BMJ Open

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Journal:	*BMJ Open*
Manuscript ID	bmjopen-2016-015471
Article Type:	Research
Date Submitted by the Author:	08-Dec-2016
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Primary Subject Heading:	Health services research
Secondary Subject Heading:	Qualitative research
Keywords:	Community pharmacy services, health service research, qualitative meta-synthesis, barriers, facilitators, determinants of practice

A qualitative meta-synthesis of barriers and facilitators that influence the implementation of community pharmacy services: perspectives of patients, nurses and general medical practitioners

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Word count (excluding title page, abstract, references, figures and tables): 3667

ABSTRACT

Objectives: The integration of community pharmacy services (CPSs) into primary care practice can be enhanced by developing suitable implementation programs. A key early step in the development of such programs is assessing the elements that enable or hinder the implementation of such services. These elements have been widely researched from the perspective of community pharmacists but not from the perspectives of other stakeholders who can directly or indirectly interact with, and influence the implementation of CPSs. The aim of this study was to synthesise the literature on patients', general practitioners' (GPs) and nurses' perspectives of CPSs to identify elements that can hinder (i.e., barriers) or enable (i.e., facilitators) their implementation in Australia.

Methods: A meta-synthesis of qualitative studies was performed. A systematic literature search in PubMed, Scopus and Informit was conducted to identify qualitative studies that explored patients', GPs' or nurses' views about CPSs in Australia. Thematic synthesis was performed to identify the elements influencing CPS implementation, which were further classified using an ecological approach.

Results: Twenty nine articles were included in the review. Sixty three barriers or facilitators to the implementation of CPSs were identified. These elements were related to different ecological levels: (1) individual patient (n=14); (2) interpersonal, which was divided into two sub-levels: (a) individual healthcare professionals (n=17) and (b) relationships between individuals (n=7); (3) organizational, which was divided into (a) community pharmacy setting (n=8); and (b) the service itself (n=8); and (4) community and healthcare system (n=9).

Conclusions: Patients, GPs and nurses can identify a large number of barriers and facilitators to the implementation of CPSs in Australia. These influential elements should be taken into account together with those previously identified by pharmacists, to enhance the analysis of the

context in which CPSs are implemented and, thus, the development of implementation programs.

KEY WORDS

Community pharmacy services [MeSH]; health service research [MeSH]; qualitative meta-synthesis; barriers; facilitators; determinants of practice.

STRENGHTS AND LIMITATIONS OF THIS STUDY

- Qualitative meta-synthesis aims to synthesise qualitative literature to provide a new, more comprehensive interpretation of the findings that goes beyond the depth and breadth of the original studies and to broaden the range of concepts identified. Therefore, it is an appropriate method to suitably achieve the aim of this study, which was to identify a comprehensive range of elements that, according to general practitioners, patients and nurses, can enable (i.e., facilitators) or hinder (i.e., barriers) the implementation of community pharmacy services in Australia.
- For the first time, a review focuses on synthesising the perspectives of these key stakeholders who can strongly influence the implementation of community pharmacy services at the primary care level.
- Qualitative studies in this review were checked against a minimum set of quality appraisal criteria, but a comprehensive quality assessment was not conducted. This decision was made due to the difficulty of using the information about studies' quality to inform the synthesis (e.g. even studies with flaws in methodology can provide valuable information), and to identify a larger number of possible influential elements.
- This review was purposively focused on a specific implementation context (i.e., Australia), to which its results are directly relevant and will be immediately applied and actions will be taken. Australia is a country with a large experience in research and

implementation of community pharmacy services and, therefore, it is expected the results of this review may be relevant to start investigating barriers and facilitators to community pharmacy service implementation in contexts with less experience.

INTRODUCTION

The implementation of new health interventions and services into established healthcare practices and systems has been found to be challenging.[1-4] The inherent complexity of both health services and healthcare systems may be fundamental to the implementation problem.[5, 6] According to current health planning approaches, the implementation of health services can be enhanced by comprehensively assessing the context in which they will be delivered. Analysis of the context should consider the stakeholders who can influence or be affected by the health service, as well as the social, physical, economic and policy environments that can enable or hinder the normalization of the service.[2, 7] Early identification of these elements (including how they relate to or interact with each other) is a key step for developing suitable strategies and interventions to enhance health service implementation.

In the implementation science literature, several terms are used to refer to the elements that can influence service implementation and practice change. Some generally known examples, which are commonly used interchangeably in the literature,[8] are: barriers and facilitators;[9] determinants of practice;[7] implementation factors;[10] or constructs.[2] The current use of these terms encloses different concepts. For the purpose of this review and to avoid the terminological debate we have used the term 'influential element' as a neutral term.

In the community pharmacy setting, the implementation and sustainability of patient-centred services and the integration of community pharmacists into primary healthcare teams remains a challenge worldwide.[11, 12] Extensive research has been conducted to identify the elements that from the perspective of community pharmacists (i.e., service provider) can influence the implementation of community pharmacy services (CPSs).[13-15] However, considering the view of a single stakeholder group is insufficient to comprehensively analyse the complexity of a particular implementation context. These limited analyses can lead to the development of inadequate implementation strategies and interventions. Patients, general practitioners (GPs),

and primary care nurses are key stakeholders who interact with or are affected by CPSs and may be able to strongly influence the implementation of such services. These stakeholders may have their own particular views about CPSs and so can complement the findings from previous pharmacy-informed research. Patients', nurses' and GPs' views and experiences regarding CPSs have been explored in several qualitative studies[16-20] but no systematic review that collates and analyses such information exists. Qualitative meta-synthesis aims to synthesise qualitative literature to provide a new, more comprehensive interpretation of the findings that goes beyond the depth and breadth of the original studies and to broaden the range of concepts identified.[21, 22] Thus, the aim of this study was to synthesise such qualitative literature to describe the broad range of elements that, from the patients', GPs' and nurses' perspectives, can hinder or enable the implementation of CPSs in Australia.

METHODS

A systematic review was conducted following Cochrane handbook[23] and reported following the ENTREQ Statement.[24]

Search strategy, screening and eligibility criteria. A systematic search was conducted in May 2015 in three electronic databases (PubMed, Scopus and Informit), without time limits, to identify qualitative studies addressing patients', nurses' or GPs' views about CPSs in Australia. A CPS was assumed to refer to an action or set of actions delivered in or organised by a community pharmacy to optimise the process of care, with the aim of improving health outcomes and the value of healthcare.[25] For the purpose of this review, routine professional activities performed by community pharmacists, such as dispensing, were not considered as CPSs and so excluded. Articles that did not address a specific CPS but inter-professional collaboration (i.e. between community pharmacists and other healthcare professionals) were included as they can also provide insight into the elements influencing the implementation of

CPSs. Full search strategies are available on Appendix 1 (Supplementary File). In addition, the references from the included papers were searched manually for additional relevant studies. A two-step process was performed by one researcher to select studies for the analysis. As a first step, titles and abstracts were screened to identify and exclude non-relevant literature. In a second, full texts of the remaining articles were reviewed to exclude those that: (1) were not related to CPSs; (2) did not address patient, nurse and/or GP perspective; (3) did not use qualitative research methodology;[26] (4) did not clearly identify the stakeholder (i.e., patient, nurse or GP) as the source of the information; and (5) were not accessible in any of the research team university libraries, or unattainable following contact with the authors.

All the included articles were checked by the same researcher for 'elementary quality assessment' using the first three criteria delineated by Dixon-Woods et al[27] to appraise qualitative research: (1) was the research question clear? (2) Was the research questions suited to qualitative inquiry? (3) Were (a) sampling, (b) data collection, and (c) analysis clearly described? Articles were excluded when no answer, or an unclear answer, was given to at least one of the three questions.

Synthesis. Qualitative meta-synthesis was conducted by one researcher according to the three-stage method for thematic synthesis described by Thomas et al[28] The first stage of analysis involved free line-by-line coding of the original data (study participants' quotes) and the study authors' interpretation of the original data. The process of coding involves summarising text from the results and discussion sections of each article into one or more descriptive issues (i.e. codes) to capture meaning. The second stage of the process involved grouping codes into one or more descriptive themes. Subsequent articles were coded into pre-existing themes, and new themes were created when considered necessary. To simplify the terminology throughout this article, themes were interpreted as elements (i.e., influential elements) that could positively (i.e., facilitators) or negatively (i.e., barriers) influence CPS implementation or practice change.

A barrier was defined as *"any type of obstacle (material or immaterial) which can impede the dissemination, implementation and/or sustainability of a CPS"*; while a facilitator was defined as *"any type of element (material or immaterial) which can help to overcome barriers and/or accelerate the dissemination or implementation"* of a CPS.[15] Themes that were related to similar issues were further grouped to create one broad barrier or facilitator. The identified influential elements were reviewed by a second researcher to assess clarity, consistency, and understanding. At the third stage, barriers and facilitators were organised using an adapted version of the Ecological Model (Table 1),[29] which classified them into four different levels: patient, interpersonal, organisational, and community/system. Coding of papers that were identified manually was conducted last. NVivo Version 10 software (QSR International Pty Ltd; Australia) was used to help manage and analyse the data. Once all the influential elements were identified, a second round of analysis was conducted to explore for the relationships between them. Again, both study participants' quotes and study authors' data interpretation were reviewed for this purpose. A network representing the identified relationships was generated using a ForceAtlas2 layout[30] with Gephi, 0.8.

Table 1. Levels where elements that can influence the implementation of community pharmacy services can exist (adapted from McLeroy et al[29])	
Individual patient	Elements related to the personal characteristics and ideas concerning individual patients that can affect their utilisation of community pharmacy services.
Interpersonal	Elements related to the healthcare providers and non-healthcare personnel who are involved with the community pharmacy service and with whom patients associate (e.g., family, friends, pharmacists, pharmacy assistants, GPs, nurses) and the formal and informal relationships between patients and healthcare professionals and healthcare professionals with other healthcare professionals.
Organisational	Elements related to characteristics of the community pharmacy setting and attributes of the community pharmacy service that can influence the success of implementation.
Community and system	Elements related to the larger society, which consists of collectives of people in a geographical location, the relationships between organisations, the political players in the system and the rules, regulations and policies that have the power to control and/or influence the implementation of services.

RESULTS

The systematic and manual search identified 243 articles once duplicates were removed. After title and abstract screening, 124 full-text articles were assessed for eligibility of which 29 articles were included in the qualitative meta-synthesis (all of them fulfilled the appraisal criteria) (Figure 1). A description of the papers included in the review can be found in Table 2. Of the 29 included papers, 15 addressed patients' perspectives only, 2 addressed nurses' perspectives only, 6 addressed GPs' perspectives only, 2 addressed nurses' and GPs' perspectives together, 3 addressed patients' and GPs' perspectives together and 1 addressed the views of all three participants. Twenty-three articles were related to a specific CPS, 2 were related specifically to

inter-professional collaboration, 3 were related to both CPSs and inter-professional collaboration, and 1 addressed concordance-based healthcare. The articles employed semi-structured interviews (n=23) and/or focus groups (n=11) as methods of data collection.

Table 2. General description of the articles included in the qualitative meta-synthesis

Study	Description of participants (n)	Explored/assessed topic	Method
McMillan et al[31]	Patients with a chronic condition, diverse culture and socioeconomic background from three geographical locations in Queensland (Logan-Beaudesert and Mount Isa), New South Wales (Northern Rivers) and Western Australia (Greater Perth) (n=89)	Service for patients with chronic conditions	SSI
Rieck & Pettigrew[32]	GPs working in practices in low, medium or high socioeconomic status suburbs across Perth (Western Australia) (n=22)	Chronic disease management service	SSI
Barbara et al[33]	Patients who are immigrants of Maltese ethnicity, residing in Australia, with a confirmed diagnosis of T2DM, >50 years of age, able to adequately communicate verbally in English or Maltese, located in Sydney (n=24)	Diabetes self-management service	SSI
Bereznicki et al[34]	Patients (n=6) and GPs (n=10) previously involved in a community pharmacy based asthma intervention, in Tasmania	Asthma management service	SSI
Cvetkovski et al[16]	Patients >18 years of age with a diagnosis of asthma (n=10); and GPs in small rural centres (n=8), from different locations based on the Australian Standard Geographical Classification	Asthma management service	SSI
Saba et al[35]	Patients >18 year of age, English speaking, current smoker, medical diagnosis of asthma and/or any other condition alongside asthma in Sydney Central Business District and South Western suburbs (n=24)	Smoking cessation service for patients with asthma	SSI

Shoukry et al[36]	Patients who had bought/hired/trialled a Continuous Positive Airway Pressure machine (or accessories) through their pharmacy in the previous 12 months in the greater Sydney region (n=20)	Obstructive sleep apnoea services	SSI
Um et al[37]	GPs with large expertise in weight management (n=3)	Weight management service	SSI
Snell et al[38]	Patients >18 years of age, English speaking, enrolled in a specific weight loss program for >2 weeks from different urban and regional suburbs in Sydney (n=20)	Weight management service	II
Maher et al[39]	Women who have at least one child <5 years old are able to read and speak English from different locations based on Australian Standard Geographical Classification (n=28)	Maternal nutrition service	SSI
Mey et al[40]	Patients living independently, experiencing a mild to moderate mental illness (and carers) in Queensland, New South Wales and Western Australia (n=74*)	Service for patients with mental health conditions	FG/SSI
Hattingh et al[41]	Patients with a mental health condition (and carers) (n=74*) and healthcare professionals (n=13) located in urban, regional, rural and remote regions in Queensland, New South Wales and Western Australia	Service for patients with mental health conditions	FG/SSI
Clark et al[42]	Refugee women (n=38)	Primary healthcare service	FG
O'Connor et al[43]	Palliative care nurses working in community-based palliative care, residential aged care adopting a palliative approach or working in a dedicated hospice or palliative care unit in a hospital (n=44); and practising GPs (n=10), in Australian	Services to community-based palliative care patients	FG/SSI

	metropolitan and regional areas		
Carter et al[44]	Patients who are English, Mandarin or Arabic speaking, who had received a home medicines review service within the last 6 months or had not received such a service but were eligible for it, in metropolitan or rural areas in Australia (n=80)	Home medicines review	FG
Lee et al[45]	Patients living in retirement villages in Victoria who were using prescribed medicines (n=25); GPs (n=9) and nurses (n=1) with experience with home medicines review services and/or providing care to retirement-village residents.	Home medicines review	FG/SSI
White et al[46]	Patients of Chinese or Vietnamese origin who had never received a home medicines review service but were eligible for it, in two suburban areas in Sydney (n=17)	Home medicines review	FG
White et al[17]	Patients who had received a home medicines review service in the past 6 months or who had never received such a service but were eligible for it, in New South Wales, Victoria, Queensland and South Australia (n=77)	Home medicines review	FG
Dhillon et al[19]	GPs practising in metropolitan medical centres in Perth (n=24)	Home medicines review	SSI
Swain et al[47]	Patients taking multiple medications, with a reasonable understanding of English and linked to an Aboriginal Health Service in urban, regional, rural and remote settings in Queensland, Northern Territory, South Australia, New South Wales and Victoria (n=101)	Service aimed at enhance the quality use of medicines	FG

Du Pasquier & Aslani[48]	Patients >18 years of age, fluent in English, taking one prescription medication on a daily basis in Sydney (n=22)	Adherence support service	SSI
Gilmartin et al[18]	Nurses who worked at residential aged care facilities and used dose administration aids in Victoria (n=5)	Dose administration aids service	FG
Bui et al[49]	Nurses working in public, opioid substitution therapy clinics in NSW (n=9)	Opioid substitution therapy services	SSI
Van et al[50]	GPs practising in private/medical/specialised settings in rural/suburb/city areas in Sydney (n=23)	Inter-professional collaboration and professional pharmacy services	SSI
Van et al[51]	GPs in metropolitan and rural areas in New South Wales (n=15)	Inter-professional collaboration in the context of Diabetes Medication Assistance Service and home medicines review service	SSI
Dey et al[52]	GPs working in Western Sydney (n=7)	Inter-professional collaboration in the context of asthma management services	SSI
Chong et al[53]	GPs (n=4) and nurses (n=7) working with mental health consumers in a healthcare setting in New South Wales	Inter-professional collaboration in the context of mental health services	SSI

Cheong et al[54]	Patients >18 years of age, English speaking, with a diagnosis of asthma, in inner-west Sydney metropolitan region (n=16)	Inter-professional collaboration/multi-disciplinary care	SSI
Bajramovic et al[55]	Patients >18 years of age, taking at least one medication (n=7) and GPs (n=10) in Brisbane	Concordance based healthcare services	FG/SSI

GP: General Practitioner; SSI: Semi-structured interview; FG: Focus Group; II: In-depth Interview

* Total number of patients and carers. Opinions of carers were clearly differentiated in the article and excluded from this review.

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During the first stage of data extraction, 181 patient, 30 nurse and 91 GP codes were created. At the completion of the coding process, 63 influential elements were identified (Table 3). In several studies patients, nurses and GPs were able to describe approaches or strategies to overcome specific barriers.[16-19, 31-34, 37, 39, 41, 45, 49, 50, 55] These strategies have been reported in Table 3 as additional facilitators (marked with an asterisk). During coding of the manually identified papers, it seemed that conceptual saturation may have been reached, since no new barriers or facilitators were identified.

Table 3. Elements that can hinder (i.e., barrier) or enable (i.e., facilitator) the implementation of community pharmacy services as identified by patients, general practitioners and nurses

	Effect on implementation and source of information (i.e., stakeholder)	
	Barrier‡	Facilitator†
Elements at the individual patient level		
1. Patients' real or perceived need for healthcare (according to patients' individual concerns, understanding or perception of their health problems).	Pt[17, 44, 45, 53, 54]; GP[16]	Pt[17, 31, 33, 34, 39, 44, 46, 54, 55]; N[49]; GP[16]
2. Patients' awareness of the availability of CPS	Pt[31, 45, 46]; GP[19, 45]	
3. Patient personal desire or preference for CPSs		Pt[39, 44, 46, 54]
4. Patients' understanding, perceptions and expectations of their own role in the CPS	Pt[34, 48, 54]	Pt[16, 34, 54]
5. Patients' understanding, perceptions and expectations of the role of community pharmacists in healthcare	Pt[16, 17, 33, 34, 39, 40, 54]; N[49]; GP[19]	Pt[33, 35, 36, 39, 40, 48, 54]
6. Patients' understanding, perceptions and expectations of the role of the GP associated to the CPS	Pt[33, 34, 44-48, 54]	
7. Patients' understanding, perceptions and expectations of collaboration between healthcare professionals	Pt[54]	Pt[54]

8. Patients' availability, time to participate in CPSs	Pt[31, 38]	Pt[38, 54]
9. Patients' previous/background experiences with CPSs and multidisciplinary care	Pt[39, 40, 45, 54]	Pt[36, 40, 44, 45, 47, 54]
10. Patient abilities; i.e., to follow the procedures of the CPS or to self-manage their health problems	Pt[38, 54]; GP[34, 50, 52]	Pt[35, 38, 46]
11. Patients' satisfaction with the delivered CPSs and multidisciplinary care		Pt[34, 36, 38, 40, 44]; N[49]
12. Patients' motivation towards CPSs	Pt[44]	Pt[35, 38, 44]
13. Patients' level of emotional intelligence; i.e. ability to cope with negative experiences.	Pt[38]	Pt[38]
14. Patients' language, communication and cultural issues	Pt[42, 46]; GP[19]	
Elements at interpersonal level		
a. Individual healthcare professionals (sub-level)		
a.1. Community pharmacist		
15. Knowledge, expertise, clinical and non-clinical skills (e.g. cultural competency) to adequately provide CPSs	Pt[40]; GP[32, 50]	Pt[17*, 19, 36, 38, 39*, 40, 42, 46]; GP[37, 52]
16. Communication skills; including the capacity to speak other languages	Pt[46, 47]; N[43]	Pt[17, 31, 33, 35, 39, 46-48]
17. Humanistic attributes (e.g. being respectful, caring, non-judgemental, friendly, empathetic, supportive and approachable)	Pt[38]	Pt[31, 33, 34, 36, 38-41, 44, 54]

18. Willingness, interest, motivation to provide CPSs and/or participate in multidisciplinary collaboration	N[31, 35, 49, 54]; GP[45]	Pt[33]
a.2. Other community pharmacy staff members (e.g. pharmacy assistants)		
19. Technical knowledge (e.g., about a product)	Pt[39, 40]	Pt[39]
20. Communication skills	Pt[40]	Pt[39]
21. Humanistic attributes		Pt[39]
22. Ability to work professionally (e.g., uphold patient confidentiality)	Pt[40, 41]	
23. Experience working in the pharmacy	Pt[39, 40]	Pt[39]
a.3. General Practitioner		
24. Understanding, perceptions and expectations of their individual role with regard CPSs	GP[50, 52]	
25. Understanding, perceptions and expectations of pharmacist's capabilities and role in healthcare	GP[32, 34, 50-52]	GP[52]; [16, 32, 34, 37, 55]
26. Awareness of the availability of CPS	GP[19]	
27. Willingness, interest, motivation to collaborate with CPSs	GP[19]	GP[19, 52]
a.4. Nurse		
28. Understanding, perceptions and expectations of their individual role within, or in regards to, CPSs	N[18]	

29. Knowledge and skills to adequately participate in the delivery of CPS	N[18]	N[18*]
30. Attitude towards other healthcare professionals and their roles		N[18]
31. Willingness, interest, motivation to collaborate with CPSs	N[18]	N[18]
b. Relationships (or interactions) between individuals (sub-level)		
32. Influence of friends and family on patients utilising CPSs (i.e., they may provide support, affect patient's adherence, or patient's enthusiasm with CPSs)	Pt[38, 39, 46]	Pt[16*, 33*, 39]
33. Previous relationship between the patient and the pharmacist and its nature (e.g. trusting relationship)	Pt[17]; GP[19]	Pt[17, 31, 34, 36, 38-40, 44]; GP[50]
34. Collaborative relationships between the pharmacist and other healthcare providers (e.g., GPs), and their nature	Pt[55]; N[49]; GP[32, 43, 45, 50, 51, 55]	Pt[33, 54]; N[18, 49]; GP[16*, 19, 50-52, 55]
35. Communication channels and modes between pharmacists and other healthcare providers (e.g., GPs)	N[18, 43]; GP[34, 50, 52, 53]	Pt[16, 17, 33]; N[49]; GP[16, 50-52]
36. Existence of referral mechanisms between healthcare professionals, including also those between pharmacy support staff and pharmacists (i.e., care coordination and transition)	Pt[40]; GP[34, 50]; N[49],	Pt[36, 39]; GP[16, 19, 34, 37, 45, 50, 52]; N[49]
37. Consistency in the information provided by the pharmacist with regards to the GP's recommendations	GP[43, 50, 51, 55]	GP[50, 55]
38. Availability of multidisciplinary education, training and meetings for pharmacists and GPs that		Pt[50*, 54*]; N[49];

enhance integrated, collaborative care		GP[16, 32, 50, 51]
Elements at the organisational level		
a. Community pharmacy setting (sub-level)		
39. Accessibility of the pharmacy setting (e.g. convenient location, co-location, no appointments required, opening hours)	Pt[16, 47]; N[49]	Pt[16, 31, 33, 35, 36, 38, 39, 54*, 55]; N[49]; GP[45*, 50*, 51]
40. Structural characteristics of the pharmacy setting i.e. size, provision of counselling rooms, use of visual space for posters, child-friendly area	Pt[41]	Pt[38, 39, 41*]
41. Privacy of the setting, including the availability of a private consultation area and limited involvement of multiple staff members who would be aware of the patients' personal matters	Pt[17, 39-41, 47, 54]; GP[19]; N[43]	Pt[36, 38, 41]
42. Availability of suitable material resources to support the service (e.g. educational material for patients, medical devices, patient data management system, etc.)		Pt[39, 40, 42]
43. Sufficient qualified staff to perform CPS	Pt[42]; GP[19, 45, 55]	Pt[46]
44. Organization of the pharmacist's workload and time to deliver CPSs	Pt[39, 46, 47, 54]; N[49]; GP[31, 45]	Pt[39, 55]
45. Organisational commitment to implement a CPS	Pt[31, 39]; N[49]	
46. Promotion of the CPS to facilitate its uptake		Pt[31*, 33*, 45]; GP[19]

b. Community pharmacy service		
47. Extent to which the CPS meets and is tailored to fit individual patient's needs or fills existing gaps in healthcare practice (this enhances the value of the service for patients and healthcare professionals)	Pt[17, 33, 34, 40, 44, 45, 54]; GP[50, 52]	Pt[17, 31, 33, 36, 39, 40, 44-47, 54]; N[45]; GP[19, 37, 45, 50-53, 55]
48. Quality of the CPS (e.g. validity, accuracy of the materials and tools used, CPSs provided in a timely manner, provision of both verbal and written information, professional advice and education, etc.)	Pt[44]; GP[45, 55]; N[18]	Pt[17, 36, 38, 39]; GP[19]
49. Complexity of the CPS for use by healthcare professionals	GP[19]; N[18, 49]	
50. Extent to which CPSs provide ongoing support, follow-up and feedback to patients	GP[50]	Pt[17, 31, 36, 38, 40, 41, 45]
51. Flexibility to use different communication channels (e.g. telephone, website) to interact with patients and healthcare providers		Pt[36, 38, 41*]
52. Consistency in the community pharmacist delivering the CPS		Pt[36, 39, 44], N[18*]
53. Involvement of other healthcare providers in delivering the CPS		Pt[39]; N[18*]; GP[19*]
54. Costs and duration of the CPS consultation for the patient	Pt[54, 55]; N[49]	Pt[36, 55]; GP[16, 19]; N[49*],
Elements at the community and health system level		

55. General consumer education about healthcare; promotion of CPS by the media	Pt[55]; GP[55]	Pt[46, 55]; GP[45*, 55]
56. Collaboration, influences, conflicts between GP and pharmacist professional bodies		GP[32*]
57. Organization of GPs' workload and time to collaborate with CPSs	GP[19, 45, 50, 52, 53]	
58. Complexity of system-level administrative processes (e.g. tedious paperwork) associated to the delivery of CPS; i.e., complying with the requirements of the department of health	GP[16, 19, 45, 51, 55]	
59. Availability of an electronic system for sharing information	Pt[17, 54]	Pt[16*, 55]; N[18*]; GP[16, 19*, 34*, 48, 50*, 51]
60. Presence of agreed healthcare protocols, regulations, rules and policies to facilitate the delivery of CPSs	Pt[42]; N[49]	Pt[42]; GP[19*, 50, 51]
61. Limits on the healthcare budget; i.e., funding allocated to support CPS delivery	GP[16, 45, 52, 55]	Pt[42, 54*]; GP[16, 50, 55]
62. Availability of financial incentives for service provision and inter-professional collaboration		Pt[54*]; N[49*]
63. Organisation of the healthcare system	Pt[54]; GP[55]	

CPS: Community Pharmacy Service; GP: General Practitioner; Pt: Patient; N: Nurse

‡ Barrier: the element was mentioned to act as a BARRIER or hinder to the implementation of CPSs; † Facilitator: the element was mentioned to act as a FACILITATOR or enabler to the implementation of CPSs; (*) this element was reported as a potential strategy to overcome a barrier (i.e., facilitator).

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Individual patient level. All the 16 elements at the patient level were identified by patients. GPs and nurses did not identify any additional patient-related barriers and facilitators. Influential elements at this level were related to the patients' needs, preferences, perceptions expectations, or previous experiences with community pharmacists and services. Patients' health-related concerns, understanding or perception of their health problems are important elements that influence patients' need for healthcare and so their decisions to utilise CPSs. Most patients held positive views about CPSs and the role of the pharmacist in providing such services.[38, 39, 45] Some articles highlighted that positive experiences were related to the patient feeling comfortable and welcomed in the pharmacy.[36, 38, 40] When CPSs required a formal referral from the GP, some patients deterred from requesting the services. These patients perceived that by requesting a CPS they would be bothering the GP[34] or offending and compromising their relationship with the GP.[17, 45, 46] Patients also reported that having negative experience with a CPS also deterred them from accessing and utilising such CPS in the future.[40]

Interpersonal level. Influential elements at the interpersonal level were related to two categories or sub-levels: (1) *individual healthcare professionals* (which also includes professional pharmacy staff), and (2) *relationships (or interactions) between individuals* (which includes both the relationships between healthcare professionals and between those professionals and patients). With respect to the *individual healthcare professionals*, 17 elements were identified and related to characteristics of the community pharmacists (n=4), nurses (n=4) and GPs (n=4) and characteristics of non-provider personnel (i.e., other community pharmacy staff members -e.g., pharmacy assistant) (n=5). Articles reported that GPs' and nurses' service support varied depending on their perceptions or understanding of CPSs and the role of pharmacists. Home medicine review services had a great deal of approval and support from the GP perspective.[45, 50] On the other side, pharmacists providing immunisations raised some conflicting views among GPs since they believed this was the role of the GP or nurse practitioner.[50] Some studies highlighted that GPs had a limited

understanding of the capabilities of the pharmacist as service providers with pharmacists perceived as drug sellers in a retail enviroment.[32-34, 51, 54] Regarding the second sub-level (i.e., *relationships (or interactions) between individuals*), seven influential elements were identified. Articles reported that well-established relationships between the pharmacist and the nurse or the GP, were essential for the success of a CPS.[19, 49] Similarly, characteristics of the relationship between the patient and the pharmacist (e.g., trust) was a key element that influenced pharmacy choice, contributed to the patient adhering to the CPS, and accepting the intervention.[17, 31, 34, 36, 38-40, 44] Some articles reported the influence of family and friends on patient utilisation of CPSs (e.g., providing support, influencing motivation),[33, 54] and others commented on the integration of partners into the CPS (e.g., provision of group sessions with partners).[33, 36]

Organizational level. Also at the organisational level, influential elements were divided into two sub-levels: (1) *the community pharmacy setting* (n=8) and (2) *the service itself* (n=8). With respect to the pharmacy setting, many articles identified the accessibility of the pharmacy facilitated inter-professional relationships between GPs and pharmacists,[50, 51] and influenced patient[16, 36, 39] and nurse[49] participation in CPS. In some articles non-english speaking patients reported that the lack of multilingual staff limited their awareness and access to CPSs.[42, 46] Other articles noted GP and nurse concerns regarding the lack of pharmacies that provide CPSs[49] and insufficient accredited pharmacists to perform CPSs.[45, 55] Regarding the barriers and facilitators related to the CPS itself, concerns regarding the validity and accuracy of the tools and instruments used (e.g. medical devices, medication charts) were raised by GPs and nurses.[18, 50] Patients and nurses commented that having the same service provider at each encounter facilitated rapport building between the patient and the pharmacist,[36, 39, 44] and caused fewer errors when it came to preparing dose administration aids.[18] Furthermore, patients, nurses and GPs reported on the involvement/participation of healthcare professionals other than pharmacists in the provision of CPSs,[39] or to act as a point of liaison,[19] to improve the quality and efficiency of the

service. The cost of the service was a key element, mentioned by all stakeholders, that could either discourage[49, 54] or motivate[36] patients to utilise services. In particular it was mentioned that smaller, manageable cost payments for patients could facilitate CPS use.[49]

Community and healthcare system level. Nine influential elements were identified at this level. Several articles identified the need for adequate remuneration for GPs and pharmacists for participating in and providing CPSs.[16, 42, 50, 52] GPs also cited the availability of competing, government-funded health programs as contributing to their low participation in CPSs.[45] Where services were available, remunerated and widely supported by GPs and patients, such as home medicine reviews (i.e., a medication review service), GPs mentioned complex bureaucratic procedures (e.g. completing tedious documents) may discourage their use.[16, 19, 45, 51, 55] Despite this, the home medicine review service was generally considered successful by GPs and a frequently reported reason for this was the presence of a clear protocol guiding service delivery.[19, 50, 51] Finally, some broad comments suggesting some additional issues at the higher levels of the healthcare system were mentioned, such as 'better and more responsible organisation of the healthcare system'.[55]

With regards to the interactions between the identified influential elements, 12 articles out of 29 mentioned some form of a relationship between certain elements.[19, 31, 38, 40, 44, 46, 49-53, 56] As shown in Appendix 2 (Supplementary File), a total of 27 relationships between 25 elements were found, with 10 elements presenting 2 or more relationships with others (2 elements showed 5 or more interactions). As a result of the limited, unsystematic information reported in the articles, a sparse network disclosing the recognized relationships between elements was obtained (Appendix 2 in Supplementary File).

DISCUSSION

To the best of our knowledge this is the first review that summarises comprehensive information on the elements that, according to patients, nurses and GPs, can enable or hinder the implementation of CPSs. Patients, GPs and nurses are key members of the

primary healthcare team and their support and expectations for CPSs can highly influence their implementation.[1, 18, 50, 56-59] Thus, by synthesising and organising the influential elements identified by these key stakeholders, this review can optimize future analyses of barriers and facilitators to the implementation of CPSs and so potentially enhance their integration into primary practice. Importantly, this work was intentionally restricted to a specific implementation context (i.e., Australia), to which its results are directly relevant and will be immediately applied. Focusing only on Australia is not considered a limitation of the study; rather it is a sensible decision that allows knowledge about a particular context of interest to be gained. Including studies conducted in contexts or healthcare systems other than Australia (e.g., United Kingdom, United States, etc.), where barriers and facilitators to CPS implementation can be dissimilar in nature and expressed differently, may have brought irrelevant or inappropriate information to this analysis, and so hinder the understanding of the context of interest. However, it should be noted that Australia is a country with a large experience in CPS implementation and where significant research has been conducted in this regard. Therefore, it is expected that the comprehensive list of influential elements demonstrated in this context may be relevant to start investigating barriers and facilitators to CPS implementation in contexts with fewer experience.

Barriers and facilitators to the implementation of CPSs in Australia have been well researched and reported from the perspective of community pharmacists.[13, 14, 58, 60] In this regard, the results of this review confirms that patients, nurses and GPs also recognise some of the influential elements reported in previous pharmacist-informed studies, such as the pharmacist's education and training, collaboration between the pharmacist and the GP, internal pharmacy layout, and financial remuneration. However, this study provides additional insight into further barriers and facilitators, across different ecological levels, that are relevant to other key stakeholder and so are less likely to be reported by pharmacists; for example: patients' capability to follow the procedures of the service, GPs' workload, nurses' attitudes towards other healthcare professionals/services, the actual relationships between

GP and pharmacy professional bodies, or the availability of multidisciplinary training and education. These results highlight the importance of engaging key stakeholders other than pharmacists to better understand the contexts in which CPSs are implemented. In other words, disregarding the input of these stakeholders (or considering only the views of pharmacists), may lead to an incomplete and biased understanding of the implementation context, which, in turn, can result in service underutilisation, unsuccessful implementation and limited service impact.[61] Generally, involving relevant stakeholders throughout the development, implementation and evaluation of health programs is crucial to increase the chances of any of those initiatives being effective and successfully implemented.[6, 62-64] Indeed, this is equally relevant to CPS planning.[65, 66]

The results of this review can assist pharmacy service planners and researchers to better identify the elements that may be enabling or hindering the implementation of existing CPSs. To do so the list of influential elements generated in this review must be combined with the previous findings in pharmacists-informed studies to produce a comprehensive framework to assess barriers and facilitators to CPS implementation. Assessing and understanding the elements influencing pharmacy practice and service implementation must be a key early step in developing appropiate, multilevel programs (i.e., including interventions targeting elements at different levels) aimed at enhancing the integration of CPSs into the healthcare system.[62, 64, 66, 67] Also, influential elements should be prompted and assessed when designing new CPSs. In this scenario, an early analysis of those elements may guide both the early adaptation of CPSs and the early development of tailored implementation programs to better fit the implementation context. The analysis conducted in this review revealed two concerns that must be considered to improve future studies aimed at identifing influential elements. On the one hand, some influential elements at the community and healthcare system level were too broadly described (i.e., ‘organisation of the health system’) and further exploration is needed to clearly understand the specific ‘items’ that they encompass. Presumably, the list determinants of practice described by Flottorp et al[7] (i.e., Tailored

Implementation in Chronic Disease checklist) can provide more detail regarding influential elements at the higher community and healthcare system level and so can initially assist to better frame future analysis of barriers and facilitators to CPS implementation. Particularly, the determinants under the domains 'Incentives and resources'; 'Capacity for organizational change'; and 'Social political and legal factors' seem particularly relevant for this purpose. Importantly, to bring further insight on the elements at the community and healthcare system level it would be important to include and explore the perspectives of other potential key stakeholders, such as other healthcare providers (e.g., specialists), caregivers, representatives of healthcare organisations and professional bodies, policy makers, etc. Furthermore, future studies aimed at identifying barriers and facilitators to CPS implemetation must better describe and understand the relationships between elements.[2, 7] This may help to understand how elements influence each other and which elements are more suitable to be addressed (based on the overall effect that they can produce on other elements) when designing implementation efforts.

Limitations. The network analysis intended in this study was strongly constrained by the limited and unsystematically reported information about the relationships between influential elements. As a result, it was decided not to report further results of the network analysis beyond its pictorial representation. The potential of a full network analysis should be considered in future studies aimed at analysing elements that influence the implementation of CPSs. A suitable network analysis can help to better understand the complex relationships between these elements; detect the core elements that may primarily explain the implementation challenge; and provide insight on the key leverage points that should be targeted within the network to enhance service implementation. Ideally, accurate information on relevant attributes of the influential elements (and the interactions between them) should be collected by the authors of the primary studies to increase the potential of a network analysis; for example, the frequency of occurrence; the direction of the relationships; the domain or level where the element is located (i.e., patients, healthcare professionals,

professional interactions, etc.); the relative relevance of each element; or the effect on implementation outcomes (i.e., performance as barrier or facilitator). Following the particular method chosen for this review (i.e., qualitative meta-synthesis),[21, 22] only primary research articles that used qualitative methods were included. Meta-synthesis enabled a rich description of elements perceived by GPs, patients and nurses to influence implementation of CPSs in Australia. Future reviews that synthesise the quantitative literature on this topic are encouraged. Appraising qualitative research is controversial because of the difficulty of using information about quality to inform syntheses (e.g. even studies with flaws in methodology can provide valuable information).[27] Furthermore, there is no gold standard on appraising qualitative studies.[24] The elementary quality assessment conducted in the current review was aimed at ensuring minimal quality while identifying a broad range of elements that might influence CPS implementation.

CONCLUSION

This qualitative meta-synthesis identified a broad range of elements that, according to patients, GPs and nurses, can enable (i.e., facilitators) or hinder (i.e., barriers) the implementation of CPSs. These influential elements are located at different ecological levels and should be considered together with those previously identified in pharmacy-informed studies to comprehensively analyse the barriers and facilitators to the implementation of CPSs. Future studies aimed at that purpose must involve multiple stakeholder groups (i.e., others than only pharmacists) and better understand the relationships between influential elements to increase the usefulness and interest of their findings. Further to the identification of the influential elements, key stakeholders should keep involved in developing suitable, multilevel programs aimed at enhancing CPS implementation.

ACKNOWLEDGEMENTS

We would like to acknowledge Antonio E. Mendes (Universidade Federal do Parana, Brazil) for his collaboration in the network analysis.

COMPETING INTERESTS

All authors declare no competing interest

FUNDING

Lutfun N. Hossain was awarded a University of Technology Sydney (UTS) President's Scholarship and a UTS Chancellors Research Scholarship.

This work is part of a larger UTS Chancellor's Postdoctoral Research Fellowship awarded to Dr Daniel Sabater-Hernández (UTS ID number: 2013001605).

DATA SHARING STATEMENT

No additional data are available

AUTHORS' CONTRIBUTION

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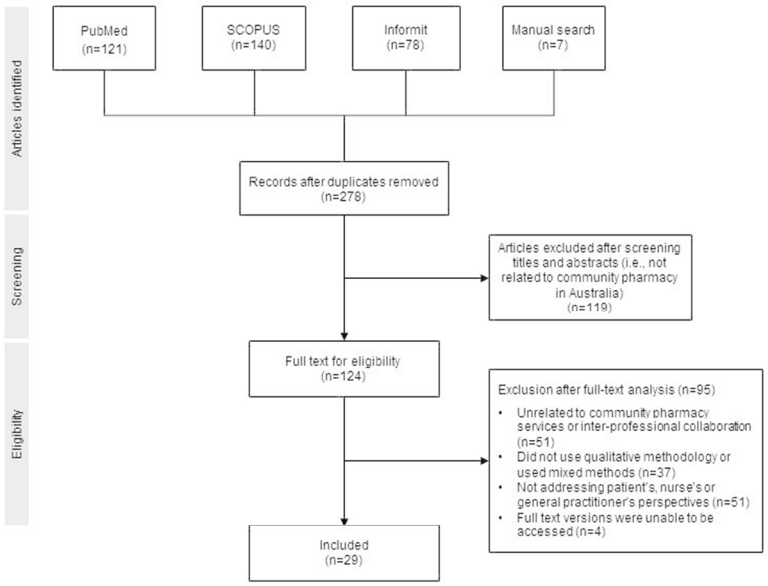
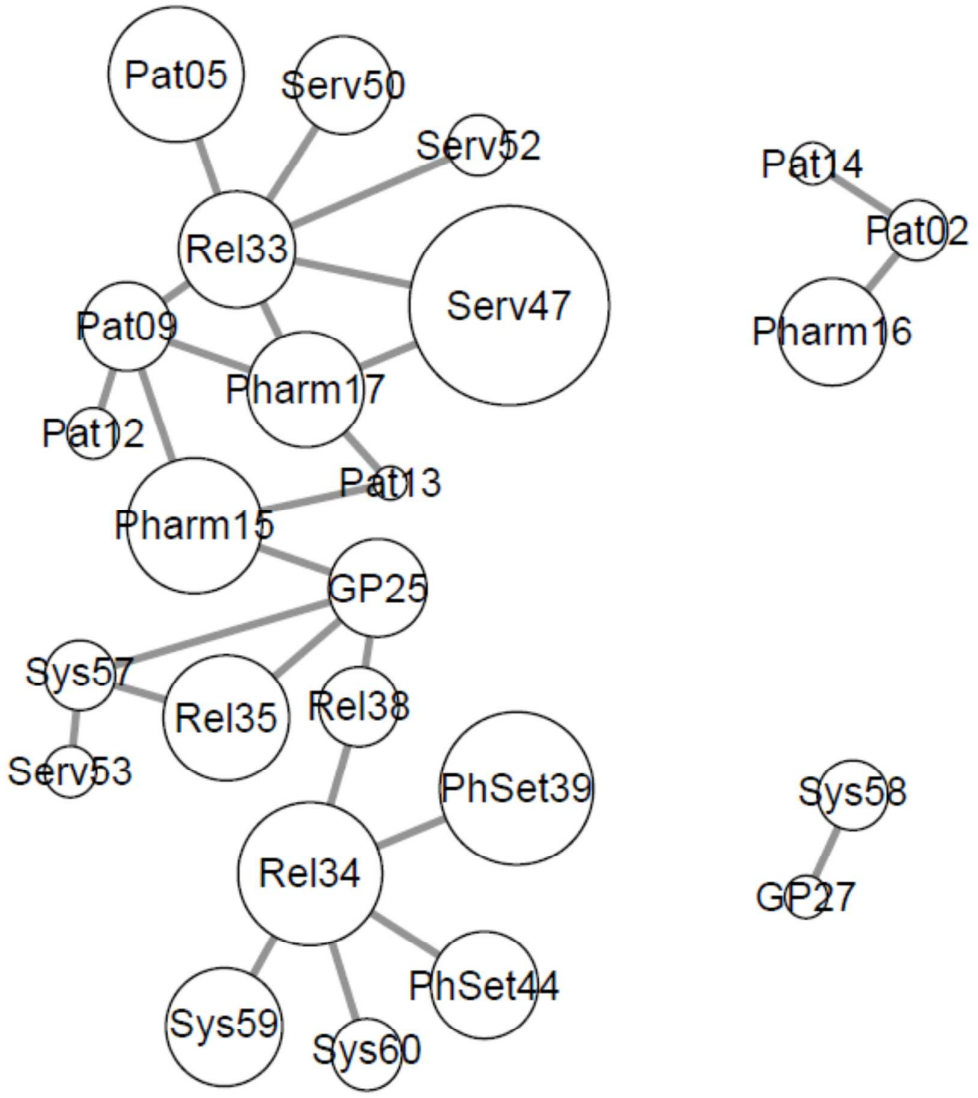
Figure 1. PRISMA flow diagram



254x190mm (96 x 96 DPI)

Appendix 1. Search strategy and key words used in database search	
Database	Search strategy and keywords
PubMed	((opinion OR opinions) OR (view or views) OR (attitude or attitudes) OR (experience OR experiences) OR satisfaction OR (motivation or motivations) OR (perception OR perceptions) OR (preference OR preferences) OR "Attitude to Health"[MH] OR awareness[TW] OR (barrier OR barriers) OR (facilitator or facilitators)) AND (pharmacy OR pharmacies OR pharmacist OR pharmacists) AND ("Interviews as Topic[MH] OR "Empirical Research[MH] OR semi-structured OR qualitative OR ("Focus Groups"[TW] OR "focus group")) AND Australia[TIAB]
Scopus	(((TITLE-ABS-KEY (opinion OR opinions)) OR (TITLE-ABS-KEY (view OR views)) OR (TITLE-ABS-KEY (attitude OR attitudes)) OR (TITLE-ABS-KEY (experience OR experiences)) OR (TITLE-ABS-KEY (satisfaction)) OR (TITLE-ABS-KEY (motivation OR motivations)) OR (TITLE-ABS-KEY (perception OR perceptions)) OR (TITLE-ABS-KEY (preference OR preferences))) OR ((TITLE-ABS-KEY (awareness)) OR (TITLE-ABS-KEY (barrier OR barriers)) OR (TITLE-ABS-KEY (facilitator OR facilitators)) OR (KEY (patient attitude)) OR (KEY (patient satisfaction)) OR (KEY (health personnel attitude)) OR (KEY (patient preference)))) AND ((TITLE-ABS-KEY (pharmacy OR pharmacies)) OR (TITLE-ABS-KEY (pharmacist OR pharmacists))) AND ((KEY (semi structured interview)) OR (TITLE-ABS-KEY (qualitative)) OR (KEY (qualitative research))) AND (TITLE-ABS-KEY (Australia))
Informit	Pharmacy AND qualitative

Appendix 2. Relationships between influential elements and resulted network*



* Elements' numbers in the figure match with the elements' numbers on table 3 where a full description of each element can be found. The size of the nodes is determined by the number of times (i.e., articles) that each element was reported.

Pat: element at the patient level; Pharm: element at the healthcare professional level (i.e., pharmacist); GP: element at the at the healthcare professional level (i.e., general practitioner); Rel: element related to the relationships (or interactions) between individuals; PhSet: element related to the community pharmacy setting; Serv: element related to the community pharmacy service; Sys: influential element at the community and healthcare system level.

Related elements		Description of the relationship
Pat09	Pat12	Patients who did not have a positive experience with CPSs were not motivated to receive future ones[1]
Pat14	Pat02	Patients' language issues prevented them from becoming more aware of CPSs[2]
Pat09	Pharm15	Patients' previous positive experiences of CPS were related to a suitable knowledge of the pharmacist[3]
Pat09	Pharm17	Patients' previous positive experiences of CPS were related to positive humanistic attributes of the community pharmacist (i.e. friendly)[3]
Pat09	Rel33	Patients' previous positive experiences in the pharmacy contributed to the formation of a closer relationship between the patient and the pharmacist[3]
Pat13	Pharm15	Patients with higher levels of emotional intelligence valued the knowledge and competency of community pharmacists[4]
Pat13	Pharm17	Patients with lower levels of emotional intelligence valued the humanistic attributes of the community pharmacist in CPS[4]
Pharm16	Pat02	Lack of multilingual community pharmacists prevented awareness of the availability of CPS in some ethnic patients[2]
Pharm17	Rel33	The humanistic attributes of the pharmacist (e.g., approachability, sensitivity) shaped the relationships between the patient and the pharmacist[3]
Pharm17	Serv47	The humanistic attributes of the pharmacist (e.g., approachability) created an environment in which patients could ask questions, seek advice and better address their needs[5]
GP25	Sys57	GPs can see a higher value in CPSs when they address their time limitations[6]
GP25	Pharm15	GPs' perceptions and understanding of the role of community

		pharmacists depends on whether pharmacists have received appropriate training and demonstrate suitable health-related knowledge and skills[7]
Rel38	Rel34	GP-Pharmacist combined meetings and training can promote collaborative relationships between the pharmacist and GP[8]
Rel33	Pat05	Patients who had an on-going relationship with community pharmacists were more likely to see the value of pharmacists providing health services[3]
Rel33	Serv50	The existence of a relationship between the patient and the pharmacist can determine the success of follow-up mechanisms in the CPS[4]
Rel35	GP25	GPs who experienced a high level of communication with pharmacists saw value in the input pharmacists can make to their practice[8]
Rel38	GP25	Developing multidisciplinary training with pharmacists and GPs could enhance GPs' understanding and perception of pharmacists' capabilities and role in healthcare[8]
PhSet39	Rel34	Physical accessibility and co-location of the pharmacy to the GP medical centre can promote collaborative relationships between the pharmacists and GPs[8,9]
PhSet44	Rel34	Time constraints of the pharmacist limited the collaboration between the pharmacists and the nurse[10]
Serv47	Pat09	When patients perceived that CPS were not patient-centred, they reported negative experiences[3]
Serv47	Rel33	CPSs which are patient-centred can contribute to the development of a relationship between the patient and the pharmacist[3,11]
Serv52	Rel33	Having the same pharmacist delivering the CPS each time can contribute to the development of a relationship between the patient and the pharmacist[1]

Serv53	Sys57	Involving healthcare providers other than pharmacists (e.g., practice nurses) in the provision/coordination of CPS and related processes can positively influence GP time and workload constraints[12]
Sys57	Rel35	The workload and time of GPs influence the mode through which they interact and communicate with community pharmacists[9]
Sys58	GP27	Complex administrative processes (e.g., tedious paperwork to refer patients to CPS) that require extra time from the GP (Sys57) may affect GPs' willingness to collaborate with CPSs[12]
Sys59	Rel34	A system for sharing information can promote collaborative relationships between the pharmacist and GP[8]
Sys60	Rel34	The presence of protocols to guide CPS delivery can contribute to improved GP–pharmacist relationships[9]

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BMJ Open

A qualitative meta-synthesis of barriers and facilitators that influence the implementation of community pharmacy services: perspectives of patients, nurses and general medical practitioners

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2016-015471.R1
Article Type:	Research
Date Submitted by the Author:	26-May-2017
Complete List of Authors:	Hossain, Lutfun; University of Technology Sydney Fernandez-Llimos, Fernando; Universidade de Lisboa Luckett, Tim; University of Technology Sydney Moullin, Joanna; University of California San Diego Durks, Desire; University of Technology Sydney Franco-Trigo, Lucia; University of Technology Sydney Benrimoj, Charlie; University of Technology, Sydney Sabater-Hernandez, Daniel; University of Technology Sydney
Primary Subject Heading:	Health services research
Secondary Subject Heading:	Qualitative research
Keywords:	Community pharmacy services, health service research, qualitative meta-synthesis, barriers, facilitators, determinants of practice

A qualitative meta-synthesis of barriers and facilitators that influence the implementation of community pharmacy services: perspectives of patients, nurses and general medical practitioners

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Word count (excluding title page, abstract, references, figures and tables): 4263

ABSTRACT

Objectives: The integration of community pharmacy services (CPSs) into primary care practice can be enhanced by assessing (and further addressing) the elements that enable (i.e., facilitators) or hinder (i.e., barriers) the implementation of such CPSs. These elements have been widely researched from the perspective of pharmacists but not from the perspectives of other stakeholders who can interact with, and influence the implementation of CPSs. The aim of this study was to synthesise the literature on patients', general practitioners' (GPs) and nurses' perspectives of CPSs to identify barriers and facilitators to their implementation in Australia.

Methods: A meta-synthesis of qualitative studies was performed. A systematic search in PubMed, Scopus and Informit was conducted to identify studies that explored patients', GPs' or nurses' views about CPSs in Australia. Thematic synthesis was performed to identify elements influencing CPS implementation, which were further classified using an ecological approach.

Results: Twenty nine articles were included in the review, addressing sixty three elements influencing CPS implementation. Elements were identified as a barrier, facilitator or both, and were related to four ecological levels: individual patient (n=14); interpersonal (n=24); organizational (n=16); and community and healthcare system (n=9). It was found that patients, nurses and GPs identified elements reported in previous pharmacist-informed studies, such as pharmacist's training/education or financial remuneration, but also new elements, such as patients' capability to follow service's procedures, the relationships between GP and pharmacy professional bodies, or the availability of multidisciplinary training/education.

Conclusions: Patients, GPs and nurses can describe a large number of elements influencing CPS implementation. These elements can be combined with previous findings in pharmacists-informed studies to produce a comprehensive framework to assess barriers and facilitators to

CPS implementation. This framework can be used by pharmacy service planners and policy makers to improve the analysis of the contexts in which CPSs are implemented.

KEY WORDS

Community pharmacy services [MeSH]; health service research [MeSH]; qualitative meta-synthesis; barriers; facilitators; determinants of practice.

STRENGHTS AND LIMITATIONS OF THIS STUDY

- Qualitative meta-synthesis aims to synthesise qualitative literature to provide a new, more comprehensive interpretation of the findings that goes beyond the depth and breadth of the original studies and to broaden the range of concepts identified. Therefore, it is an appropriate method to suitably achieve the aim of this study, which was to identify a comprehensive range of elements that, according to general practitioners, patients and nurses, can enable (i.e., facilitators) or hinder (i.e., barriers) the implementation of community pharmacy services in Australia.
- For the first time, a review focuses on synthesising the perspectives of these key stakeholders who can strongly influence the implementation of community pharmacy services at the primary care level.
- Qualitative studies in this review were checked against a minimum set of quality appraisal criteria, but a comprehensive quality assessment was not conducted. This decision was made due to the difficulty of using the information about studies' quality to inform the synthesis (e.g. even studies with flaws in methodology can provide valuable information), and to identify a larger number of possible influential elements.
- This review was purposively focused on a specific implementation context (i.e., Australia), to which its results are directly relevant and will be immediately applied and actions will be taken. Australia is a country with a large experience in research and

implementation of community pharmacy services and, therefore, it is expected the results of this review may be relevant to start investigating barriers and facilitators to community pharmacy service implementation in contexts with less experience.

INTRODUCTION

The implementation of new health interventions and services into established healthcare practices and systems has been found to be challenging.[1-4] The inherent complexity of both health services and healthcare systems may be fundamental to the implementation problem.[5, 6] According to current health planning approaches, the implementation of health services can be enhanced by comprehensively assessing the context in which they will be delivered. Analysis of the context should consider the stakeholders who can influence or be affected by the health service, as well as the social, physical, economic and policy environments that can enable or hinder the normalization of the service.[2, 7] Early identification of these elements (including how they relate to or interact with each other) is a key step for developing suitable strategies and interventions to enhance health service implementation.

In the implementation science literature, several terms are used to refer to the elements that can influence service implementation and practice change. Some generally known examples, which are commonly used interchangeably in the literature,[8] are: barriers and facilitators;[9] determinants of practice;[7] implementation factors;[10] or constructs.[2] The current use of these terms encloses different concepts. For the purpose of this review and to avoid the terminological debate we have used the term 'influential element' as a neutral term.

Amid increasing awareness of the uniqueness of the community pharmacy setting and the positive contribution pharmacists can make to healthcare,[11] there has been a shift towards pharmacists providing more professional, patient-centred services. However the implementation and sustainability of community pharmacy services (CPSs) and the integration of community pharmacists into primary healthcare teams remains a challenge worldwide.[12, 13] In consistence with this international trend, Australian community pharmacies are eager to provide CPSs, receive remuneration from the government for its provision, but are experiencing challenges in the implementation, uptake and sustainability of CPSs.[14] Extensive research has

been conducted to identify the elements that from the perspective of community pharmacists (i.e., service provider) can influence the implementation of CPSs.[14-16] However, considering the view of a single stakeholder group is insufficient to comprehensively analyse the complexity of a particular implementation context. These limited analyses can lead to the development of inadequate implementation strategies and interventions. Patients, general practitioners (GPs), and primary care nurses are key stakeholders who interact with or are affected by CPSs and may be able to strongly influence the implementation of such services. These stakeholders may have their own particular views about CPSs and so can complement the findings from previous pharmacy-informed research.[14, 15] Patients', nurses' and GPs' views and experiences regarding CPSs have been explored in several qualitative studies[17-21] but no review that collates and analyses such information exists. Qualitative meta-synthesis aims to synthesise qualitative literature to provide a new, more comprehensive interpretation of the findings that goes beyond the depth and breadth of the original studies and to broaden the range of concepts identified.[22, 23] Thus, the aim of this study was to synthesise such qualitative literature to describe the broad range of elements that, from the patients', GPs' and nurses' perspectives, can hinder or enable the implementation of CPSs in Australia.

METHODS

Search strategy, screening and eligibility criteria. A systematic search was conducted in May 2015 in three electronic databases (i.e., PubMed, Scopus and Informit), without time limits, to identify qualitative studies addressing patients', nurses' or GPs' views about CPSs in Australia. A CPS was assumed to refer to an action or set of actions delivered in or organised by a community pharmacy to optimise the process of care, with the aim of improving health outcomes and the value of healthcare.[24] For the purpose of this review, CPSs are specific health programs that are implemented in addition to routine professional activities performed by community pharmacists, which do not require any specific or extra implementation effort (i.e.,

they are part of normal community pharmacy practice). Since medicines dispensing is the main routine activity in the community pharmacy, it was not considered as a CPS and so excluded. Articles that did not address a specific CPS but inter-professional collaboration (i.e. between community pharmacists and other healthcare professionals) were included as they can also provide insight into the elements influencing the implementation of CPSs. Full search strategies are available on Appendix 1 (Supplementary File). In addition, the references from the included papers were searched manually for additional relevant studies. A two-step process was performed by one researcher to select studies for the analysis. As a first step, titles and abstracts were screened to identify and exclude non-relevant literature. In a second, full texts of the remaining articles were reviewed to exclude those that: (1) were not related to CPSs; (2) did not address patient, nurse and/or GP perspective; (3) did not use qualitative research methodology;[25] (4) did not clearly identify the stakeholder (i.e., patient, nurse or GP) as the source of the information; and (5) were not accessible in any of the research team university libraries, or unattainable following contact with the authors.

All the included articles were checked by the same researcher for 'elementary quality assessment' using the first three criteria delineated by Dixon-Woods et al[26] to appraise qualitative research: (1) was the research question clear? (2) Was the research questions suited to qualitative inquiry? (3) Were (a) sampling, (b) data collection, and (c) analysis clearly described? Articles were excluded when no answer, or an unclear answer, was given to at least one of the three questions.

Synthesis. Qualitative meta-synthesis was conducted by one researcher according to the three-stage method for thematic synthesis described by Thomas et al[27] The first stage of analysis involved free line-by-line coding of the original data (study participants' quotes) and the study authors' interpretation of the original data. The process of coding involves summarising text from the results and discussion sections of each article into one or more descriptive issues

(i.e. codes) to capture meaning. The second stage of the process involved grouping codes into one or more descriptive themes. Subsequent articles were coded into pre-existing themes, and new themes were created when considered necessary. To simplify the terminology throughout this article, themes were interpreted as elements (i.e., influential elements) that could positively (i.e., facilitators) or negatively (i.e., barriers) influence CPS implementation or practice change. A barrier was defined as *"any type of obstacle (material or immaterial) which can impede the dissemination, implementation and/or sustainability of a CPS"*; while a facilitator was defined as *"any type of element (material or immaterial) which can help to overcome barriers and/or accelerate the dissemination or implementation"* of a CPS.[16] Themes that were related to similar issues were further grouped to create one broad barrier or facilitator. The identified influential elements were reviewed by a second researcher to assess clarity, consistency, and understanding. At the third stage, barriers and facilitators were organised using an adapted version of the Ecological Model (Table 1),[28] which classified them into four different levels: patient, interpersonal, organisational, and community/system. The four levels defined in Table 1 were used as an overarching structure, with further sub-headings created during analysis, for appropriate allocation and organisation of the influential elements into the levels. The ecological model has been widely and successfully used for planning services in a variety of settings, targeting different populations and problems.[29, 30] Coding of papers that were identified manually was conducted last. NVivo Version 10 software (QSR International Pty Ltd; Australia) was used to help manage and analyse the data. Once all the influential elements were identified, a second round of analysis was conducted to identify where a connection or relationship was mentioned between two or more elements. Again, both study participants' quotes and study authors' data interpretation were reviewed for this purpose. A network representing the identified relationships was generated using a ForceAtlas2 layout[31] with Gephi, 0.8. This article has been written following existing guidelines for reporting the synthesis of qualitative research (the ENTREQ Statement).[32]

Table 1. Levels where elements that can influence the implementation of community pharmacy services can exist (adapted from McLeroy et al[28])	
Individual patient	Influential elements related to the personal characteristics and ideas concerning individual patients (i.e., individual determinants), such as their knowledge, beliefs and skills, that can affect their utilisation of community pharmacy services.
Interpersonal	Influential elementsrelated to the healthcare providers and non-healthcare personnel (i.e., individual determinants) who are involved with the community pharmacy service and with whom patients associate (e.g., family, friends, pharmacists, pharmacy assistants, GPs, nurses) and the formal and informal relationships between patients and healthcare professionals and healthcare professionals with other healthcare professionals.
Organisational	Influential elements related to characteristics of the community pharmacy setting and their decision processes, and attributes of the community pharmacy service that can influence the success of implementation.
Community and system	Influential elements related to the larger society (i.e., environmental determinants), which consists of collectives of people in a geographical location, the relationships between organisations, the political players in the system and the rules, regulations and policies that have the power to control and/or influence the implementation of services.

RESULTS

The systematic and manual search identified 243 articles once duplicates were removed. After title and abstract screening, 124 full-text articles were assessed for eligibility of which 29 articles were included in the qualitative meta-synthesis (all of them fulfilled the appraisal criteria) (Figure 1). A description of the papers included in the review can be found in Table 2. Of the 29 included papers, 15 addressed patients' perspectives only, 2 addressed nurses' perspectives only, 6 addressed GPs' perspectives only, 2 addressed nurses' and GPs' perspectives together,

3 addressed patients' and GPs' perspectives together and 1 addressed the views of all three participants. Twenty-three articles were related to a specific CPS, 2 were related specifically to inter-professional collaboration, 3 were related to both CPSs and inter-professional collaboration, and 1 addressed concordance-based healthcare. The articles employed semi-structured interviews (n=23), and/or focus groups (n=11) as methods of data collection.

Table 2. General description of the articles included in the qualitative meta-synthesis

Study	Description of participants				Service explored/assessed topic	Method
	(n)	Pt	N	GP		
McMillan et al[33]	Patients with a chronic condition, diverse culture and socioeconomic background from three geographical locations in Queensland (Logan-Beaudesert and Mount Isa), New South Wales (Northern Rivers) and Western Australia (Greater Perth) (n=89)	X			Disease management and Medication management (i.e., chronic management service)	SSI
Rieck & Pettigrew[34]	GPs working in practices in low, medium or high socioeconomic status suburbs across Perth (Western Australia) (n=22)			X	Disease management (i.e., chronic disease management service) and inter-professional collaboration	SSI
Barbara et al[35]	Patients who are immigrants of Maltese ethnicity, residing in Australia, with a confirmed diagnosis of T2DM, >50 years of	X			Disease management and Medication management (i.e., diabetes self-	SSI

	age, able to adequately communicate verbally in English or Maltese, located in Sydney (n=24)				management service)	
Bereznicki et al[36]	Patients (n=6) and GPs (n=10) previously involved in a community pharmacy based asthma intervention, in Tasmania	X		X	Disease management (i.e., Asthma management service)	SSI
Cvetkovski et al[17]	Patients >18 years of age with a diagnosis of asthma (n=10); and GPs in small rural centres (n=8), from different locations based on the Australian Standard Geographical Classification	X		X	Disease management (i.e., Asthma management service)	SSI
Saba et al[37]	Patients >18 year of age, English speaking, current smoker, medical diagnosis of asthma and/or any other condition alongside asthma in Sydney Central Business District and South Western suburbs (n=24)	X			Disease management (i.e., smoking cessation service for patients with asthma)	SSI
Shoukry et al[38]	Patients who had bought/hired/trialled a Continuous Positive Airway Pressure machine (or accessories) through their pharmacy in the previous 12 months in the greater Sydney region (n=20)	X			Disease management (i.e., obstructive sleep apnoea services)	SSI

Um et al[39]	GPs with large expertise in weight management (n=3)			X	Disease management (i.e., weight management service)	SSI
Snell et al[40]	Patients >18 years of age, English speaking, enrolled in a specific weight loss program for >2 weeks from different urban and regional suburbs in Sydney (n=20)	X			Disease management (i.e., weight management service)	SSI
Maher et al[41]	Women who have at least one child <5 years old are able to read and speak English from different locations based on Australian Standard Geographical Classification (n=28)	X			Condition management (i.e., Maternal nutrition service)	SSI
Mey et al[42]	Patients living independently, experiencing a mild to moderate mental illness (and carers) in Queensland, New South Wales and Western Australia (n=74*)	X			Medication management (i.e., service for patients with mental health conditions)	FG/SSI
Hattingh et al[43]	Patients with a mental health condition (and carers) (n=74*) and healthcare professionals (n=13) located in urban, regional, rural and remote regions in Queensland, New South Wales and Western Australia	X			Disease management (i.e., service for patients with mental health conditions)	FG/SSI

Clark et al[44]	Refugee women (n=38)**	X			Medication management (i.e., primary healthcare service)	FG
O'Connor et al[45]	Palliative care nurses working in community-based palliative care, residential aged care adopting a palliative approach or working in a dedicated hospice or palliative care unit in a hospital (n=44); and practising GPs (n=10), in Australian metropolitan and regional areas		X	X	Disease management and medication management (i.e., services to community-based palliative care patients)	FG/SSI
Carter et al[46]	Patients who are English, Mandarin or Arabic speaking, who had received a home medicines review service within the last 6 months or had not received such a service but were eligible for it, in metropolitan or rural areas in Australia (n=80)	X			Medication management (i.e., home medicines review)	FG
Lee et al[47]	Patients living in retirement villages in Victoria who were using prescribed medicines (n=25); GPs (n=9) and nurses (n=1) with experience with home medicines review services and/or providing care to retirement-village residents.	X	X	X	Medication management (i.e., home medicines review)	FG/SSI
White et al[48]	Patients of Chinese or Vietnamese origin who	X			Medication management (i.e., home	FG

	had never received a home medicines review service but were eligible for it, in two suburban areas in Sydney (n=17)				medicines review)	
White et al[18]	Patients who had received a home medicines review service in the past 6 months or who had never received such a service but were eligible for it, in New South Wales, Victoria, Queensland and South Australia (n=77)	X			Medication management (i.e., home medicines review)	FG
Dhillon et al[20]	GPs practising in metropolitan medical centres in Perth (n=24)			X	Medication management (i.e., home medicines review)	SSI
Swain et al[49]	Patients taking multiple medications, with a reasonable understanding of English and linked to an Aboriginal Health Service in urban, regional, rural and remote settings in Queensland, Northern Territory, South Australia, New South Wales and Victoria (n=101)	X			Medication management (i.e., service aimed at enhance the quality use of medicines)	FG
Du Pasquier & Aslani[50]	Patients >18 years of age, fluent in English, taking one prescription medication on a daily basis in Sydney (n=22)	X			Medication management (i.e., adherence support service)	SSI
Gilmartin et	Nurses who worked at residential aged care		X		Medication management (i.e., dose	FG

al[19]	facilities and used dose administration aids in Victoria (n=5)				administration aids service)	
Bui et al[51]	Nurses working in public, opioid substitution therapy clinics in NSW (n=9)		X		Disease management (i.e., opioid substitution therapy services)	SSI
Van et al[52]	GPs practising in private/medical/specialised settings in rural/suburb/city areas in Sydney (n=23)			X	Inter-professional collaboration in the context of disease management and medication management (i.e., professional pharmacy services)	SSI
Van et al[53]	GPs in metropolitan and rural areas in New South Wales (n=15)**			X	Inter-professional collaboration in the context of a disease management (i.e., diabetes medication assistance service) and medication management (i.e., home medicines review service)	SSI
Dey et al[54]	GPs working in Western Sydney (n=7)**			X	Inter-professional collaboration in the context of disease management (i.e., asthma management services)	SSI
Chong et al[55]	GPs (n=4) and nurses (n=7) working with mental health consumers in a healthcare setting in New South Wales		X	X	Inter-professional collaboration in the context of disease management (i.e., mental health services)	SSI
Cheong et	Patients >18 years of age, English speaking,	X			Inter-professional collaboration in the	SSI

al[56]	with a diagnosis of asthma, in inner-west Sydney metropolitan region (n=16)				context of disease management (i.e., asthma management service)	
Bajramovic et al[57]	Patients >18 years of age, taking at least one medication (n=7) and GPs (n=10) in Brisbane	X		X	Medication management (i.e., concordance based healthcare services)	FG/SSI
	GP: General Practitioner; N: Nurse; Pt: Patient; SSI: Semi-structured interview; FG: Focus Group; * Total number of patients and carers. Opinions of carers were clearly differentiated in the article and excluded from this review. ** No further description of participants was provided in the paper					

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During the first stage of data extraction, 181 patient, 30 nurse and 91 GP codes were created. At the completion of the coding process, 63 influential elements were identified (Table 3). These elements were found to exist as a barrier, facilitator or both. In several studies patients, nurses and GPs were able to describe approaches or strategies to overcome specific barriers.[17-20, 33-36, 39, 41, 43, 47, 51, 52, 57] These strategies have been reported in Table 3 as additional facilitators (marked with an asterisk). During coding of the manually identified papers, it seemed that conceptual saturation may have been reached, since no new barriers or facilitators were identified.

Table 3. Elements that can hinder (i.e., barrier) or enable (i.e., facilitator) the implementation of community pharmacy services as identified by patients, general practitioners and nurses

	Effect on implementation and source of information (i.e., stakeholder)	
	Barrier‡	Facilitator†
Elements at the individual patient level		
1. Patients' real or perceived need for healthcare (according to patients' individual concerns, understanding or perception of their health problems).	Pt[18, 46, 47, 55, 56]; GP[17]	Pt[18, 33, 35, 36, 41, 46, 48, 56, 57]; N[51]; GP[17]
2. Patients' awareness of the availability of CPS	Pt[33, 47, 48]; GP[20, 47]	
3. Patient personal desire or preference for CPSs		Pt[41, 46, 48, 56]
4. Patients' understanding, perceptions and expectations of their own role in the CPS	Pt[36, 50, 56]	Pt[17, 36, 56]
5. Patients' understanding, perceptions and expectations of the role of community pharmacists in healthcare	Pt[17, 18, 35, 36, 41, 42, 56]; N[51]; GP[20]	Pt[35, 37, 38, 41, 42, 50, 56]
6. Patients' understanding, perceptions and expectations of the role of the GP associated to the CPS	Pt[35, 36, 46-50, 56]	
7. Patients' understanding, perceptions and expectations of collaboration between healthcare professionals	Pt[56]	Pt[56]

8. Patients' availability, time to participate in CPSs	Pt[33, 40]	Pt[40, 56]
9. Patients' previous/background experiences with CPSs and multidisciplinary care	Pt[41, 42, 47, 56]	Pt[38, 42, 46, 47, 49, 56]
10. Patient abilities; i.e., to follow the procedures of the CPS or to self-manage their health problems	Pt[40, 56]; GP[36, 52, 54]	Pt[37, 40, 48]
11. Patients' satisfaction with the delivered CPSs and multidisciplinary care		Pt[36, 38, 40, 42, 46]; N[51]
12. Patients' motivation towards CPSs	Pt[46]	Pt[37, 40, 46]
13. Patients' level of emotional intelligence; i.e. ability to cope with negative experiences.	Pt[40]	Pt[40]
14. Patients' language, communication and cultural issues	Pt[44, 48]; GP[20]	
Elements at interpersonal level		
a. Individual healthcare professionals (sub-level)		
a.1. Community pharmacist		
15. Knowledge, expertise, clinical and non-clinical skills (e.g. cultural competency) to adequately provide CPSs	Pt[42]; GP[34, 52]	Pt[18*, 20, 38, 40, 41*, 42, 44, 48]; GP[39, 54]
16. Communication skills; including the capacity to speak other languages	Pt[48, 49]; N[45]	Pt[18, 33, 35, 37, 41, 48-50]
17. Humanistic attributes (e.g. being respectful, caring, non-judgemental, friendly, empathetic, supportive and approachable)	Pt[40]	Pt[33, 35, 36, 38, 40-43, 46, 56]

18. Willingness, interest, motivation to provide CPSs and/or participate in multidisciplinary collaboration	N[33, 37, 51, 56]; GP[47]	Pt[35]
a.2. Other community pharmacy staff members (e.g. pharmacy assistants)		
19. Technical knowledge (e.g., about a product)	Pt[41, 42]	Pt[41]
20. Communication skills	Pt[42]	Pt[41]
21. Humanistic attributes		Pt[41]
22. Ability to work professionally (e.g., uphold patient confidentiality)	Pt[42, 43]	
23. Experience working in the pharmacy	Pt[41, 42]	Pt[41]
a.3. General Practitioner		
24. Understanding, perceptions and expectations of their individual role with regard CPSs	GP[52, 54]	
25. Understanding, perceptions and expectations of pharmacist's capabilities and role in healthcare	GP[34, 36, 52-54]	GP[54]; [17, 34, 36, 39, 57]
26. Awareness of the availability of CPS	GP[20]	
27. Willingness, interest, motivation to collaborate with CPSs	GP[20]	GP[20, 54]
a.4. Nurse		
28. Understanding, perceptions and expectations of their individual role within, or in regards to,	N[19]	

CPSs		
29. Knowledge and skills to adequately participate in the delivery of CPS	N[19]	N[19*]
30. Attitude towards other healthcare professionals and their roles		N[19]
31. Willingness, interest, motivation to collaborate with CPSs	N[19]	N[19]
b. Relationships (or interactions) between individuals (sub-level)		
32. Influence of friends and family on patients utilising CPSs (i.e., they may provide support, affect patient's adherence, or patient's enthusiasm with CPSs)	Pt[40, 41, 48]	Pt[17*, 35*, 41]
33. Previous relationship between the patient and the pharmacist and its nature (e.g. trusting relationship)	Pt[18]; GP[20]	Pt[18, 33, 36, 38, 40-42, 46]; GP[52]
34. Collaborative relationships between the pharmacist and other healthcare providers (e.g., GPs), and their nature	Pt[57]; N[51]; GP[34, 45, 47, 52, 53, 57]	Pt[35, 56]; N[19, 51]; GP[17*, 20, 52-54, 57]
35. Communication channels and modes between pharmacists and other healthcare providers (e.g., GPs)	N[19, 45]; GP[36, 52, 54, 55]	Pt[17, 18, 35]; N[51]; GP[17, 52-54]
36. Existence of referral mechanisms between healthcare professionals, including also those between pharmacy support staff and pharmacists (i.e., care coordination and transition)	Pt[42]; GP[36, 52]; N[51],	Pt[38, 41]; GP[17, 20, 36, 39, 47, 52, 54]; N[51]
37. Consistency in the information provided by the pharmacist with regards to the GP's recommendations	GP[45, 52, 53, 57]	GP[52, 57]

38. Availability of multidisciplinary education, training and meetings for pharmacists and GPs that enhance integrated, collaborative care		Pt[52*, 56*]; N[51]; GP[17, 34, 52, 53]
Elements at the organisational level		
a. Community pharmacy setting (sub-level)		
39. Accessibility of the pharmacy setting (e.g. convenient location, co-location, no appointments required, opening hours)	Pt[17, 49]; N[51]	Pt[17, 33, 35, 37, 38, 40, 41, 56*, 57]; N[51]; GP[47*, 52*, 53]
40. Structural characteristics of the pharmacy setting i.e. size, provision of counselling rooms, use of visual space for posters, child-friendly area	Pt[43]	Pt[40, 41, 43*]
41. Privacy of the setting, including the availability of a private consultation area and limited involvement of multiple staff members who would be aware of the patients' personal matters	Pt[18, 41-43, 49, 56]; GP[20]; N[45]	Pt[38, 40, 43]
42. Availability of suitable material resources to support the service (e.g. educational material for patients, medical devices, patient data management system, etc.)		Pt[41, 42, 44]
43. Sufficient qualified staff to perform CPS	Pt[44]; GP[20, 47, 57]	Pt[48]
44. Organization of the pharmacist's workload and time to deliver CPSs	Pt[41, 48, 49, 56]; N[51]; GP[33, 47]	Pt[41, 57]
45. Organisational commitment to implement a CPS	Pt[33, 41]; N[51]	

46. Promotion of the CPS to facilitate its uptake		Pt[33*, 35*, 47]; GP[20]
b. Community pharmacy service		
47. Extent to which the CPS meets and is tailored to fit individual patient's needs or fills existing gaps in healthcare practice (this enhances the value of the service for patients and healthcare professionals)	Pt[18, 35, 36, 42, 46, 47, 56]; GP[52, 54]	Pt[18, 33, 35, 38, 41, 42, 46-49, 56]; N[47]; GP[20, 39, 47, 52-55, 57]
48. Quality of the CPS (e.g. validity, accuracy of the materials and tools used, CPSs provided in a timely manner, provision of both verbal and written information, professional advice and education, etc.)	Pt[46]; GP[47, 57]; N[19]	Pt[18, 38, 40, 41]; GP[20]
49. Complexity of the CPS for use by healthcare professionals	GP[20]; N[19, 51]	
50. Extent to which CPSs provide ongoing support, follow-up and feedback to patients	GP[52]	Pt[18, 33, 38, 40, 42, 43, 47]
51. Flexibility to use different communication channels (e.g. telephone, website) to interact with patients and healthcare providers		Pt[38, 40, 43*]
52. Consistency in the community pharmacist delivering the CPS		Pt[38, 41, 46], N[19*]
53. Involvement of other healthcare providers in delivering the CPS		Pt[41]; N[19*]; GP[20*]
54. Costs and duration of the CPS consultation for the patient	Pt[56, 57]; N[51]	Pt[38, 57]; GP[17, 20]; N[51*],

Elements at the community and health system level		
55. General consumer education about healthcare; promotion of CPS by the media	Pt[57]; GP[57]	Pt[48, 57]; GP[47*, 57]
56. Collaboration, influences, conflicts between GP and pharmacist professional bodies		GP[34*]
57. Organization of GPs' workload and time to collaborate with CPSs	GP[20, 47, 52, 54, 55]	
58. Complexity of system-level administrative processes (e.g. tedious paperwork) associated to the delivery of CPS; i.e., complying with the requirements of the department of health	GP[17, 20, 47, 53, 57]	
59. Availability of an electronic system for sharing information	Pt[18, 56]	Pt[17*, 57]; N[19*]; GP[17, 20*, 36*, 50, 52*, 53]
60. Presence of agreed healthcare protocols, regulations, rules and policies to facilitate the delivery of CPSs	Pt[44]; N[51]	Pt[44]; GP[20*, 52, 53]
61. Limits on the healthcare budget; i.e., funding allocated to support CPS delivery	GP[17, 47, 54, 57]	Pt[44, 56*]; GP[17, 52, 57]
62. Availability of financial incentives for service provision and inter-professional collaboration		Pt[56*]; N[51*]
63. Organisation of the healthcare system	Pt[56]; GP[57]	

CPS: Community Pharmacy Service; GP: General Practitioner; Pt: Patient; N: Nurse

‡ Barrier: the element was mentioned to act as a BARRIER or hinder to the implementation of CPSs; † Facilitator: the element was mentioned to act as a FACILITATOR or enabler to the implementation of CPSs; (*) this element was reported as a potential strategy to overcome a barrier

(i.e., facilitator).

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Individual patient level. All the 16 elements at the patient level were identified by patients. GPs and nurses did not identify any additional patient-related barriers and facilitators. Influential elements at this level were related to the patients' needs, preferences, perceptions and expectations, capabilities or previous experiences with community pharmacists and services. Patients' health-related concerns, understanding or perception of their health problems are important elements that influence patients' need for healthcare and so their decisions to utilise CPSs. Most patients held positive views about CPSs and the role of the pharmacist in providing such services.[40, 41, 47] Some articles highlighted that positive experiences were related to the patient feeling comfortable and welcomed in the pharmacy.[38, 40, 42] When CPSs required a formal referral from the GP, some patients deterred from requesting the services. These patients perceived that by requesting a CPS they would be bothering the GP[36] or offending and compromising their relationship with the GP.[18, 47, 48] Patients also reported that having a negative experience with a CPS also deterred them from accessing and utilising such CPSs in the future.[42]

Interpersonal level. Influential elements at the interpersonal level were related to two categories or sub-levels: (1) *individual healthcare professionals* (which also includes professional pharmacy staff), and (2) *relationships (or interactions) between individuals* (which includes both the relationships between healthcare professionals and between those professionals and patients).

Individual healthcare professionals. 17 elements were identified and related to characteristics of the community pharmacists (n=4), nurses (n=4) and GPs (n=4) and characteristics of non-provider personnel (i.e., other community pharmacy staff members - e.g., pharmacy assistant) (n=5). Articles reported that GPs' and nurses' service support varied depending on their perceptions or understanding of CPSs and the role of pharmacists. Home medicine review services had a great deal of approval and support from the GP perspective.[47, 52] On the other side, pharmacists providing immunisations raised some conflicting views among GPs since they believed this was the role of the GP or nurse

practitioner.[52] Some studies highlighted that GPs had a limited understanding of the capabilities of the pharmacist as service providers with pharmacists perceived as drug sellers in a retail enviroment.[34-36, 53, 56] Both patients and GPs implied the need for pharmacists to undergo upskilling and training to be qualified to provide some CPSs.[34, 39, 48]

Relationships (or interactions) between individuals. Seven influential elements were identified. Articles reported that well-established relationships between the pharmacist and the nurse or the GP, including collaborative relationships, were essential for the success of a CPS.[17, 19, 20, 35, 51, 54] Multidisciplinary education an training for healthcare professionals was suggested as a way to improve healthcare professional competence.[56] Similarly, characteristics of the relationship between the patient and the pharmacist (e.g., trust) was a key element that influenced pharmacy choice, contributed to the patient adhering to the CPS, and accepting the intervention.[18, 33, 36, 38, 40-42, 46] Some articles reported the influence of family and friends on patient utilisation of CPSs (e.g., providing support, influencing motivation),[35, 56] and others commented on the integration of partners into the CPS (e.g., provision of group sessions with partners).[35, 38]

Organizational level. Also at the organisational level, influential elements were divided into two sub-levels: (1) *the community pharmacy setting* (n=8) and (2) *the service itself* (n=8).

The community pharmacy setting. Some articles identified the accessibility of the pharmacy facilitated inter-professional relationships between GPs and pharmacists,[52, 53] and influenced patient[17, 38, 41] and nurse[51] participation in CPS. In some articles non-english speaking patients reported that the lack of multilingual staff limited their awareness and access to CPSs.[44, 48] Other articles noted GP and nurse concerns regarding the lack of pharmacies that provide CPSs[51] and insufficient accredited pharmacists to perform CPSs.[47, 57]

The community phamacy service. Concerns regarding the validity and accuracy of the tools and instruments used (e.g. medical devices, medication charts) were raised by GPs and nurses.[19, 52] Patients and nurses commented that having the same service provider at each

encounter facilitated rapport building between the patient and the pharmacist,[38, 41, 46] and caused fewer errors when it came to preparing dose administration aids.[19] Furthermore, patients, nurses and GPs reported on the involvement/participation of healthcare professionals other than pharmacists in the provision of CPSs,[41] or to act as a point of liaison,[20] to improve the quality and efficiency of the service. The cost of the service was a key element, mentioned by all stakeholders, that could either discourage[51, 56] or motivate[38] patients to utilise services. In particular it was mentioned that smaller, manageable cost payments for patients could facilitate CPS use.[51]

Community and healthcare system level. Nine influential elements were identified at this level. Several articles identified the need for adequate remuneration for GPs and pharmacists for participating in and providing CPSs,[17, 44, 52, 54] as well as the implementation of an electronic system of information sharing between these two healthcare professionals.[19, 20, 36, 57] GPs also cited the availability of competing, government-funded health programs, and their high level of workload and lack of time as contributing to their low participation in CPSs.[47] Where services were available, remunerated and widely supported by GPs and patients, such as home medicine reviews (i.e., a medication review service), GPs mentioned complex bureaucratic procedures (e.g. completing tedious documents) may discourage their use.[17, 20, 47, 53, 57] Despite this, the home medicine review service was generally considered successful by GPs and a frequently reported reason for this was the presence of a clear protocol guiding service delivery.[20, 52, 53] GPs also suggested increased and improved collaboration between pharmacy and GP professional representative bodies may improve awareness of the services and encourage participation. The media was perceived to have an important role in improving awareness of and promoting CPSs. Finally, some broad comments suggesting some additional issues at the higher levels of the healthcare system were mentioned, such as ‘better and more responsible organisation of the healthcare system’.[57]

With regards to the interactions between the identified influential elements, 12 articles out of 29 mentioned some form of a relationship between certain elements.[20, 33, 40, 42, 46, 48, 51-55, 58] As shown in Appendix 2 (Supplementary File), a total of 27 relationships between 25 elements were found, with 10 elements presenting 2 or more relationships with others (2 elements showed 5 or more interactions). As a result of the limited, unsystematic information reported in the articles, a sparse network disclosing the recognized relationships between elements was obtained (Appendix 2 in Supplementary File).

DISCUSSION

To the best of our knowledge this is the first review that summarises comprehensive information on the elements that, according to patients, nurses and GPs, can enable or hinder the implementation of CPSs. Patients, GPs and nurses are key members of the primary healthcare team and their support and expectations for CPSs can highly influence their implementation.[1, 19, 52, 58-61] Thus, by synthesising and organising the influential elements identified by these key stakeholders, this review can optimize future analyses of barriers and facilitators to the implementation of CPSs and so potentially enhance their integration into primary practice. Importantly, this work was intentionally restricted to a specific implementation context (i.e., Australia), to which its results are directly relevant and will be immediately applied. Focusing only on Australia is not considered a limitation of the study; rather it is a sensible decision that allows knowledge about a particular context of interest to be gained. Including studies conducted in contexts or healthcare systems other than Australia (e.g., United Kingdom, United States, etc.), where barriers and facilitators to CPS implementation can be dissimilar in nature and expressed differently, may have brought irrelevant or inappropriate information to this analysis, and so hinder the understanding of the context of interest. However, it should be noted that Australia is a country with a large experience in CPS implementation and where significant research has been conducted in this regard compared to other countries worldwide. Therefore, it is expected that the comprehensive list of influential elements identified in this context may be relevant to start

investigating barriers and facilitators to CPS implementation in countries with less experience. Furthermore, the elements identified in this review can provide insight to pharmacy service planners in other countries to guess and avoid some problems in the implementation of CPSs beforehand.

Barriers and facilitators to the implementation of CPSs in Australia have been well researched and reported from the perspective of community pharmacists.[14, 15, 60, 62] In this regard, the results of this review confirms that patients, nurses and GPs also recognise some of the influential elements reported in previous pharmacist-informed studies, such as the pharmacist's education and training, collaboration between the pharmacist and the GP, accessibility of the pharmacy setting, and financial remuneration. However, this study provides additional insight into further barriers and facilitators, across different ecological levels, that are relevant to other key stakeholder and so are less likely to be reported by pharmacists; for example: patients' capability to follow the procedures of the service, GPs' workload, nurses' attitudes towards other healthcare professionals/services, the actual relationships between GP and pharmacy professional bodies, or the availability of multidisciplinary training and education. These results highlight the importance of engaging key stakeholders other than pharmacists to better understand the contexts in which CPSs are implemented. In other words, disregarding the input of these stakeholders (or considering only the views of pharmacists), may lead to an incomplete and biased understanding of the implementation context, which, in turn, can result in service underutilisation, unsuccessful implementation and limited service impact.[63] Generally, involving relevant stakeholders throughout the development, implementation and evaluation of health programs is crucial to increase the chances of any of those initiatives being effective and successfully implemented.[6, 29, 30, 64] Indeed, this is equally relevant to CPS planning.[65, 66]

Semi-structured interviews, and/or focus group with healthcare professionals and patients appear to be appropriate methods to identify a large number of unique influential elements.[67]

Thus pharmacy service planners can continue to utilise these methods to identify determinants of pharmacy practice in their own context. Although, the type of qualitative method used may affect the type of barriers/facilitators identified, it is more likely that the aims of the studies included in this review, their target population and/or the specific service/topic addressed by the study may have had a stronger influence in the type of barriers or facilitator identified.

The results of this review can assist pharmacy service planners and researchers to better identify the elements that may be enabling or hindering the implementation of existing CPSs. By combining the list of influential elements generated in this review with previous findings in pharmacists-informed studies a comprehensive framework to assess barriers and facilitators to CPS implementation can be produced. Assessing and understanding the elements influencing pharmacy practice and service implementation must be a key early step in developing appropiate, multilevel programs (i.e., including interventions targeting elements at different levels) aimed at enhancing the integration of CPSs into the healthcare system.[29, 30, 66, 68] Also, influential elements should be prompted and assessed when designing new CPSs. Identifying elements prior to designing a new CPS may guide both the early adaptation of the service to the context, as well as the early development of tailored implementation programs to better fit (or change) the implementation context. As an analysis of influential elements is likely to yield a large number of items, it would not be feasible to address each and every one of those elements. Thus once elements have been identified for a specific context, further efforts are required to prioritise those elements that are most relevant and can be practically addressed.[8, 69] In this regard, McMillan et al[70] provide a summary of methods used to determine priorities and how they have been used in pharmacy practice research, which can guide pharmacy service planners in this regard.

The analysis conducted in this review revealed three concerns that must be considered to improve future studies aimed at identifing influential elements. On the one hand, some influential elements at the community and healthcare system level were too broadly

described (i.e., 'organisation of the health system') and further exploration is needed to clearly understand the specific 'items' that they encompass. Presumably, the list determinants of practice described by Flottorp et al[7] (i.e., Tailored Implementation in Chronic Disease checklist) can provide more detail regarding influential elements at the higher community and healthcare system level and so can initially assist to better frame future analysis of barriers and facilitators to CPS implementation. Particularly, the determinants under the domains 'Incentives and resources'; 'Capacity for organizational change'; and 'Social political and legal factors' seem particularly relevant for this purpose. Importantly, to bring further insight on the elements at the community and healthcare system level it would be important to include and explore the perspectives of other potential key stakeholders, such as other healthcare providers (e.g., specialists), caregivers, representatives of healthcare organisations and professional bodies, policy makers, etc. Furthermore, future studies aimed at identifying barriers and facilitators to CPS implemetation must better describe and understand the relationships between elements.[2, 7] This may help to understand how elements influence each other and which elements are more suitable to be addressed (based on the overall effect that they can produce on other elements) when designing implementation efforts.

Limitations. The network analysis intended in this study was strongly constrained by the limited and unsystematically reported information about the relationships between influential elements. As a result, it was decided not to report further results of the network analysis beyond its pictorial representation. The potential of a full network analysis should be considered in future studies aimed at analysing elements that influence the implementation of CPSs. A suitable network analysis can help to better understand the complex relationships between these elements; detect the core elements that may primarily explain the implementation challenge; and provide insight on the key leverage points that should be targeted within the network to enhance service implementation. Ideally, accurate information on relevant attributes of the influential elements (and the interactions between them) should

be collected by the authors of the primary studies to increase the potential of a network analysis; for example, the frequency of occurrence; the direction of the relationships; the domain or level where the element is located (i.e., patients, healthcare professionals, professional interactions, etc.); the relative relevance of each element; or the effect on implementation outcomes (i.e., performance as barrier or facilitator).

Following the particular method chosen for this review (i.e., qualitative meta-synthesis),[22, 23] only primary research articles that used qualitative methods were included. Meta-synthesis enabled a rich description of elements perceived by GPs, patients and nurses to influence implementation of CPSs in Australia. Future reviews that synthesise the quantitative literature on this topic are encouraged. Appraising qualitative research is controversial because of the difficulty of using information about quality to inform syntheses (e.g. even studies with flaws in methodology can provide valuable information).[26] Furthermore, there is no gold standard on appraising qualitative studies.[32] The elementary quality assessment conducted in the current review was aimed at ensuring minimal quality while identifying a broad range of elements that might influence CPS implementation. Lastly, the papers included in this review were not restricted by the time at which they were published, since the aim of the study was to include all relevant papers that can inform about any influential element that has been noted in practice. It is important to acknowledge that as contexts can change over time, the effect of influential elements can also change, cease to exist or new elements can emerge. It is therefore important to regularly monitor elements and prioritise those that must be addressed.

CONCLUSION

This qualitative meta-synthesis identified a broad range of elements that, according to patients, GPs and nurses, can enable (i.e., facilitators) or hinder (i.e., barriers) the implementation of CPSs. These influential elements are located at different ecological levels and should be considered together with those previously identified in pharmacy-informed

studies to comprehensively analyse the barriers and facilitators to the implementation of CPSs. Future studies aimed at that purpose must involve multiple stakeholder groups (i.e., others than only pharmacists) and better understand the relationships between influential elements to increase the usefulness and interest of their findings. Further to the identification of the influential elements, key stakeholders should keep involved in developing suitable, multilevel programs aimed at enhancing CPS implementation.

ACKNOWLEDGEMENTS

We would like to acknowledge Antonio E. Mendes (Universidade Federal do Parana, Brazil) for his collaboration in the network analysis.

COMPETING INTERESTS

All authors declare no competing interest

FUNDING

Lutfun N. Hossain was awarded a University of Technology Sydney (UTS) President's Scholarship and a UTS Chancellors Research Scholarship.

This work is part of a larger UTS Chancellor's Postdoctoral Research Fellowship awarded to Dr Daniel Sabater-Hernández (UTS ID number: 2013001605).

DATA SHARING STATEMENT

No additional data are available

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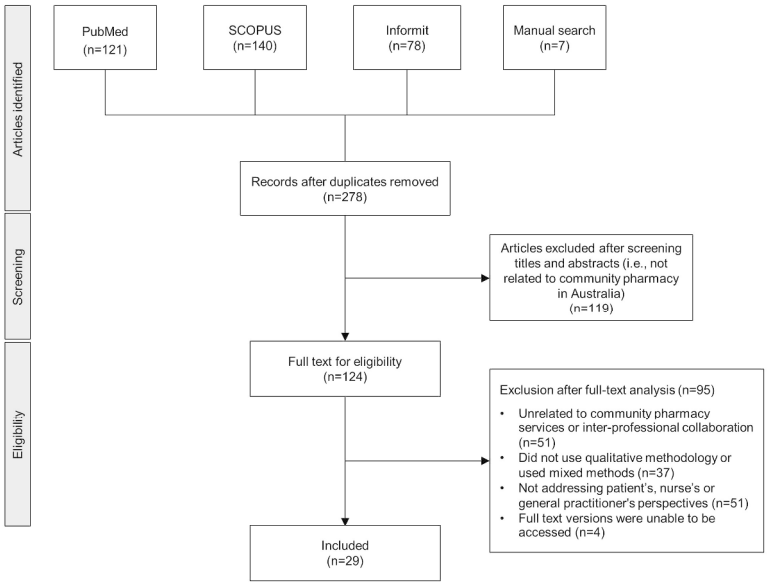
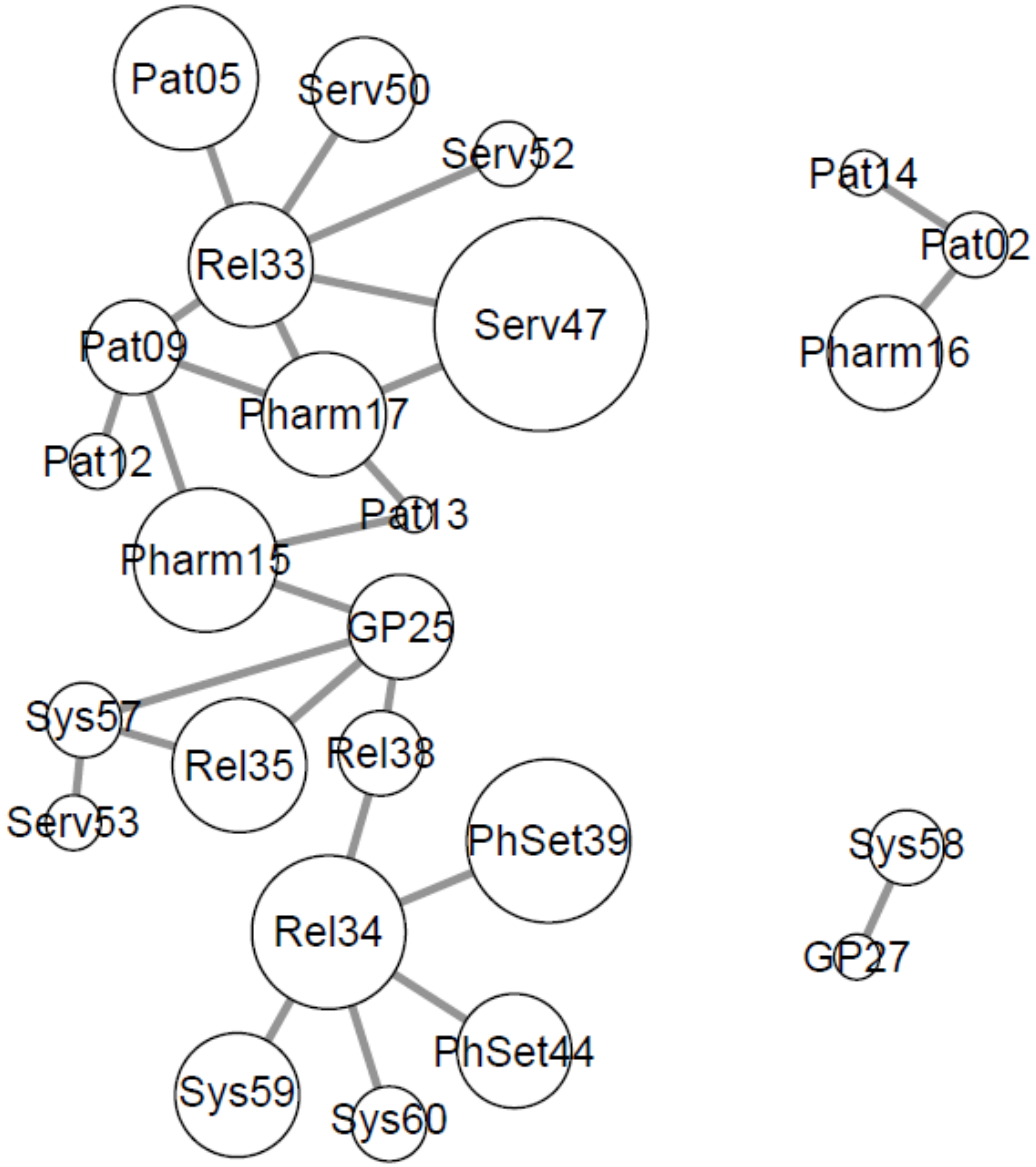
Figure 1. PRISMA flow diagram



254x190mm (300 x 300 DPI)

Appendix 1. Search strategy and key words used in database search	
Database	Search strategy and keywords
PubMed	((opinion OR opinions) OR (view or views) OR (attitude or attitudes) OR (experience OR experiences) OR satisfaction OR (motivation or motivations) OR (perception OR perceptions) OR (preference OR preferences) OR "Attitude to Health"[MH] OR awareness[TW] OR (barrier OR barriers) OR (facilitator or facilitators)) AND (pharmacy OR pharmacies OR pharmacist OR pharmacists) AND ("Interviews as Topic[MH] OR "Empirical Research[MH] OR semi-structured OR qualitative OR ("Focus Groups"[TW] OR "focus group")) AND Australia[TIAB]
Scopus	(((TITLE-ABS-KEY (opinion OR opinions)) OR (TITLE-ABS-KEY (view OR views)) OR (TITLE-ABS-KEY (attitude OR attitudes)) OR (TITLE-ABS-KEY (experience OR experiences)) OR (TITLE-ABS-KEY (satisfaction)) OR (TITLE-ABS-KEY (motivation OR motivations)) OR (TITLE-ABS-KEY (perception OR perceptions)) OR (TITLE-ABS-KEY (preference OR preferences))) OR ((TITLE-ABS-KEY (awareness)) OR (TITLE-ABS-KEY (barrier OR barriers)) OR (TITLE-ABS-KEY (facilitator OR facilitators)) OR (KEY (patient attitude)) OR (KEY (patient satisfaction)) OR (KEY (health personnel attitude)) OR (KEY (patient preference)))) AND ((TITLE-ABS-KEY (pharmacy OR pharmacies)) OR (TITLE-ABS-KEY (pharmacist OR pharmacists))) AND ((KEY (semi structured interview)) OR (TITLE-ABS-KEY (qualitative)) OR (KEY (qualitative research))) AND (TITLE-ABS-KEY (Australia))
Informit	Pharmacy AND qualitative

Appendix 2. Relationships between influential elements and resulted network*



* Elements' numbers in the figure match with the elements' numbers on table 3 where a full description of each element can be found. The size of the nodes is determined by the number of times (i.e., articles) that each element was reported.

Pat: element at the patient level; Pharm: element at the healthcare professional level (i.e., pharmacist); GP: element at the at the healthcare professional level (i.e., general practitioner); Rel: element related to the relationships (or interactions) between individuals; PhSet: element related to the community pharmacy setting; Serv: element related to the community pharmacy service; Sys: influential element at the community and healthcare system level.

Related elements		Description of the relationship
Pat09	Pat12	Patients who did not have a positive experience with CPSs were not motivated to receive future ones[1]
Pat14	Pat02	Patients' language issues prevented them from becoming more aware of CPSs[2]
Pat09	Pharm15	Patients' previous positive experiences of CPS were related to a suitable knowledge of the pharmacist[3]
Pat09	Pharm17	Patients' previous positive experiences of CPS were related to positive humanistic attributes of the community pharmacist (i.e. friendly)[3]
Pat09	Rel33	Patients' previous positive experiences in the pharmacy contributed to the formation of a closer relationship between the patient and the pharmacist[3]
Pat13	Pharm15	Patients with higher levels of emotional intelligence valued the knowledge and competency of community pharmacists[4]
Pat13	Pharm17	Patients with lower levels of emotional intelligence valued the humanistic attributes of the community pharmacist in CPS[4]
Pharm16	Pat02	Lack of multilingual community pharmacists prevented awareness of the availability of CPS in some ethnic patients[2]
Pharm17	Rel33	The humanistic attributes of the pharmacist (e.g., approachability, sensitivity) shaped the relationships between the patient and the pharmacist[3]
Pharm17	Serv47	The humanistic attributes of the pharmacist (e.g., approachability) created an environment in which patients could ask questions, seek advice and better address their needs[5]
GP25	Sys57	GPs can see a higher value in CPSs when they address their time limitations[6]
GP25	Pharm15	GPs' perceptions and understanding of the role of community

		pharmacists depends on whether pharmacists have received appropriate training and demonstrate suitable health-related knowledge and skills[7]
Rel38	Rel34	GP-Pharmacist combined meetings and training can promote collaborative relationships between the pharmacist and GP[8]
Rel33	Pat05	Patients who had an on-going relationship with community pharmacists were more likely to see the value of pharmacists providing health services[3]
Rel33	Serv50	The existence of a relationship between the patient and the pharmacist can determine the success of follow-up mechanisms in the CPS[4]
Rel35	GP25	GPs who experienced a high level of communication with pharmacists saw value in the input pharmacists can make to their practice[8]
Rel38	GP25	Developing multidisciplinary training with pharmacists and GPs could enhance GPs' understanding and perception of pharmacists' capabilities and role in healthcare[8]
PhSet39	Rel34	Physical accessibility and co-location of the pharmacy to the GP medical centre can promote collaborative relationships between the pharmacists and GPs[8,9]
PhSet44	Rel34	Time constraints of the pharmacist limited the collaboration between the pharmacists and the nurse[10]
Serv47	Pat09	When patients perceived that CPS were not patient-centred, they reported negative experiences[3]
Serv47	Rel33	CPSs which are patient-centred can contribute to the development of a relationship between the patient and the pharmacist[3,11]
Serv52	Rel33	Having the same pharmacist delivering the CPS each time can contribute to the development of a relationship between the patient and the pharmacist[1]

Serv53	Sys57	Involving healthcare providers other than pharmacists (e.g., practice nurses) in the provision/coordination of CPS and related processes can positively influence GP time and workload constraints[12]
Sys57	Rel35	The workload and time of GPs influence the mode through which they interact and communicate with community pharmacists[9]
Sys58	GP27	Complex administrative processes (e.g., tedious paperwork to refer patients to CPS) that require extra time from the GP (Sys57) may affect GPs' willingness to collaborate with CPSs[12]
Sys59	Rel34	A system for sharing information can promote collaborative relationships between the pharmacist and GP[8]
Sys60	Rel34	The presence of protocols to guide CPS delivery can contribute to improved GP–pharmacist relationships[9]

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Assessment of the synthesis of qualitative research using the ENTREQ Statement for enhancing transparency in reporting the synthesis of qualitative research	
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BMJ Open

A qualitative meta-synthesis of barriers and facilitators that influence the implementation of community pharmacy services: perspectives of patients, nurses and general medical practitioners

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2016-015471.R2
Article Type:	Research
Date Submitted by the Author:	13-Jul-2017
Complete List of Authors:	Hossain, Lutfun; University of Technology Sydney Fernandez-Llimos, Fernando; Universidade de Lisboa Luckett, Tim; University of Technology Sydney Moullin, Joanna; University of California San Diego Durks, Desire; University of Technology Sydney Franco-Trigo, Lucia; University of Technology Sydney Benrimoj, Charlie; University of Technology, Sydney Sabater-Hernandez, Daniel; University of Technology Sydney
Primary Subject Heading:	Health services research
Secondary Subject Heading:	Qualitative research
Keywords:	Community pharmacy services, health service research, qualitative meta-synthesis, barriers, facilitators, determinants of practice

A qualitative meta-synthesis of barriers and facilitators that influence the implementation of community pharmacy services: perspectives of patients, nurses and general medical practitioners

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Word count (excluding title page, abstract, references, figures and tables): 4263

ABSTRACT

Objectives: The integration of community pharmacy services (CPSs) into primary care practice can be enhanced by assessing (and further addressing) the elements that enable (i.e., facilitators) or hinder (i.e., barriers) the implementation of such CPSs. These elements have been widely researched from the perspective of pharmacists but not from the perspectives of other stakeholders who can interact with, and influence the implementation of CPSs. The aim of this study was to synthesise the literature on patients', general practitioners' (GPs) and nurses' perspectives of CPSs to identify barriers and facilitators to their implementation in Australia.

Methods: A meta-synthesis of qualitative studies was performed. A systematic search in PubMed, Scopus and Informit was conducted to identify studies that explored patients', GPs' or nurses' views about CPSs in Australia. Thematic synthesis was performed to identify elements influencing CPS implementation, which were further classified using an ecological approach.

Results: Twenty nine articles were included in the review, addressing sixty three elements influencing CPS implementation. Elements were identified as a barrier, facilitator or both, and were related to four ecological levels: individual patient (n=14); interpersonal (n=24); organizational (n=16); and community and healthcare system (n=9). It was found that patients, nurses and GPs identified elements reported in previous pharmacist-informed studies, such as pharmacist's training/education or financial remuneration, but also new elements, such as patients' capability to follow service's procedures, the relationships between GP and pharmacy professional bodies, or the availability of multidisciplinary training/education.

Conclusions: Patients, GPs and nurses can describe a large number of elements influencing CPS implementation. These elements can be combined with previous findings in pharmacists-informed studies to produce a comprehensive framework to assess barriers and facilitators to

CPS implementation. This framework can be used by pharmacy service planners and policy makers to improve the analysis of the contexts in which CPSs are implemented.

KEY WORDS

Community pharmacy services [MeSH]; health service research [MeSH]; qualitative meta-synthesis; barriers; facilitators; determinants of practice.

STRENGHTS AND LIMITATIONS OF THIS STUDY

- The particular method chosen for this review (i.e., qualitative meta-synthesis) is aimed at synthesising qualitative literature and so enabled a rich description of the barriers and facilitators perceived by GPs, patients and nurses that can influence the implementation of CPSs in Australia.
- A systematic search was conducted in three comprehensive electronic databases (i.e., PubMed, Scopus and Informit), one of which (i.e., Informit) is particularly relevant to the specific context where the results will be applied.
- The papers included in this review were not restricted by the time at which they were published, since the aim of the study was to include all relevant papers that can inform about any influential element that has been noted in practice.
- A set of quality appraisal criteria was used to appraise all the studies included in this review to ensure minimal quality. .
- Qualitative meta-synthesis was conducted by one researcher according to a three-stage method for thematic synthesis.
- This review was restricted to a specific implementation context (i.e., Australia), to which its results are directly relevant and will be immediately applied and actions will be taken.

INTRODUCTION

The implementation of new health interventions and services into established healthcare practices and systems has been found to be challenging.[1-4] The inherent complexity of both health services and healthcare systems may be fundamental to the implementation problem.[5, 6] According to current health planning approaches, the implementation of health services can be enhanced by comprehensively assessing the context in which they will be delivered. Analysis of the context should consider the stakeholders who can influence or be affected by the health service, as well as the social, physical, economic and policy environments that can enable or hinder the normalization of the service.[2, 7] Early identification of these elements (including how they relate to or interact with each other) is a key step for developing suitable strategies and interventions to enhance health service implementation.

In the implementation science literature, several terms are used to refer to the elements that can influence service implementation and practice change. Some generally known examples, which are commonly used interchangeably in the literature,[8] are: barriers and facilitators;[9] determinants of practice;[7] implementation factors;[10] or constructs.[2] The current use of these terms encloses different concepts. For the purpose of this review and to avoid the terminological debate we have used the term 'influential element' as a neutral term.

Amid increasing awareness of the uniqueness of the community pharmacy setting and the positive contribution pharmacists can make to healthcare,[11] there has been a shift towards pharmacists providing more professional, patient-centred services. However the implementation and sustainability of community pharmacy services (CPSs) and the integration of community pharmacists into primary healthcare teams remains a challenge worldwide.[12, 13] In consistence with this international trend, Australian community pharmacies are eager to provide CPSs, receive remuneration from the government for its provision, but are experiencing challenges in the implementation, uptake and sustainability of CPSs.[14] Extensive research has

been conducted to identify the elements that from the perspective of community pharmacists (i.e., service provider) can influence the implementation of CPSs.[14-16] However, considering the view of a single stakeholder group is insufficient to comprehensively analyse the complexity of a particular implementation context. These limited analyses can lead to the development of inadequate implementation strategies and interventions. Patients, general practitioners (GPs), and primary care nurses are key stakeholders who interact with or are affected by CPSs and may be able to strongly influence the implementation of such services. These stakeholders may have their own particular views about CPSs and so can complement the findings from previous pharmacy-informed research.[14, 15] Patients', nurses' and GPs' views and experiences regarding CPSs have been explored in several qualitative studies[17-21] but no review that collates and analyses such information exists. Qualitative meta-synthesis aims to synthesise qualitative literature to provide a new, more comprehensive interpretation of the findings that goes beyond the depth and breadth of the original studies and to broaden the range of concepts identified.[22, 23] Thus, the aim of this study was to synthesise such qualitative literature to describe the broad range of elements that, from the patients', GPs' and nurses' perspectives, can hinder or enable the implementation of CPSs in Australia.

METHODS

Search strategy, screening and eligibility criteria. A systematic search was conducted in May 2015 in three electronic databases (i.e., PubMed, Scopus and Informit), without time limits, to identify qualitative studies addressing patients', nurses' or GPs' views about CPSs in Australia. A CPS was assumed to refer to an action or set of actions delivered in or organised by a community pharmacy to optimise the process of care, with the aim of improving health outcomes and the value of healthcare.[24] For the purpose of this review, CPSs are specific health programs that are implemented in addition to routine professional activities performed by community pharmacists, which do not require any specific or extra implementation effort (i.e.,

they are part of normal community pharmacy practice). Since medicines dispensing is the main routine activity in the community pharmacy, it was not considered as a CPS and so excluded. Articles that did not address a specific CPS but inter-professional collaboration (i.e. between community pharmacists and other healthcare professionals) were included as they can also provide insight into the elements influencing the implementation of CPSs. Full search strategies are available on Appendix 1 (Supplementary File). In addition, the references from the included papers were searched manually for additional relevant studies. A two-step process was performed by one researcher to select studies for the analysis. As a first step, titles and abstracts were screened to identify and exclude non-relevant literature. In a second, full texts of the remaining articles were reviewed to exclude those that: (1) were not related to CPSs; (2) did not address patient, nurse and/or GP perspective; (3) did not use qualitative research methodology;[25] (4) did not clearly identify the stakeholder (i.e., patient, nurse or GP) as the source of the information; and (5) were not accessible in any of the research team university libraries, or unattainable following contact with the authors.

All the included articles were checked by the same researcher for 'elementary quality assessment' using the first three criteria delineated by Dixon-Woods et al[26] to appraise qualitative research: (1) was the research question clear? (2) Was the research questions suited to qualitative inquiry? (3) Were (a) sampling, (b) data collection, and (c) analysis clearly described? Articles were excluded when no answer, or an unclear answer, was given to at least one of the three questions.

Synthesis. Qualitative meta-synthesis was conducted by one researcher according to the three-stage method for thematic synthesis described by Thomas et al[27] The first stage of analysis involved free line-by-line coding of the original data (study participants' quotes) and the study authors' interpretation of the original data. The process of coding involves summarising text from the results and discussion sections of each article into one or more descriptive issues

(i.e. codes) to capture meaning. The second stage of the process involved grouping codes into one or more descriptive themes. Subsequent articles were coded into pre-existing themes, and new themes were created when considered necessary. To simplify the terminology throughout this article, themes were interpreted as elements (i.e., influential elements) that could positively (i.e., facilitators) or negatively (i.e., barriers) influence CPS implementation or practice change. A barrier was defined as *"any type of obstacle (material or immaterial) which can impede the dissemination, implementation and/or sustainability of a CPS"*; while a facilitator was defined as *"any type of element (material or immaterial) which can help to overcome barriers and/or accelerate the dissemination or implementation"* of a CPS.[16] Themes that were related to similar issues were further grouped to create one broad barrier or facilitator. The identified influential elements were reviewed by a second researcher to assess clarity, consistency, and understanding. At the third stage, barriers and facilitators were organised using an adapted version of the Ecological Model (Table 1),[28] which classified them into four different levels: patient, interpersonal, organisational, and community/system. The four levels defined in Table 1 were used as an overarching structure, with further sub-headings created during analysis, for appropriate allocation and organisation of the influential elements into the levels. The ecological model has been widely and successfully used for planning services in a variety of settings, targeting different populations and problems.[29, 30] Coding of papers that were identified manually was conducted last. NVivo Version 10 software (QSR International Pty Ltd; Australia) was used to help manage and analyse the data. Once all the influential elements were identified, a second round of analysis was conducted to identify where a connection or relationship was mentioned between two or more elements. Again, both study participants' quotes and study authors' data interpretation were reviewed for this purpose. A network representing the identified relationships was generated using a ForceAtlas2 layout[31] with Gephi, 0.8. This article has been written following existing guidelines for reporting the synthesis of qualitative research (the ENTREQ Statement).[32]

Table 1. Levels where elements that can influence the implementation of community pharmacy services can exist (adapted from McLeroy et al[28])	
Individual patient	Influential elements related to the personal characteristics and ideas concerning individual patients (i.e., individual determinants), such as their knowledge, beliefs and skills, that can affect their utilisation of community pharmacy services.
Interpersonal	Influential elementsrelated to the healthcare providers and non-healthcare personnel (i.e., individual determinants) who are involved with the community pharmacy service and with whom patients associate (e.g., family, friends, pharmacists, pharmacy assistants, GPs, nurses) and the formal and informal relationships between patients and healthcare professionals and healthcare professionals with other healthcare professionals.
Organisational	Influential elements related to characteristics of the community pharmacy setting and their decision processes, and attributes of the community pharmacy service that can influence the success of implementation.
Community and system	Influential elements related to the larger society (i.e., environmental determinants), which consists of collectives of people in a geographical location, the relationships between organisations, the political players in the system and the rules, regulations and policies that have the power to control and/or influence the implementation of services.

RESULTS

The systematic and manual search identified 243 articles once duplicates were removed. After title and abstract screening, 124 full-text articles were assessed for eligibility of which 29 articles were included in the qualitative meta-synthesis (all of them fulfilled the appraisal criteria) (Figure 1). A description of the papers included in the review can be found in Table 2. Of the 29 included papers, 15 addressed patients' perspectives only, 2 addressed nurses' perspectives only, 6 addressed GPs' perspectives only, 2 addressed nurses' and GPs' perspectives together,

3 addressed patients' and GPs' perspectives together and 1 addressed the views of all three participants. Twenty-three articles were related to a specific CPS, 2 were related specifically to inter-professional collaboration, 3 were related to both CPSs and inter-professional collaboration, and 1 addressed concordance-based healthcare. The articles employed semi-structured interviews (n=23), and/or focus groups (n=11) as methods of data collection.

Table 2. General description of the articles included in the qualitative meta-synthesis

Study	Description of participants				Service explored/assessed topic	Method
	(n)	Pt	N	GP		
McMillan et al[33]	Patients with a chronic condition, diverse culture and socioeconomic background from three geographical locations in Queensland (Logan-Beaudesert and Mount Isa), New South Wales (Northern Rivers) and Western Australia (Greater Perth) (n=89)	X			Disease management and Medication management (i.e., chronic management service)	SSI
Rieck & Pettigrew[34]	GPs working in practices in low, medium or high socioeconomic status suburbs across Perth (Western Australia) (n=22)			X	Disease management (i.e., chronic disease management service) and inter-professional collaboration	SSI
Barbara et al[35]	Patients who are immigrants of Maltese ethnicity, residing in Australia, with a confirmed diagnosis of T2DM, >50 years of	X			Disease management and Medication management (i.e., diabetes self-	SSI

	age, able to adequately communicate verbally in English or Maltese, located in Sydney (n=24)				management service)	
Bereznicki et al[36]	Patients (n=6) and GPs (n=10) previously involved in a community pharmacy based asthma intervention, in Tasmania	X		X	Disease management (i.e., Asthma management service)	SSI
Cvetkovski et al[17]	Patients >18 years of age with a diagnosis of asthma (n=10); and GPs in small rural centres (n=8), from different locations based on the Australian Standard Geographical Classification	X		X	Disease management (i.e., Asthma management service)	SSI
Saba et al[37]	Patients >18 year of age, English speaking, current smoker, medical diagnosis of asthma and/or any other condition alongside asthma in Sydney Central Business District and South Western suburbs (n=24)	X			Disease management (i.e., smoking cessation service for patients with asthma)	SSI
Shoukry et al[38]	Patients who had bought/hired/trialled a Continuous Positive Airway Pressure machine (or accessories) through their pharmacy in the previous 12 months in the greater Sydney region (n=20)	X			Disease management (i.e., obstructive sleep apnoea services)	SSI

Um et al[39]	GPs with large expertise in weight management (n=3)			X	Disease management (i.e., weight management service)	SSI
Snell et al[40]	Patients >18 years of age, English speaking, enrolled in a specific weight loss program for >2 weeks from different urban and regional suburbs in Sydney (n=20)	X			Disease management (i.e., weight management service)	SSI
Maher et al[41]	Women who have at least one child <5 years old are able to read and speak English from different locations based on Australian Standard Geographical Classification (n=28)	X			Condition management (i.e., Maternal nutrition service)	SSI
Mey et al[42]	Patients living independently, experiencing a mild to moderate mental illness (and carers) in Queensland, New South Wales and Western Australia (n=74*)	X			Medication management (i.e., service for patients with mental health conditions)	FG/SSI
Hattingh et al[43]	Patients with a mental health condition (and carers) (n=74*) and healthcare professionals (n=13) located in urban, regional, rural and remote regions in Queensland, New South Wales and Western Australia	X			Disease management (i.e., service for patients with mental health conditions)	FG/SSI

Clark et al[44]	Refugee women (n=38)**	X			Medication management (i.e., primary healthcare service)	FG
O'Connor et al[45]	Palliative care nurses working in community-based palliative care, residential aged care adopting a palliative approach or working in a dedicated hospice or palliative care unit in a hospital (n=44); and practising GPs (n=10), in Australian metropolitan and regional areas		X	X	Disease management and medication management (i.e., services to community-based palliative care patients)	FG/SSI
Carter et al[46]	Patients who are English, Mandarin or Arabic speaking, who had received a home medicines review service within the last 6 months or had not received such a service but were eligible for it, in metropolitan or rural areas in Australia (n=80)	X			Medication management (i.e., home medicines review)	FG
Lee et al[47]	Patients living in retirement villages in Victoria who were using prescribed medicines (n=25); GPs (n=9) and nurses (n=1) with experience with home medicines review services and/or providing care to retirement-village residents.	X	X	X	Medication management (i.e., home medicines review)	FG/SSI
White et al[48]	Patients of Chinese or Vietnamese origin who	X			Medication management (i.e., home	FG

	had never received a home medicines review service but were eligible for it, in two suburban areas in Sydney (n=17)				medicines review)	
White et al[18]	Patients who had received a home medicines review service in the past 6 months or who had never received such a service but were eligible for it, in New South Wales, Victoria, Queensland and South Australia (n=77)	X			Medication management (i.e., home medicines review)	FG
Dhillon et al[20]	GPs practising in metropolitan medical centres in Perth (n=24)			X	Medication management (i.e., home medicines review)	SSI
Swain et al[49]	Patients taking multiple medications, with a reasonable understanding of English and linked to an Aboriginal Health Service in urban, regional, rural and remote settings in Queensland, Northern Territory, South Australia, New South Wales and Victoria (n=101)	X			Medication management (i.e., service aimed at enhance the quality use of medicines)	FG
Du Pasquier & Aslani[50]	Patients >18 years of age, fluent in English, taking one prescription medication on a daily basis in Sydney (n=22)	X			Medication management (i.e., adherence support service)	SSI
Gilmartin et	Nurses who worked at residential aged care		X		Medication management (i.e., dose	FG

al[19]	facilities and used dose administration aids in Victoria (n=5)				administration aids service)	
Bui et al[51]	Nurses working in public, opioid substitution therapy clinics in NSW (n=9)		X		Disease management (i.e., opioid substitution therapy services)	SSI
Van et al[52]	GPs practising in private/medical/specialised settings in rural/suburb/city areas in Sydney (n=23)			X	Inter-professional collaboration in the context of disease management and medication management (i.e., professional pharmacy services)	SSI
Van et al[53]	GPs in metropolitan and rural areas in New South Wales (n=15)**			X	Inter-professional collaboration in the context of a disease management (i.e., diabetes medication assistance service) and medication management (i.e., home medicines review service)	SSI
Dey et al[54]	GPs working in Western Sydney (n=7)**			X	Inter-professional collaboration in the context of disease management (i.e., asthma management services)	SSI
Chong et al[55]	GPs (n=4) and nurses (n=7) working with mental health consumers in a healthcare setting in New South Wales		X	X	Inter-professional collaboration in the context of disease management (i.e., mental health services)	SSI
Cheong et	Patients >18 years of age, English speaking,	X			Inter-professional collaboration in the	SSI

al[56]	with a diagnosis of asthma, in inner-west Sydney metropolitan region (n=16)				context of disease management (i.e., asthma management service)	
Bajramovic et al[57]	Patients >18 years of age, taking at least one medication (n=7) and GPs (n=10) in Brisbane	X		X	Medication management (i.e., concordance based healthcare services)	FG/SSI
	GP: General Practitioner; N: Nurse; Pt: Patient; SSI: Semi-structured interview; FG: Focus Group; * Total number of patients and carers. Opinions of carers were clearly differentiated in the article and excluded from this review. ** No further description of participants was provided in the paper					

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During the first stage of data extraction, 181 patient, 30 nurse and 91 GP codes were created. At the completion of the coding process, 63 influential elements were identified (Table 3). These elements were found to exist as a barrier, facilitator or both. In several studies patients, nurses and GPs were able to describe approaches or strategies to overcome specific barriers.[17-20, 33-36, 39, 41, 43, 47, 51, 52, 57] These strategies have been reported in Table 3 as additional facilitators (marked with an asterisk). During coding of the manually identified papers, it seemed that conceptual saturation may have been reached, since no new barriers or facilitators were identified.

Table 3. Elements that can hinder (i.e., barrier) or enable (i.e., facilitator) the implementation of community pharmacy services as identified by patients, general practitioners and nurses

	Effect on implementation and source of information (i.e., stakeholder)	
	Barrier‡	Facilitator†
Elements at the individual patient level		
1. Patients' real or perceived need for healthcare (according to patients' individual concerns, understanding or perception of their health problems).	Pt[18, 46, 47, 55, 56]; GP[17]	Pt[18, 33, 35, 36, 41, 46, 48, 56, 57]; N[51]; GP[17]
2. Patients' awareness of the availability of CPS	Pt[33, 47, 48]; GP[20, 47]	
3. Patient personal desire or preference for CPSs		Pt[41, 46, 48, 56]
4. Patients' understanding, perceptions and expectations of their own role in the CPS	Pt[36, 50, 56]	Pt[17, 36, 56]
5. Patients' understanding, perceptions and expectations of the role of community pharmacists in healthcare	Pt[17, 18, 35, 36, 41, 42, 56]; N[51]; GP[20]	Pt[35, 37, 38, 41, 42, 50, 56]
6. Patients' understanding, perceptions and expectations of the role of the GP associated to the CPS	Pt[35, 36, 46-50, 56]	
7. Patients' understanding, perceptions and expectations of collaboration between healthcare professionals	Pt[56]	Pt[56]

8. Patients' availability, time to participate in CPSs	Pt[33, 40]	Pt[40, 56]
9. Patients' previous/background experiences with CPSs and multidisciplinary care	Pt[41, 42, 47, 56]	Pt[38, 42, 46, 47, 49, 56]
10. Patient abilities; i.e., to follow the procedures of the CPS or to self-manage their health problems	Pt[40, 56]; GP[36, 52, 54]	Pt[37, 40, 48]
11. Patients' satisfaction with the delivered CPSs and multidisciplinary care		Pt[36, 38, 40, 42, 46]; N[51]
12. Patients' motivation towards CPSs	Pt[46]	Pt[37, 40, 46]
13. Patients' level of emotional intelligence; i.e. ability to cope with negative experiences.	Pt[40]	Pt[40]
14. Patients' language, communication and cultural issues	Pt[44, 48]; GP[20]	
Elements at interpersonal level		
a. Individual healthcare professionals (sub-level)		
a.1. Community pharmacist		
15. Knowledge, expertise, clinical and non-clinical skills (e.g. cultural competency) to adequately provide CPSs	Pt[42]; GP[34, 52]	Pt[18*, 20, 38, 40, 41*, 42, 44, 48]; GP[39, 54]
16. Communication skills; including the capacity to speak other languages	Pt[48, 49]; N[45]	Pt[18, 33, 35, 37, 41, 48-50]
17. Humanistic attributes (e.g. being respectful, caring, non-judgemental, friendly, empathetic, supportive and approachable)	Pt[40]	Pt[33, 35, 36, 38, 40-43, 46, 56]

18. Willingness, interest, motivation to provide CPSs and/or participate in multidisciplinary collaboration	N[33, 37, 51, 56]; GP[47]	Pt[35]
a.2. Other community pharmacy staff members (e.g. pharmacy assistants)		
19. Technical knowledge (e.g., about a product)	Pt[41, 42]	Pt[41]
20. Communication skills	Pt[42]	Pt[41]
21. Humanistic attributes		Pt[41]
22. Ability to work professionally (e.g., uphold patient confidentiality)	Pt[42, 43]	
23. Experience working in the pharmacy	Pt[41, 42]	Pt[41]
a.3. General Practitioner		
24. Understanding, perceptions and expectations of their individual role with regard CPSs	GP[52, 54]	
25. Understanding, perceptions and expectations of pharmacist's capabilities and role in healthcare	GP[34, 36, 52-54]	GP[54]; [17, 34, 36, 39, 57]
26. Awareness of the availability of CPS	GP[20]	
27. Willingness, interest, motivation to collaborate with CPSs	GP[20]	GP[20, 54]
a.4. Nurse		
28. Understanding, perceptions and expectations of their individual role within, or in regards to,	N[19]	

CPSs		
29. Knowledge and skills to adequately participate in the delivery of CPS	N[19]	N[19*]
30. Attitude towards other healthcare professionals and their roles		N[19]
31. Willingness, interest, motivation to collaborate with CPSs	N[19]	N[19]
b. Relationships (or interactions) between individuals (sub-level)		
32. Influence of friends and family on patients utilising CPSs (i.e., they may provide support, affect patient's adherence, or patient's enthusiasm with CPSs)	Pt[40, 41, 48]	Pt[17*, 35*, 41]
33. Previous relationship between the patient and the pharmacist and its nature (e.g. trusting relationship)	Pt[18]; GP[20]	Pt[18, 33, 36, 38, 40-42, 46]; GP[52]
34. Collaborative relationships between the pharmacist and other healthcare providers (e.g., GPs), and their nature	Pt[57]; N[51]; GP[34, 45, 47, 52, 53, 57]	Pt[35, 56]; N[19, 51]; GP[17*, 20, 52-54, 57]
35. Communication channels and modes between pharmacists and other healthcare providers (e.g., GPs)	N[19, 45]; GP[36, 52, 54, 55]	Pt[17, 18, 35]; N[51]; GP[17, 52-54]
36. Existence of referral mechanisms between healthcare professionals, including also those between pharmacy support staff and pharmacists (i.e., care coordination and transition)	Pt[42]; GP[36, 52]; N[51],	Pt[38, 41]; GP[17, 20, 36, 39, 47, 52, 54]; N[51]
37. Consistency in the information provided by the pharmacist with regards to the GP's recommendations	GP[45, 52, 53, 57]	GP[52, 57]

38. Availability of multidisciplinary education, training and meetings for pharmacists and GPs that enhance integrated, collaborative care		Pt[52*, 56*]; N[51]; GP[17, 34, 52, 53]
Elements at the organisational level		
a. Community pharmacy setting (sub-level)		
39. Accessibility of the pharmacy setting (e.g. convenient location, co-location, no appointments required, opening hours)	Pt[17, 49]; N[51]	Pt[17, 33, 35, 37, 38, 40, 41, 56*, 57]; N[51]; GP[47*, 52*, 53]
40. Structural characteristics of the pharmacy setting i.e. size, provision of counselling rooms, use of visual space for posters, child-friendly area	Pt[43]	Pt[40, 41, 43*]
41. Privacy of the setting, including the availability of a private consultation area and limited involvement of multiple staff members who would be aware of the patients' personal matters	Pt[18, 41-43, 49, 56]; GP[20]; N[45]	Pt[38, 40, 43]
42. Availability of suitable material resources to support the service (e.g. educational material for patients, medical devices, patient data management system, etc.)		Pt[41, 42, 44]
43. Sufficient qualified staff to perform CPS	Pt[44]; GP[20, 47, 57]	Pt[48]
44. Organization of the pharmacist's workload and time to deliver CPSs	Pt[41, 48, 49, 56]; N[51]; GP[33, 47]	Pt[41, 57]
45. Organisational commitment to implement a CPS	Pt[33, 41]; N[51]	

46. Promotion of the CPS to facilitate its uptake		Pt[33*, 35*, 47]; GP[20]
b. Community pharmacy service		
47. Extent to which the CPS meets and is tailored to fit individual patient's needs or fills existing gaps in healthcare practice (this enhances the value of the service for patients and healthcare professionals)	Pt[18, 35, 36, 42, 46, 47, 56]; GP[52, 54]	Pt[18, 33, 35, 38, 41, 42, 46-49, 56]; N[47]; GP[20, 39, 47, 52-55, 57]
48. Quality of the CPS (e.g. validity, accuracy of the materials and tools used, CPSs provided in a timely manner, provision of both verbal and written information, professional advice and education, etc.)	Pt[46]; GP[47, 57]; N[19]	Pt[18, 38, 40, 41]; GP[20]
49. Complexity of the CPS for use by healthcare professionals	GP[20]; N[19, 51]	
50. Extent to which CPSs provide ongoing support, follow-up and feedback to patients	GP[52]	Pt[18, 33, 38, 40, 42, 43, 47]
51. Flexibility to use different communication channels (e.g. telephone, website) to interact with patients and healthcare providers		Pt[38, 40, 43*]
52. Consistency in the community pharmacist delivering the CPS		Pt[38, 41, 46], N[19*]
53. Involvement of other healthcare providers in delivering the CPS		Pt[41]; N[19*]; GP[20*]
54. Costs and duration of the CPS consultation for the patient	Pt[56, 57]; N[51]	Pt[38, 57]; GP[17, 20]; N[51*],

Elements at the community and health system level		
55. General consumer education about healthcare; promotion of CPS by the media	Pt[57]; GP[57]	Pt[48, 57]; GP[47*, 57]
56. Collaboration, influences, conflicts between GP and pharmacist professional bodies		GP[34*]
57. Organization of GPs' workload and time to collaborate with CPSs	GP[20, 47, 52, 54, 55]	
58. Complexity of system-level administrative processes (e.g. tedious paperwork) associated to the delivery of CPS; i.e., complying with the requirements of the department of health	GP[17, 20, 47, 53, 57]	
59. Availability of an electronic system for sharing information	Pt[18, 56]	Pt[17*, 57]; N[19*]; GP[17, 20*, 36*, 50, 52*, 53]
60. Presence of agreed healthcare protocols, regulations, rules and policies to facilitate the delivery of CPSs	Pt[44]; N[51]	Pt[44]; GP[20*, 52, 53]
61. Limits on the healthcare budget; i.e., funding allocated to support CPS delivery	GP[17, 47, 54, 57]	Pt[44, 56*]; GP[17, 52, 57]
62. Availability of financial incentives for service provision and inter-professional collaboration		Pt[56*]; N[51*]
63. Organisation of the healthcare system	Pt[56]; GP[57]	

CPS: Community Pharmacy Service; GP: General Practitioner; Pt: Patient; N: Nurse

‡ Barrier: the element was mentioned to act as a BARRIER or hinder to the implementation of CPSs; † Facilitator: the element was mentioned to act as a FACILITATOR or enabler to the implementation of CPSs; (*) this element was reported as a potential strategy to overcome a barrier

(i.e., facilitator).

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Individual patient level. All the 16 elements at the patient level were identified by patients. GPs and nurses did not identify any additional patient-related barriers and facilitators. Influential elements at this level were related to the patients' needs, preferences, perceptions and expectations, capabilities or previous experiences with community pharmacists and services. Patients' health-related concerns, understanding or perception of their health problems are important elements that influence patients' need for healthcare and so their decisions to utilise CPSs. Most patients held positive views about CPSs and the role of the pharmacist in providing such services.[40, 41, 47] Some articles highlighted that positive experiences were related to the patient feeling comfortable and welcomed in the pharmacy.[38, 40, 42] When CPSs required a formal referral from the GP, some patients deterred from requesting the services. These patients perceived that by requesting a CPS they would be bothering the GP[36] or offending and compromising their relationship with the GP.[18, 47, 48] Patients also reported that having a negative experience with a CPS also deterred them from accessing and utilising such CPSs in the future.[42]

Interpersonal level. Influential elements at the interpersonal level were related to two categories or sub-levels: (1) *individual healthcare professionals* (which also includes professional pharmacy staff), and (2) *relationships (or interactions) between individuals* (which includes both the relationships between healthcare professionals and between those professionals and patients).

Individual healthcare professionals. 17 elements were identified and related to characteristics of the community pharmacists (n=4), nurses (n=4) and GPs (n=4) and characteristics of non-provider personnel (i.e., other community pharmacy staff members - e.g., pharmacy assistant) (n=5). Articles reported that GPs' and nurses' service support varied depending on their perceptions or understanding of CPSs and the role of pharmacists. Home medicine review services had a great deal of approval and support from the GP perspective.[47, 52] On the other side, pharmacists providing immunisations raised some conflicting views among GPs since they believed this was the role of the GP or nurse

practitioner.[52] Some studies highlighted that GPs had a limited understanding of the capabilities of the pharmacist as service providers with pharmacists perceived as drug sellers in a retail enviroment.[34-36, 53, 56] Both patients and GPs implied the need for pharmacists to undergo upskilling and training to be qualified to provide some CPSs.[34, 39, 48]

Relationships (or interactions) between individuals. Articles reported that well-established relationships between the pharmacist and the nurse or the GP, including collaborative relationships, were essential for the success of a CPS.[17, 19, 20, 35, 51, 54] Multidisciplinary education and training for healthcare professionals was suggested as a way to improve healthcare professional competence.[56] Similarly, characteristics of the relationship between the patient and the pharmacist (e.g., trust) was a key element that influenced pharmacy choice, contributed to the patient adhering to the CPS, and accepting the intervention.[18, 33, 36, 38, 40-42, 46] Some articles reported the influence of family and friends on patient utilisation of CPSs (e.g., providing support, influencing motivation),[35, 56] and others commented on the integration of partners into the CPS (e.g., provision of group sessions with partners).[35, 38]

Organizational level. Also at the organisational level, influential elements were divided into two sub-levels: (1) *the community pharmacy setting* (n=8) and (2) *the service itself* (n=8).

The community pharmacy setting. Some articles identified the accessibility of the pharmacy facilitated inter-professional relationships between GPs and pharmacists,[52, 53] and influenced patient[17, 38, 41] and nurse[51] participation in CPS. In some articles non-english speaking patients reported that the lack of multilingual staff limited their awareness and access to CPSs.[44, 48] Other articles noted GP and nurse concerns regarding the lack of pharmacies that provide CPSs[51] and insufficient accredited pharmacists to perform CPSs.[47, 57]

The community phamacy service. Concerns regarding the validity and accuracy of the tools and instruments used (e.g. medical devices, medication charts) were raised by GPs and nurses.[19, 52] Patients and nurses commented that having the same service provider at each encounter facilitated rapport building between the patient and the pharmacist,[38, 41, 46] and

caused fewer errors when it came to preparing dose administration aids.[19] Furthermore, patients, nurses and GPs reported on the involvement/participation of healthcare professionals other than pharmacists in the provision of CPSs,[41] or to act as a point of liaison,[20] to improve the quality and efficiency of the service. The cost of the service was a key element, mentioned by all stakeholders, that could either discourage[51, 56] or motivate[38] patients to utilise services. In particular it was mentioned that smaller, manageable cost payments for patients could facilitate CPS use.[51]

Community and healthcare system level. Nine influential elements were identified at this level. Several articles identified the need for adequate remuneration for GPs and pharmacists for participating in and providing CPSs,[17, 44, 52, 54] as well as the implementation of an electronic system of information sharing between these two healthcare professionals.[19, 20, 36, 57] GPs also cited the availability of competing, government-funded health programs, and their high level of workload and lack of time as contributing to their low participation in CPSs.[47] Where services were available, remunerated and widely supported by GPs and patients, such as home medicine reviews (i.e., a medication review service), GPs mentioned complex bureaucratic procedures (e.g. completing tedious documents) may discourage their use.[17, 20, 47, 53, 57] Despite this, the home medicine review service was generally considered successful by GPs and a frequently reported reason for this was the presence of a clear protocol guiding service delivery.[20, 52, 53] GPs also suggested increased and improved collaboration between pharmacy and GP professional representative bodies may improve awareness of the services and encourage participation. The media was perceived to have an important role in improving awareness of and promoting CPSs. Finally, some broad comments suggesting some additional issues at the higher levels of the healthcare system were mentioned, such as 'better and more responsible organisation of the healthcare system'.[57]

With regards to the interactions between the identified influential elements, 12 articles out of 29 mentioned some form of a relationship between certain elements.[20, 33, 40, 42, 46, 48, 51-55, 58] As

shown in Appendix 2 (Supplementary File), a total of 27 relationships between 25 elements were found, with 10 elements presenting 2 or more relationships with others (2 elements showed 5 or more interactions). As a result of the limited, unsystematic information reported in the articles, a sparse network disclosing the recognized relationships between elements was obtained (Appendix 2 in Supplementary File).

DISCUSSION

To the best of our knowledge this is the first review that summarises comprehensive information on the elements that, according to patients, nurses and GPs, can enable or hinder the implementation of CPSs. Patients, GPs and nurses are key members of the primary healthcare team and their support and expectations for CPSs can highly influence their implementation.[1, 19, 52, 58-61] Thus, by synthesising and organising the influential elements identified by these key stakeholders, this review can optimize future analyses of barriers and facilitators to the implementation of CPSs and so potentially enhance their integration into primary practice. Importantly, this work was intentionally restricted to a specific implementation context (i.e., Australia), to which its results are directly relevant and will be immediately applied. Focusing only on Australia is not considered a limitation of the study; rather it is a sensible decision that allows knowledge about a particular context of interest to be gained. Including studies conducted in contexts or healthcare systems other than Australia (e.g., United Kingdom, United States, etc.), where barriers and facilitators to CPS implementation can be dissimilar in nature and expressed differently, may have brought irrelevant or inappropriate information to this analysis, and so hinder the understanding of the context of interest. However, it should be noted that Australia is a country with a large experience in CPS implementation and where significant research has been conducted in this regard compared to other countries worldwide. Therefore, it is expected that the comprehensive list of influential elements identified in this context may be relevant to start investigating barriers and facilitators to CPS implementation in countries with less experience. Furthermore, the elements identified in this review can provide insight to

pharmacy service planners in other countries to guess and avoid some problems in the implementation of CPSs beforehand.

Barriers and facilitators to the implementation of CPSs in Australia have been well researched and reported from the perspective of community pharmacists.[14, 15, 60, 62] In this regard, the results of this review confirms that patients, nurses and GPs also recognise some of the influential elements reported in previous pharmacist-informed studies, such as the pharmacist's education and training, collaboration between the pharmacist and the GP, accessibility of the pharmacy setting, and financial remuneration. However, this study provides additional insight into further barriers and facilitators, across different ecological levels, that are relevant to other key stakeholder and so are less likely to be reported by pharmacists; for example: patients' capability to follow the procedures of the service, GPs' workload, nurses' attitudes towards other healthcare professionals/services, the actual relationships between GP and pharmacy professional bodies, or the availability of multidisciplinary training and education. These results highlight the importance of engaging key stakeholders other than pharmacists to better understand the contexts in which CPSs are implemented. In other words, disregarding the input of these stakeholders (or considering only the views of pharmacists), may lead to an incomplete and biased understanding of the implementation context, which, in turn, can result in service underutilisation, unsuccessful implementation and limited service impact.[63] Generally, involving relevant stakeholders throughout the development, implementation and evaluation of health programs is crucial to increase the chances of any of those initiatives being effective and successfully implemented.[6, 29, 30, 64] Indeed, this is equally relevant to CPS planning.[65, 66]

Semi-structured interviews, and/or focus group with healthcare professionals and patients appear to be appropriate methods to identify a large number of unique influential elements.[67] Thus pharmacy service planners can continue to utilise these methods to identify determinants of pharmacy practice in their own context. Although, the type of qualitative

method used may affect the type of barriers/facilitators identified, it is more likely that the aims of the studies included in this review, their target population and/or the specific service/topic addressed by the study may have had a stronger influence in the type of barriers or facilitator identified.

The results of this review can assist pharmacy service planners and researchers to better identify the elements that may be enabling or hindering the implementation of existing CPSs. By combining the list of influential elements generated in this review with previous findings in pharmacists-informed studies a comprehensive framework to assess barriers and facilitators to CPS implementation can be produced. Assessing and understanding the elements influencing pharmacy practice and service implementation must be a key early step in developing appropiate, multilevel programs (i.e., including interventions targeting elements at different levels) aimed at enhancing the integration of CPSs into the healthcare system.[29, 30, 66, 68] Also, influential elements should be prompted and assessed when designing new CPSs. Identifying elements prior to designing a new CPS may guide both the early adaptation of the service to the context, as well as the early development of tailored implementation programs to better fit (or change) the implementation context. As an analysis of influential elements is likely to yield a large number of items, it would not be feasible to address each and every one of those elements. Thus once elements have been identified for a specific context, further efforts are required to prioritise those elements that are most relevant and can be practically addressed.[8, 69] In this regard, McMillan et al[70] provide a summary of methods used to determine priorities and how they have been used in pharmacy practice research, which can guide pharmacy service planners in this regard.

The analysis conducted in this review revealed three concerns that must be considered to improve future studies aimed at identifing influential elements. On the one hand, some influential elements at the community and healthcare system level were too broadly described (i.e., ‘organisation of the health system’) and further exploration is needed to clearly understand the specific ‘items’ that they encompass. Presumably, the list of

determinants of practice described by Flottorp et al[7] (i.e., Tailored Implementation in Chronic Disease checklist) can provide more detail regarding influential elements at the higher community and healthcare system level and so can initially assist to better frame future analysis of barriers and facilitators to CPS implementation. Particularly, the determinants under the domains 'Incentives and resources'; 'Capacity for organizational change'; and 'Social political and legal factors' seem particularly relevant for this purpose. Importantly, to bring further insight on the elements at the community and healthcare system level it would be important to include and explore the perspectives of other potential key stakeholders, such as other healthcare providers (e.g., specialists), caregivers, representatives of healthcare organisations and professional bodies, policy makers, etc. Furthermore, future studies aimed at identifying barriers and facilitators to CPS implemetation must better describe and understand the relationships between elements.[2, 7] This may help to understand how elements influence each other and which elements are more suitable to be addressed (based on the overall effect that they can produce on other elements) when designing implementation efforts.

Limitations. The network analysis intended in this study was strongly constrained by the limited and unsystematically reported information about the relationships between influential elements. As a result, it was decided not to report further results of the network analysis beyond its pictorial representation. The potential of a full network analysis should be considered in future studies aimed at analysing elements that influence the implementation of CPSs. A suitable network analysis can help to better understand the complex relationships between these elements; detect the core elements that may primarily explain the implementation challenge; and provide insight on the key leverage points that should be targeted within the network to enhance service implementation. Ideally, accurate information on relevant attributes of the influential elements (and the interactions between them) should be collected by the authors of the primary studies to increase the potential of a network analysis; for example, the frequency of occurrence; the direction of the relationships; the

domain or level where the element is located (i.e., patients, healthcare professionals, professional interactions, etc.); the relative relevance of each element; or the effect on implementation outcomes (i.e., performance as barrier or facilitator).

Following the particular method chosen for this review (i.e., qualitative meta-synthesis),[22, 23] only primary research articles that used qualitative methods were included. Meta-synthesis enabled a rich description of elements perceived by GPs, patients and nurses to influence implementation of CPSs in Australia. Future reviews that synthesise the quantitative literature on this topic are encouraged. Appraising qualitative research is controversial because of the difficulty of using information about quality to inform syntheses (e.g. even studies with flaws in methodology can provide valuable information).[26] Furthermore, there is no gold standard on appraising qualitative studies.[32] The elementary quality assessment conducted in the current review was aimed at ensuring minimal quality while identifying a broad range of elements that might influence CPS implementation. Lastly, the papers included in this review were not restricted by the time at which they were published, since the aim of the study was to include all relevant papers that can inform about any influential element that has been noted in practice. It is important to acknowledge that as contexts can change over time, the effect of influential elements can also change, cease to exist or new elements can emerge. It is therefore important to regularly monitor elements and prioritise those that must be addressed.

CONCLUSION

This qualitative meta-synthesis identified a broad range of elements that, according to patients, GPs and nurses, can enable (i.e., facilitators) or hinder (i.e., barriers) the implementation of CPSs. These influential elements are located at different ecological levels and should be considered together with those previously identified in pharmacy-informed studies to comprehensively analyse the barriers and facilitators to the implementation of CPSs. Future studies aimed at that purpose must involve multiple stakeholder groups (i.e.,

others than only pharmacists) and better understand the relationships between influential elements to increase the usefulness and interest of their findings. Further to the identification of the influential elements, key stakeholders should keep involved in developing suitable, multilevel programs aimed at enhancing CPS implementation.

ACKNOWLEDGEMENTS

We would like to acknowledge Antonio E. Mendes (Universidade Federal do Parana, Brazil) for his collaboration in the network analysis.

COMPETING INTERESTS

All authors declare no competing interest

FUNDING

Lutfun N. Hossain was awarded a University of Technology Sydney (UTS) President's Scholarship and a UTS Chancellors Research Scholarship.

This work is part of a larger UTS Chancellor's Postdoctoral Research Fellowship awarded to Dr Daniel Sabater-Hernández (UTS ID number: 2013001605).

DATA SHARING STATEMENT

No additional data are available

AUTHORS' CONTRIBUTION

Conception or design of the work: Lutfun N. Hossain, Fernando Fernandez-Llimos, Tim Luckett and Daniel Sabater-Hernández.

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Data analysis and interpretation: Lutfun N. Hossain, Joanna C. Moullin, Charlie Benrimoj and Daniel Sabater-Hernández.

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Critical revision of the article: Lutfun N. Hossain, Joanna C. Moullin, Fernando Fernandez-Llimos, Tim Luckett and Daniel Sabater-Hernández.

Final approval of the version to be published: Lutfun N. Hossain, Fernando Fernandez-Llimos, Tim Luckett, Joanna C. Moullin, Desire Durks, Lucia Franco-Trigo, Charlie Benrimoj and Daniel Sabater-Hernández.

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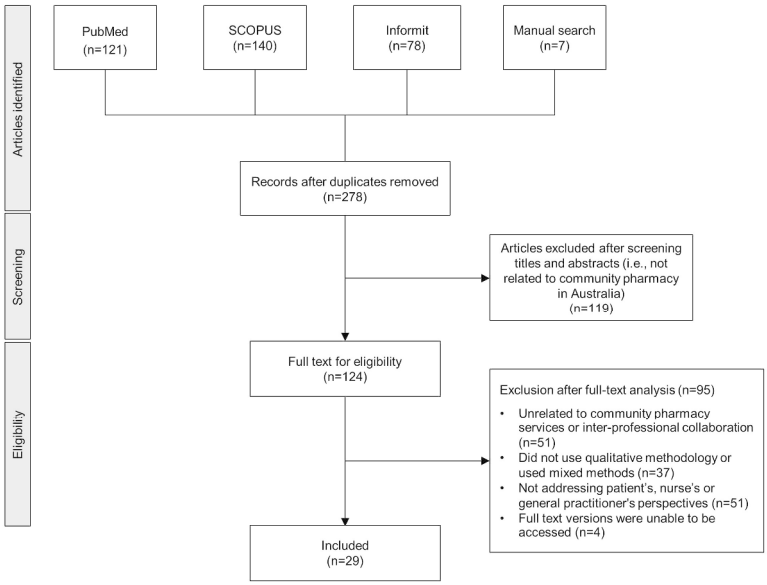
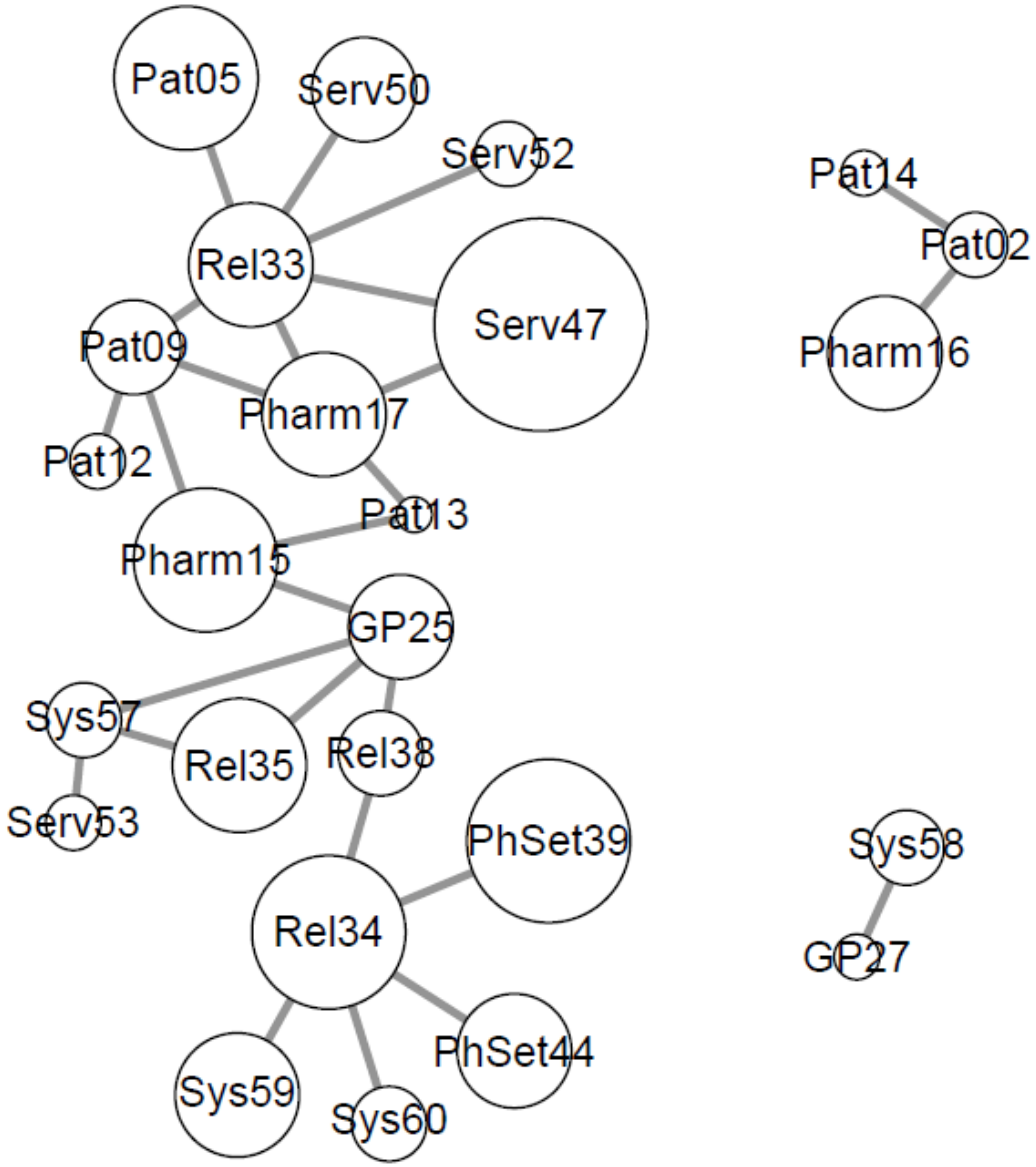
Figure 1. PRISMA flow diagram



254x190mm (300 x 300 DPI)

Appendix 1. Search strategy and key words used in database search	
Database	Search strategy and keywords
PubMed	((opinion OR opinions) OR (view or views) OR (attitude or attitudes) OR (experience OR experiences) OR satisfaction OR (motivation or motivations) OR (perception OR perceptions) OR (preference OR preferences) OR "Attitude to Health"[MH] OR awareness[TW] OR (barrier OR barriers) OR (facilitator or facilitators)) AND (pharmacy OR pharmacies OR pharmacist OR pharmacists) AND ("Interviews as Topic[MH] OR "Empirical Research[MH] OR semi-structured OR qualitative OR ("Focus Groups"[TW] OR "focus group")) AND Australia[TIAB]
Scopus	(((TITLE-ABS-KEY (opinion OR opinions)) OR (TITLE-ABS-KEY (view OR views)) OR (TITLE-ABS-KEY (attitude OR attitudes)) OR (TITLE-ABS-KEY (experience OR experiences)) OR (TITLE-ABS-KEY (satisfaction)) OR (TITLE-ABS-KEY (motivation OR motivations)) OR (TITLE-ABS-KEY (perception OR perceptions)) OR (TITLE-ABS-KEY (preference OR preferences))) OR ((TITLE-ABS-KEY (awareness)) OR (TITLE-ABS-KEY (barrier OR barriers)) OR (TITLE-ABS-KEY (facilitator OR facilitators)) OR (KEY (patient attitude)) OR (KEY (patient satisfaction)) OR (KEY (health personnel attitude)) OR (KEY (patient preference)))) AND ((TITLE-ABS-KEY (pharmacy OR pharmacies)) OR (TITLE-ABS-KEY (pharmacist OR pharmacists))) AND ((KEY (semi structured interview)) OR (TITLE-ABS-KEY (qualitative)) OR (KEY (qualitative research))) AND (TITLE-ABS-KEY (Australia))
Informit	Pharmacy AND qualitative

Appendix 2. Relationships between influential elements and resulted network*



* Elements' numbers in the figure match with the elements' numbers on table 3 where a full description of each element can be found. The size of the nodes is determined by the number of times (i.e., articles) that each element was reported.

Pat: element at the patient level; Pharm: element at the healthcare professional level (i.e., pharmacist); GP: element at the at the healthcare professional level (i.e., general practitioner); Rel: element related to the relationships (or interactions) between individuals; PhSet: element related to the community pharmacy setting; Serv: element related to the community pharmacy service; Sys: influential element at the community and healthcare system level.

Related elements		Description of the relationship
Pat09	Pat12	Patients who did not have a positive experience with CPSs were not motivated to receive future ones[1]
Pat14	Pat02	Patients' language issues prevented them from becoming more aware of CPSs[2]
Pat09	Pharm15	Patients' previous positive experiences of CPS were related to a suitable knowledge of the pharmacist[3]
Pat09	Pharm17	Patients' previous positive experiences of CPS were related to positive humanistic attributes of the community pharmacist (i.e. friendly)[3]
Pat09	Rel33	Patients' previous positive experiences in the pharmacy contributed to the formation of a closer relationship between the patient and the pharmacist[3]
Pat13	Pharm15	Patients with higher levels of emotional intelligence valued the knowledge and competency of community pharmacists[4]
Pat13	Pharm17	Patients with lower levels of emotional intelligence valued the humanistic attributes of the community pharmacist in CPS[4]
Pharm16	Pat02	Lack of multilingual community pharmacists prevented awareness of the availability of CPS in some ethnic patients[2]
Pharm17	Rel33	The humanistic attributes of the pharmacist (e.g., approachability, sensitivity) shaped the relationships between the patient and the pharmacist[3]
Pharm17	Serv47	The humanistic attributes of the pharmacist (e.g., approachability) created an environment in which patients could ask questions, seek advice and better address their needs[5]
GP25	Sys57	GPs can see a higher value in CPSs when they address their time limitations[6]
GP25	Pharm15	GPs' perceptions and understanding of the role of community

		pharmacists depends on whether pharmacists have received appropriate training and demonstrate suitable health-related knowledge and skills[7]
Rel38	Rel34	GP-Pharmacist combined meetings and training can promote collaborative relationships between the pharmacist and GP[8]
Rel33	Pat05	Patients who had an on-going relationship with community pharmacists were more likely to see the value of pharmacists providing health services[3]
Rel33	Serv50	The existence of a relationship between the patient and the pharmacist can determine the success of follow-up mechanisms in the CPS[4]
Rel35	GP25	GPs who experienced a high level of communication with pharmacists saw value in the input pharmacists can make to their practice[8]
Rel38	GP25	Developing multidisciplinary training with pharmacists and GPs could enhance GPs' understanding and perception of pharmacists' capabilities and role in healthcare[8]
PhSet39	Rel34	Physical accessibility and co-location of the pharmacy to the GP medical centre can promote collaborative relationships between the pharmacists and GPs[8,9]
PhSet44	Rel34	Time constraints of the pharmacist limited the collaboration between the pharmacists and the nurse[10]
Serv47	Pat09	When patients perceived that CPS were not patient-centred, they reported negative experiences[3]
Serv47	Rel33	CPSs which are patient-centred can contribute to the development of a relationship between the patient and the pharmacist[3,11]
Serv52	Rel33	Having the same pharmacist delivering the CPS each time can contribute to the development of a relationship between the patient and the pharmacist[1]

Serv53	Sys57	Involving healthcare providers other than pharmacists (e.g., practice nurses) in the provision/coordination of CPS and related processes can positively influence GP time and workload constraints[12]
Sys57	Rel35	The workload and time of GPs influence the mode through which they interact and communicate with community pharmacists[9]
Sys58	GP27	Complex administrative processes (e.g., tedious paperwork to refer patients to CPS) that require extra time from the GP (Sys57) may affect GPs' willingness to collaborate with CPSs[12]
Sys59	Rel34	A system for sharing information can promote collaborative relationships between the pharmacist and GP[8]
Sys60	Rel34	The presence of protocols to guide CPS delivery can contribute to improved GP–pharmacist relationships[9]

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PRISMA check-list			
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	5-6
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	6
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	Not available
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	7
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	7
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Appendix 1 (Supplementary file)
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	6-7
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	7
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	7-8
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	7
Summary	13	State the principal summary measures (e.g., risk	8

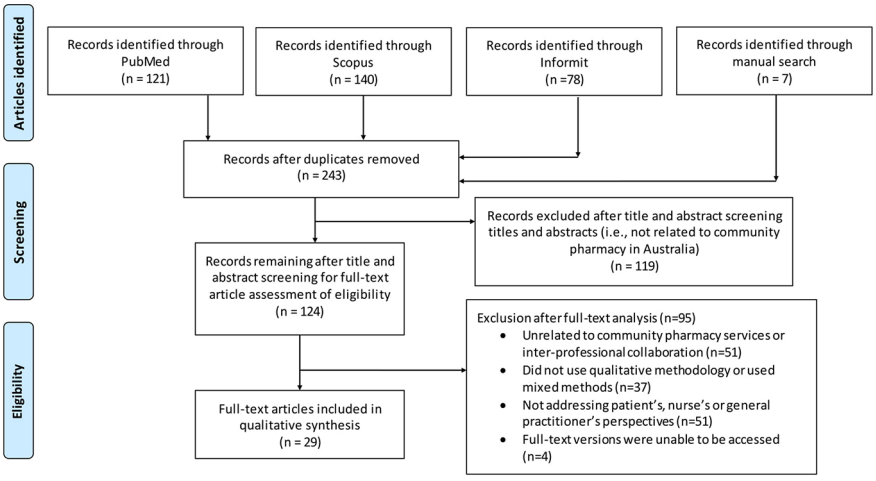
measures		ratio, difference in means).	
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	7-8

Assessment of the synthesis of qualitative research using the ENTREQ Statement for enhancing transparency in reporting the synthesis of qualitative research	
Item	**Page number**
Aim	7
Synthesis methodology	8
Approach to searching	7-8
Inclusion criteria	7-8
Data sources	7
Electronic Search strategy	Appendix 1 (Supplementary file)
Study screening methods	7-8
Study characteristics	12 (table 2)
Study selection results	Figure 1
Rationale for appraisal	8
Appraisal items	8
Appraisal process	8
Appraisal results	10
Data extraction	8-9
Software	9
Number of reviewers	8-9
Coding	8-9
Study comparison	8
Derivation of themes	8-9
Quotations	Not in this version
Synthesis output	18 (table 3)

Correction: *Qualitative meta-synthesis of barriers and facilitators that influence the implementation of community pharmacy services: perspectives of patients, nurses and general medical practitioners*

Hossain LN, Fernandez-Llimos F, Luckett T, *et al*. Qualitative meta-synthesis of barriers and facilitators that influence the implementation of community pharmacy services: perspectives of patients, nurses and general medical practitioners. *BMJ Open* 2017;7:e015471. doi: 10.1136/bmjopen-2016-015471

In figure 1, the number below 'Records after duplicates removed' should be 243 not 278. The corrected figure is shown below.



BMJ Open 2018;**8**:e015471corr1. doi:10.1136/bmjopen-2016-015471corr1