowledge and skills

(*Contd...*)

Table 2: (*Continued*)

Authors/location	Study objective/outcome measure	Method of data collection	Principal findings	Conclusion
Ahmad *et al.* Location: Netherlands	To examine CPs involvement in medication review and cognitive behavior therapy of discharged patients to reduce the numbers of DRPs	24 CPs were randomized into control and intervention groups and they had to interact with patients aged over 60 years, discharged from general and academic hospitals, consuming five or more prescription drugs for chronic diseases. The control CPs performed their roles according to Dutch Pharmacy standard whereas the intervention CPs performed their roles using cognitive behavior treatment to the theory of planned behavior. The patients had to participate in series of follow-up schedules	Combining both medication review and cognitive behavior treatment could reduce DRPs, resulting in more compliance with drug consumption among the patients	CPs are able to perform extended services to patients discharged from hospitals
George *et al.* Location: Singapore	To review the roles and responsibilities assigned to CPs on chronic disease management, in Singapore and internationally	A systematic search of peer-reviewed literature using Medline	Most CPs in Singapore were more focusing on traditional dispensing role. Barriers to the extended role were lack of funding, poor relationship with other physicians, insufficient integration into health-care system, lack of access to patient information and time constraints	There is potential for the CPs to manage chronic disease. Nevertheless, the barriers need to be intervened
Hoti *et al.* Location: Australia	To identify studies related to expanded prescribing role for pharmacists	Situation analysis through paperwork and research papers	Expanded pharmacist prescribing in Australia was lagging behind UK, USA, Canada, and New Zealand. Available literature indicated strong support from the pharmacy profession and patients. However patient safety, lack of training and conflict of interest were the main barriers to its performance	Pharmacists and clients were strongly positive about this expanded pharmacist prescriber. However, it requires for the policy makers to approve it
Wong *et al.* Location: Hong Kong	To view physicians', pharmacists', TCM practitioners' and dispensers' perceptions of patient self-management with chronic disease and potential of developing pharmacist-led patient self-management in Hong Kong	Participants were invited from the University and professional networks into homogenous focus group discussions. The discussion was audio-taped, transcribed, and analyzed accordingly	Majority of the participants (n=51) indicated that patients with stable chronic diseases should engage in patient self-management such as medication compliance, monitoring of disease parameters and complications, lifestyle modifications, and identify situation which needed for urgent medical attention. The pharmacists were positive about pharmacist-led patient self-management. However, the other three participants did not agree about it. The reasons were insufficient training in disease management, lack of patients' trust as well as abnormal practice for pharmacist	The roles of pharmacists shall not only focus on drug but also pharmacists should perform more services in the primarily health-care system. The government should give support to these extended roles for patients' benefits
You *et al.* Location: Hong Kong	To view publics' knowledge, attitudes, and behaviors regarding self-medication, self-care, and the role of CPs in self-care	A cross-sectional phone survey was conducted, involving people aged 18 years or older to complete a 37-item questionnaire which developed based on Thematic Household surveys in Hong Kong, findings from health professionals focus group discussions on patient-led patient self-management and literatures	94.6% respondents (n=1024/1082) indicated that patients with chronic disease should self-manage their health. 68.3% respondents (n=754/1098) indicated that they should consult CPs before consuming over-the-counter drug. Only 45.1% respondents (n=497/1102) indicated that CPs should play a leading role in self-care of chronic disease. Main reason against the role of CPs in self-medication and self-care consultation was no idea about the CPs' roles	CPs can consult their clients about self-medication and self-care practice. However, CPs must enhance their knowledge and skills to perform high standard of practice

(*Contd...*)

Table 2: (*Continued*)

Authors/location	Study objective/outcome measure	Method of data collection	Principal findings	Conclusion
Laliberte *et al.* Location: Canada	To view CPs' perception in urban and semi-urban area regarding their ideal and actual levels of involvement in providing health-promotion and prevention services and the barriers to such roles	A questionnaire with 28 multiple-choice and open-ended questions was sent to a random sample of 1250 pharmacists in Quebec, Canada and surrounding area, using a five-step modified Dillman's tailored design method	Majority respondents identified that they should involve in smoking cessation, screening for hypertension, diabetes, dyslipidemia and sexual health. The main barriers to these roles were lack of time, collaboration with other health-care practitioners, staff or resources, reimbursement, and clinical devices	It is noted a wide gap between ideal and actual level of practice. The barriers must be intervened before the ideal can be performed
Fang *et al*. Location: China	To describe past, present, and future community pharmacy practice in China	A literature search was conducted using Medline, International Pharmaceutical Abstracts, cross- referencing of articles or books and websites	CPs were performing the traditional practice such as prescription dispensing, selling over-the-counter drugs and counseling. Pharmaceutical care services were underdeveloped	Lack of reimbursement, shortage of pharmacist and training, regulatory issues, less public awareness and workforce issue are the barriers to the performance of these extended services
Malangu Location: South Africa	To describe the implications and challenges of the new qualification in light with the future of community pharmacy practice in South Africa	Searching for published papers in Medline, Google Scholar, and documents from Ministry of Health of South Africa, South African Pharmacy Council and School of Pharmacy	This qualification would allow the CPs to examine, diagnose, prescribe, and monitor the treatment of their clients or patients. However, it needed for infrastructural adjustment. Many challenges were laying ahead	This authorized pharmacist prescriber is a new era for community pharmacy practice in South Africa
Egorova and Akhmetova Location: Russia	To explore about pharmaceutical counseling in Russia	Situation analysis, surveys of pharmacists, and long-term dialog with pharmacists	Unclear roles between pharmacist and pharmaceutical technologist since both could dispense prescription at community pharmacies. Pharmacists were more toward business-oriented practice. Pharmaceutical counseling with evidence-based was required to promote rational over-the-counter drug use. There was a potential collaboration with doctor to resolve patient's health complaint	Lack of pharmaceutical counseling standard and clinical components in pharmacy education and more toward business-oriented than patient-oriented are the issues that need for attention before extended services can be performed
Rayes *et al.* Location: United Arab Emirates (UAE)	To view CPs perceptions and barriers toward extended services	A questionnaire was developed based on results from nation-wide quantitative survey. This questionnaire was distributed to CPs in Dubai	45.4% (n=90) of respondents indicated that they were underestimated by their clients. 52.5% (n=104) of respondents felt the same with other health-care providers. 64.7% (n=128) of respondents indicated that pharmacy practice in Dubai was business-oriented. 76.8% (n=252) of respondents identified that the main barrier to enhanced pharmacy practice was high business running cost	CPs felt negative about their own professional roles. This was reflected in their practice
Rayes *et al.* Location: United Arab Emirates (UAE)	To view pharmacists' roles in UAE	Situation analysis through paperwork and research papers	Different services noted when comparing independent pharmacies with chain-stored and franchised brand pharmacies. The pharmacists were expected to provide advices related to medicine as well as non-medicine products. New requirements were developed to enhance the quality of pharmacy practice. Main barriers were underestimation by physicians, public, and media about their roles	There is potential to increase the quality of pharmacy practice in UAE
Sadek *et al.* Location: United Arab Emirates (UAE)	To review the current roles of CPs in Abu Dhabi Emirate, UAE	Situation analysis through paperwork and research papers	HAAD was developing programs for CPs to extend their counseling roles. Abu Dhabi Health Services (SEHA) was focusing on public health issues, evidence-based clinical policies, and training for health professionals to provide high standard of practice	HAAD and SEHA are trying to enhance the role of CPs so that CPs can deliver high-quality services

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Table 2: (*Continued*)

Authors/location	Study objective/outcome measure	Method of data collection	Principal findings	Conclusion
Rayes and Abduelkarem Location: United Arab Emirates (UAE)	To view physicians' perceptions of the role of CPs in Dubai	Semi-structured interviews were conducted, involving 12 physicians	All participants agreed that CPs were important as a health-care professional. However, 7 of them indicated that CPs should only focus on dispensing medications. They were willing to collaborate with CPs but 7 of them indicated that CPs might interfere their roles	CPs must enhance their clinical knowledge to have the physicians' trust before performing their services
Salim and Elgizoli Location: Sudan	To explore CPs opinions on their identities, thought about patients and physicians toward them, role expansion and how they can assess their capabilities	In depth interviews involving 50 CPs in Khartoum State, Sudan were conducted. The interviews were recorded, transcribed and analyzed	The participants indicated nine different roles which were supplier of medicines, medicines maker, dispenser, patient counselor, medicines expert, clinical practitioner, health promoter, monitor of medicines use, and family practice identity. They indicated that most of patients valued their role more than physicians. They were capable of fulfilling their role but needed for continuous education	CPs are ready to perform extended services in community pharmacy settings to serve the local population
Wada *et al.* Location: Japan	To examine changes in BMD with the presence or absence of diet-improving guidance by pharmacists	This study was conducted in Kiyose City, Japan involving subjects 50 middle-aged or elderly residents who were measured about their BMD during baseline and post-study	The CPs managed to play an important role in community medicine through positive intervention	CPs are potentially giving advice about self-care and self-medication practice

CPs: Community pharmacists, BMD: Bone mineral density, HAAD: Health Authority Abu Dhabi, DRP: Drug-related problems, EPS: Enhanced pharmacy services, TCM: Traditional Chinese medicine, GPs: General practitioners

to improve their current practice and enhance their image as a health-care practitioner in the eyes of GPs and customers [14,17]. GPs and customers perceived CPs as a businessman rather than a practitioner. Therefore, GPs did not want to collaborate with CPs to manage their patient's drug therapy regimen. As a result, it became a barrier to the performance of other extended services in community pharmacy settings [15,16].

In Pakistan, pharmacists were not well recognized as a health-care practitioner in the health-care system [18]. As a result, CPs did not have the opportunity to collaborate with GPs to manage patient's drug therapy regimen. Therefore, Doctor of Pharmacy program had been introduced to enhance the image of the pharmacist as a competent health-care practitioner.

In Sudan, CPs believed that they could perform a wide range of extended services in the community pharmacy settings because they were knowledgeable in clinical knowledge [19]. Nevertheless, GPs were still underestimating their skills to perform the services. Therefore, CPs were encouraged to enhance their image as a health-care professional through advancing their knowledge and skills [19].

In Belgium, CPs had performed depression care service in the community pharmacy settings [20]. Nevertheless, this extended service had confronted with some barriers such as lack of knowledge and access to patient medical profile, absent of consultation room, and communication issue.

In Nepal, CPs were responsible for counseling their customers about medication use [21]. Therefore, they were required to attend an accredited CPE program to enhance their skills related to drug information [21].

Currently, In Japan, pharmaceutical care concept was not performed in community pharmacy settings [24]. Nevertheless, the Japan Pharmacists Education Centre was taking an initiative to educate CPs about the pharmaceutical care philosophy so that CPs could perform this philosophy in their current practice. It was also noted that CPs had performed an osteoporosis care service as an extended service in the community pharmacy setting to serve the elderly people [22].

In Hong Kong, CPs were encouraged to perform a pharmacist-led patient self-management service and act as a self-care advisor in community pharmacy settings [23,25]. However, other health-care professionals and customers indicated some negative perceptions of these extended services.

Extended services

Extended services performed in community pharmacy settings were depicted in Table 3. It was noted that medication counseling or review (n=10) was the most performed in community pharmacy settings. CPs in Australia (n=28) had performed a wide range of extended services in their community pharmacy settings, followed by CPs in the United Arab Emirates (n=17), Canada (n=12), Hong Kong (n=8), and China (n=5).

Perception of extended services

The perceptions among CPs, GPs, and customers of the extended services were depicted in Table 4. It was noted that GPs perceived these extended services could establish a working relationship with CPs (n=6) and this perception was the most noted in the review. It was also noted that the study in the United Kingdom (n=14) indicated a wide range of perceptions among the participants of extended services, compared with other studies conducted in other countries. The perception among policy makers of the extended services was not noted in this review.

Barriers to its performance

Barriers to its performance were depicted in Table 5. Lack of knowledge or skills (n=11) was the most noted in this review. A study in the

Table 3: Details of country which indicated extended services

Extended services	Total number of studies	Country published (Article No.)
Identifying, preventing, and resolve DRP	5	Jordan (9), Netherlands (7), China (10), Sudan (19), United Arab Emirates (17)
Supplementary prescribing pharmacist	3	United Kingdom (6), Australia (11), South Africa (13)
Pharmaceutical care service	5	Japan (24), Hong Kong (25), China (10), United Arab Emirates (15,17)
Smoking cessation program	5	Japan (24), Australia (8), Canada (12), Sudan (19), United Arab Emirates (14)
Advice on healthy eating	1	Canada (12)
Aboriginal health services	1	Australia (8)
Counseling on alcohol consumption	1	Canada (12)
Anticoagulation monitoring	1	Australia (8)
Asthma care	2	Australia (8), United Arab Emirates (17)
Body piercing	1	Australia (8)
Chemotherapy preparation	1	Australia (8)
Community health education	6	Australia (8), Singapore (3), Hong Kong (23), China (10), Sudan (19), United Arab Emirates (17)
Community clinic+nurses	1	Australia (8)
Counseling on physical activities	1	Canada (12)
Diabetes care	4	Australia (8), Canada (12), United Arab Emirates (14,17)
Discharge service for patients from hospital setting	2	Australia (8), Netherlands (7)
Drug-level monitoring/kinetic dosing	1	Australia (8)
Emergency oral contraception	2	Canada (12), Sudan (19)
Geriatric care	3	Australia (8), Japan (22,24)
Harm reduction and methadone	1	Australia (8)
Herbal medicines/nutritional supplement counseling	2	Australia (8), United Arab Emirates (14)
Hyperlipidemia monitoring	3	Australia (8), Canada (12), Sudan (19)
Hypertension care	3	Australia (8), Canada (12), Sudan (19)
Immunization program	2	Canada (12), United Arab Emirates (17)
Lifestyle modification	3	Hong Kong (23), Canada (12), United Arab Emirates (14)
Medication counseling/review	10	Nepal (21), Netherlands (7), Singapore (3), Hong Kong (23,25), China (10), Russia (5), Sudan (19), United Arab Emirates (14,17)
Minor ailment or self-care consultation	4	Singapore (3), Hong Kong (25), China (10), United Arab Emirates (14)
Naturopathy	1	Australia (8)
Nutritional support including parenteral/enteral nutrition	1	Australia (8)
Osteoporosis care	2	Australia (8), Japan (22)
Ostomy counseling	1	Australia (8)
Pediatric pharmacy	1	Australia (8)
Pain management	1	Australia (8)
Pharmacist-led patient self-management on chronic disease	2	Hong Kong (23,25)
Psychiatric pharmacy	2	Australia (8), Belgium (20)
Sexual health	1	Canada (12)
Skin-care management	1	Australia (8)
Specialized compounding	2	Australia (8), United Arab Emirates (17)
Weight management	3	Australia (8), Canada (12), United Arab Emirates (14)
Wound care	2	Australia (8), United Arab Emirates (14)

United Kingdom (n=25) indicated more numbers of barriers, compared with other studies in other countries.

DISCUSSION

It is noted in this review a dramatically changing the age-old of pharmacist role as compounding practitioner to dispense readymade products toward a more prominent role in the health-care system. Undoubtedly, this scenario indicates demand among the local population toward the extended services [26] and requiring CPs to closely interacting with GPs and customers [27]. This interaction between CPs and GPs or customers is noted in Australia, South Africa, United Arab Emirates, Sudan, United Kingdom, and Hong Kong [6,11,13,16,19,23]. Undoubtedly, the interaction reflects a potential for CPs to perform the extraordinary task which is assessing patient-related information such as demographic data, medical, and medication information [28,29]. Nevertheless, it is noted a few barriers that inhibit this extended service. For example, it is noted that confidence or trust issues with CPs are the barriers to its performance in the United Kingdom, United Arab Emirates, Belgium, Nepal, and Hong Kong [6,12,15,20,21,25]. Therefore, it is advisable to use the available social media such as blogs, Facebook, YouTube, Wikipedia, bulletin, and newspaper to educate the people [30] and GPs [31] about the potential of these extended services to improve patients' quality of life.

It is also noted that lack of knowledge or skills has become a barrier to the performance of extended services and noted in Australia [8,11], Belgium [20], China [10], Japan [22], Nepal [21], Hong Kong [23], Canada [12], Russia [5], Sudan [19], and United Arab Emirates [14]. Nevertheless, this barrier can be intervened when CPs take an initiative to enhance their skills in varies therapeutic knowledge. For example, it is noted the Royal Pharmaceutical Society in the United Kingdom provides a training program for CPs to have skills to prescribe some supplementary medications to patients who are on other medications prescribed by GPs [6]. Other noted training programs for CPs are smoking cessation [32], anticoagulant program [33], and hypertension

Table 4: Details of country which indicated perception of extended services

Perception of extended services	Total number of studies	Country published (Article No.)
Patient rarely considers community pharmacies to be health-care facilities	1	Jordan (9)
Easing the burden of physicians' overloaded activities	1	Australia (8)
Encouraged by the pharmacy associations	2	United Kingdom (6), Australia (11)
Fulfilling the need of the government	1	United Kingdom (6)
Shortage of physicians	1	United Kingdom (6)
Financial reimbursement	1	United Kingdom (6)
Performing existing skills	5	United Kingdom (6), Nepal (21), Australia (11), South Africa (13), Sudan (15)
Taking a new challenge	1	United Kingdom (6)
Promoting personal marketability	1	United Kingdom (6)
Taking greater responsibilities with their drug therapy plan	2	United Kingdom (6), South Africa (13)
Working relationship with other health-care professionals	6	United Kingdom (6), Australia (11), Hong Kong (23), South Africa (13), United Arab Emirates (16), Sudan (19)
To enhance the quality of practice	2	United Kingdom (6), South Africa (13)
As a career expansion	1	United Kingdom (6)
To benefit the profession	2	United Kingdom (6), South Africa (13)
Personal satisfaction	2	United Kingdom (6), Nepal (21)
To benefit the customer/patient	3	United Kingdom (6), Nepal (21), Sudan (19)
To improve sales	2	Nepal (21), United Arab Emirates (15)
Strategy to overcome competition	2	Nepal (21), United Arab Emirates (15)

Table 5: Details of country which indicated barriers toward performance of extended services

Barriers toward performance of extended services	Total number of studies	Country published (Article No.)
Lack of pharmacist - client interaction	6	Jordan (9), Japan (24), Pakistan (18), Hong Kong (23,25), Canada (12)
Patients are not regular clients	1	Canada (12)
Patients do not like to be "criticized" about their lifestyles	1	Canada (12)
Pharmacy practice is more toward business-oriented	7	Jordan (9), Japan (24), Singapore (3), Hong Kong (23), Russia (5), United Arab Emirates (14,15)
Patients are in rush and do not have time	1	Canada (12)
Pharmacists are not available at pharmacies	1	Canada (12)
Pharmacy program is basically product-oriented rather than patient-oriented	1	China (10)
Lack of clinical components in the pharmaceutical education	2	Russia (5), Sudan (19)
No legal requirement to maintain patient medication record	1	Jordan (9)
Lack of time	8	United Kingdom (6), Australia (8), Belgium (20), Nepal (21), Netherlands (7), Singapore (3), Canada (12), United Arab Emirates (14)
Lack of interest by pharmacy owners	2	Canada (12), Russia (5)
Lack of patient knowledge about the benefit of extended services	1	Canada (12)
Lack of relationship among pharmacists	1	Singapore (3)
Pharmacist shortage	4	Australia (8), Pakistan (18), Canada (12), China (10)
Shortage of staffs	1	United Arab Emirates (14)
Obtaining financial support	2	United Kingdom (6), Canada (12)
Acquiring self-confidence	3	United Kingdom (6), Australia (8), South Africa (13)
Personal perception of competence	2	United Kingdom (6), South Africa (13)
Pharmacists are overworked	1	Canada (12)
Lack of collaboration with other physicians or other health-care professionals	6	United Kingdom (6), Australia (8), Belgium (20), Singapore (3), Hong Kong (23), Canada (12)
Inadequate management support other than financial	1	United Kingdom (6)
Not part of pharmacy job	2	Australia (8), China (10)
Searching for a suitable area to practice	1	United Kingdom (6)
Competition with colleagues for a practicing location	1	United Kingdom (6)
Patient's confidence or trust issues	6	United Kingdom (6), Belgium (20), Nepal (21), Hong Kong (25), United Arab Emirates (15,17)
Patient is not "open" to change	1	Canada (12)
Customers would not pay	1	Australia (8)

(*Contd...*)

Table 5: (*Continued*)

Barriers toward performance of extended services	Total number of studies	Country published (Article No.)
Lack of reimbursement/funding for a new role	7	United Kingdom (6), Australia (8), Belgium (20), Singapore (3), United Arab Emirates (14), Canada (12), China (10)
Lack of clinical tool	2	Canada (12), South Africa (13)
Lack of recognition as primary health-care professional	7	Pakistan (18), Singapore (3), Hong Kong (23,25), Sudan (15), United Arab Emirates (16,17)
Lack of continuing support	1	United Kingdom (6)
Too many technical tasks to perform	2	United Kingdom (6), Canada (12)
Lack of knowledge/skills	11	Australia (8,11), Belgium (20), China (10), Pakistan (18), Nepal (21), Hong Kong (23), Canada (12), Russia (5), Sudan (19), United Arab Emirates (17)
Formulating drug therapy plan	1	United Kingdom (6)
Confused perception of role by other physicians and health-care professionals	5	United Kingdom (6), Australia (8), Hong Kong (25), United Arab Emirates (16), Sudan (19)
Lack of ongoing training	5	United Kingdom (6), Japan (24), Australia (8), Hong Kong (23), Sudan (19)
Government/Organizational barriers	6	United Kingdom (6), Pakistan (18), Singapore (3), Hong Kong (23,25), United Arab Emirates (14)
Lack of access to sharing patient medication record system, including lab-test results	7	United Kingdom (6), Belgium (20), Singapore (3), Australia (8), Hong Kong (23), Canada (12), Sudan (19)
Attitudes of other health-care providers	7	United Kingdom (6), Australia (11), Pakistan (18), Hong Kong (23), Canada (12), United Arab Emirates (16,17)
Lack of feedback performance	1	United Kingdom (6)
Confused among patients about the role of pharmacist	5	United Kingdom (6), Hong Kong (23,25), China (10), South Africa (13)
Absence of counseling room	4	United Kingdom (6), Belgium (20), Canada (12), South Africa (13)
No standardized practice model	3	Canada (12), Russia (5), United Arab Emirates (17)

DRP: Drug-related problem

care [34]. All these training programs can enhance CPs' knowledge, skills, and self-confidence to perform these extended services in community pharmacy settings.

In this review, it is noted that medication counseling or review is indicated as the main role of CPs, as noted in Netherlands, Russia, China, Singapore, United Arab Emirates, Sudan, Nepal, and Hong Kong [3,5,7,10,14,17,19,21,23,25]. This extended service is requiring for CPs to diagnose DRP among those patients who consume multiple medications and collaborate with GPs to resolve the problems. Unfortunately, lack of collaboration with GPs is noted in Singapore, Australia, Canada, Belgium, United Kingdom, and Hong Kong [3,6,11,12,20,23] and it has potential to inhibit the performance of the extended service. Nevertheless, this barrier can be intervened if the local universities can add on more clinical knowledge for the undergraduate program to help them in the future to work with GPs to assess patients appropriately [35]. This working relationship between CPs and GPs can be easier if CPs have a structured and systematic approach to communicate with GPs without overruling GPs' roles [36]. For example, such structured and systematic approaches are known as WWHAM, ASMETHOD, SIT DOWN SIR, ENCORE, CHAPS-FRAPS, and Quest/SCHOLAR simple mnemonics to remember have been promoted to use as a tool to assess patients appropriately and refer the patients to GPs for further medical examination when necessary [37-42]. However, these approaches require CPs to have basic clinical knowledge before performing the assessment. It is believed that this clinical knowledge can enhance self-confidence among CPs to perform counseling services [43] in community pharmacy settings [44]. Those who would like to have an advanced clinical knowledge, they can sign up for a training program which is offered by the Board of Pharmacy Specialties (BPS) [45]. BPS offers a wide range of extended services in varies fields such as cardiology, psychiatric, geriatric, and infectious diseases [45]. However, the services are more exclusive for hospital settings rather than community settings. Hopefully, BPS can work up a training program for CPs to perform extended services in community pharmacy settings.

CPs must be given the right image as a health-care provider and they should be integrated into the health-care team to perform their knowledge and skills to fulfil patient's medication need. It is noted in the previous studies which reveal CPs can perform extended services such as referring patients to GPs [46], diabetes care [47], hyperlipidemia care [48], and conducting weight management program [49]. Such extended services can also be noted in Canada and Germany [50,51]. However, these extended services are not noted in South Africa, United Arab Emirates, Pakistan, and Sudan [13-15,18,19]. Main reason noted in the countries is the lack of clinical knowledge and skills during the undergraduate program and ongoing training afterward [13-15,18,19]. Therefore, it is necessary for the government, universities, consumers, pharmacy, and medical associations to sit down and discuss on how to improve the pharmacy practice through ongoing training so that the practice can give a positive impact to the society. Furthermore, it is noted in previous studies which indicate that consumers and GPs are willing to accept these extended services performed in community pharmacy settings as long as its performance can give benefit to the consumers [52,53]. Therefore, it is advisable for the universities to teach the pharmacy students about the latest clinical knowledge and skills which can help them to perform quality extended services in community pharmacy settings [52-56]. Such barriers that inhibit its performance must be noted for the future study to enhance their knowledge and skills [56-58]. Hopefully, the new generation of pharmacists can perform better-extended services in community pharmacy settings.

CONCLUSION

A clinical-based era has emerged in pharmacy practice, as responding to fulfill the demand of the society. Therefore, CPs must enhance their therapeutic knowledge and skills to perform quality extended services in community pharmacy settings. However, barriers toward its performance must be intervened. In addition, the government, consumers, pharmacy, and medical associations must have a mutual understanding about these extended services. Furthermore, these extended services are actually for the benefit of the consumers.

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