

BMJ Open

BMJ Open is committed to open peer review. As part of this commitment we make the peer review history of every article we publish publicly available.

When an article is published we post the peer reviewers' comments and the authors' responses online. We also post the versions of the paper that were used during peer review. These are the versions that the peer review comments apply to.

The versions of the paper that follow are the versions that were submitted during the peer review process. They are not the versions of record or the final published versions. They should not be cited or distributed as the published version of this manuscript.

BMJ Open is an open access journal and the full, final, typeset and author-corrected version of record of the manuscript is available on our site with no access controls, subscription charges or pay-per-view fees (<http://bmjopen.bmj.com>).

If you have any questions on BMJ Open's open peer review process please email editorial.bmjopen@bmj.com

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:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2016-015471
Article Type:	Research
Date Submitted by the Author:	08-Dec-2016
Complete List of Authors:	Hossain, Lutfun; University of Technology Sydney Fernandez-Llimos, Fernando; Universidade de Lisboa Lockett, 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

SCHOLARONE™
Manuscripts

only

1
2
3
4 1 **A qualitative meta-synthesis of barriers and facilitators that influence the implementation**
5
6 2 **of community pharmacy services: perspectives of patients, nurses and general medical**
7
8 3 **practitioners**

10
11
12 4 **Authors:**

13
14
15 5 **Lutfun N. Hossain.** BPharm. Master Student; Graduate School of Health, University of
16
17 6 Technology, Sydney, Australia. Email: Lutfun.Hossain@student.uts.edu.au

18
19
20 7 **Fernando Fernandez-Llimos.** PharmD, PhD. Assistant Professor; Research Institute for
21
22 8 Medicines, Department of Social Pharmacy, Faculty of Pharmacy, University of Lisbon,
23
24 9 Portugal. Email: f-llimos@ff.ul.pt

25
26
27
28 10 **Tim Lockett.** BSc (Hons), PhD. Senior Lecturer; Faculty of Health, University of Technology
29
30 11 Sydney, Australia Email: Tim.Lockett@uts.edu.au

31
32
33 12 **Joanna C. Moullin.** BPharm. PhD; Research Fellow; Department of Psychiatry, University of
34
35 13 California, San Diego (USA). Email: jcmoullin@gmail.com

36
37
38 14 **Desire Durks.** BPharm. Master Student; Graduate School of Health, University of Technology,
39
40 15 Sydney, Australia. Email: desire.durks@student.uts.edu.au

41
42
43
44 16 **Lucia Franco-Trigo.** MPharm. PhD Student; Graduate School of Health, University of
45
46 17 Technology, Sydney, Australia. Email: lucia.francotriga@student.uts.edu.au

47
48
49 18 **Charlie Benrimoj.** PharmD, PhD. Head of School; Graduate School of Health, University of
50
51 19 Technology, Sydney, Australia. Email: shalom.benrimoj@uts.edu.au

52
53
54
55 20 **Daniel Sabater-Hernández.** PharmD, PhD. Chancellor's Postdoctoral Research Fellow;
56
57 21 Graduate School of Health, University of Technology, Sydney, Australia. Fellow; Academic

1
2
3 22 Centre in Pharmaceutical Care, University of Granada, Spain. Email:
4

5 23 daniel.sabaterhernandez@uts.edu.au; daniel.sabaterhernandez@outlook.com
6
7

8
9 24 **Corresponding author: Daniel Sabater-Hernández**

10 25 Graduate School of Health, University of Technology Sydney.

11 26 Level 4, Building 7, 67 Thomas St, Ultimo (PO Box 123)

12 27 Phone: +61 2 9514 7201; Email: daniel.sabaterhernandez@uts.edu.au;
13

14 28 daniel.sabaterhernandez@outlook.com
15
16
17
18

19
20 29 **Word count (excluding title page, abstract, references, figures and tables): 3667**
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3 30 **ABSTRACT**
4
5
6

7 31 **Objectives:** The integration of community pharmacy services (CPSs) into primary care practice
8
9 32 can be enhanced by developing suitable implementation programs. A key early step in the
10
11 33 development of such programs is assessing the elements that enable or hinder the
12
13 34 implementation of such services. These elements have been widely researched from the
14
15 35 perspective of community pharmacists but not from the perspectives of other stakeholders who
16
17 36 can directly or indirectly interact with, and influence the implementation of CPSs. The aim of this
18
19 37 study was to synthesise the literature on patients', general practitioners' (GPs) and nurses'
20
21 38 perspectives of CPSs to identify elements that can hinder (i.e., barriers) or enable (i.e.,
22
23 39 facilitators) their implementation in Australia.
24
25

26
27 40 **Methods:** A meta-synthesis of qualitative studies was performed. A systematic literature search
28
29 41 in PubMed, Scopus and Informit was conducted to identify qualitative studies that explored
30
31 42 patients', GPs' or nurses' views about CPSs in Australia. Thematic synthesis was performed to
32
33 43 identify the elements influencing CPS implementation, which were further classified using an
34
35 44 ecological approach.
36
37

38
39 45 **Results:** Twenty nine articles were included in the review. Sixty three barriers or facilitators to
40
41 46 the implementation of CPSs were identified. These elements were related to different ecological
42
43 47 levels: (1) individual patient (n=14); (2) interpersonal, which was divided into two sub-levels: (a)
44
45 48 individual healthcare professionals (n=17) and (b) relationships between individuals (n=7); (3)
46
47 49 organizational, which was divided into (a) community pharmacy setting (n=8); and (b) the
48
49 50 service itself (n=8); and (4) community and healthcare system (n=9).
50
51

52
53 51 **Conclusions:** Patients, GPs and nurses can identify a large number of barriers and facilitators
54
55 52 to the implementation of CPSs in Australia. These influential elements should be taken into
56
57 53 account together with those previously identified by pharmacists, to enhance the analysis of the
58
59
60

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

56 KEY WORDS

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

59 STRENGTHS AND LIMITATIONS OF THIS STUDY

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

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

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

81

For peer review only

82 INTRODUCTION

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

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

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

1
2
3 107 and primary care nurses are key stakeholders who interact with or are affected by CPSs and
4
5 108 may be able to strongly influence the implementation of such services. These stakeholders may
6
7 109 have their own particular views about CPSs and so can complement the findings from previous
8
9
10 110 pharmacy-informed research. Patients', nurses' and GPs' views and experiences regarding
11
12 111 CPSs have been explored in several qualitative studies¹⁶⁻²⁰ but no systematic review that
13
14 112 collates and analyses such information exists. Qualitative meta-synthesis aims to synthesise
15
16 113 qualitative literature to provide a new, more comprehensive interpretation of the findings that
17
18 114 goes beyond the depth and breadth of the original studies and to broaden the range of concepts
19
20 115 identified.^{21, 22} Thus, the aim of this study was to synthesise such qualitative literature to
21
22 116 describe the broad range of elements that, from the patients', GPs' and nurses' perspectives,
23
24 117 can hinder or enable the implementation of CPSs in Australia.
25
26
27

28 118 **METHODS**

29
30
31 119 A systematic review was conducted following Cochrane handbook²³ and reported following the
32
33 120 ENTREQ Statement.²⁴
34
35

36
37 121 **Search strategy, screening and eligibility criteria.** A systematic search was conducted in
38
39 122 May 2015 in three electronic databases (PubMed, Scopus and Informit), without time limits, to
40
41 123 identify qualitative studies addressing patients', nurses' or GPs' views about CPSs in Australia.
42
43 124 A CPS was assumed to refer to an action or set of actions delivered in or organised by a
44
45 125 community pharmacy to optimise the process of care, with the aim of improving health
46
47 126 outcomes and the value of healthcare.²⁵ For the purpose of this review, routine professional
48
49 127 activities performed by community pharmacists, such as dispensing, were not considered as
50
51 128 CPSs and so excluded. Articles that did not address a specific CPS but inter-professional
52
53 129 collaboration (i.e. between community pharmacists and other healthcare professionals) were
54
55 130 included as they can also provide insight into the elements influencing the implementation of
56
57
58
59
60

1
2
3 131 CPSs. Full search strategies are available on Appendix 1 (Supplementary File). In addition, the
4
5 132 references from the included papers were searched manually for additional relevant studies. A
6
7 133 two-step process was performed by one researcher to select studies for the analysis. As a first
8
9
10 134 step, titles and abstracts were screened to identify and exclude non-relevant literature. In a
11
12 135 second, full texts of the remaining articles were reviewed to exclude those that: (1) were not
13
14 136 related to CPSs; (2) did not address patient, nurse and/or GP perspective; (3) did not use
15
16 137 qualitative research methodology;²⁶ (4) did not clearly identify the stakeholder (i.e., patient,
17
18 138 nurse or GP) as the source of the information; and (5) were not accessible in any of the
19
20 139 research team university libraries, or unattainable following contact with the authors.
21
22

23
24 140 All the included articles were checked by the same researcher for 'elementary quality
25
26 141 assessment' using the first three criteria delineated by Dixon-Woods et al²⁷ to appraise
27
28 142 qualitative research: (1) was the research question clear? (2) Was the research questions suited
29
30 143 to qualitative inquiry? (3) Were (a) sampling, (b) data collection, and (c) analysis clearly
31
32 144 described? Articles were excluded when no answer, or an unclear answer, was given to at least
33
34 145 one of the three questions.
35
36

37
38 146 **Synthesis.** Qualitative meta-synthesis was conducted by one researcher according to the
39
40 147 three-stage method for thematic synthesis described by Thomas et al²⁸ The first stage of
41
42 148 analysis involved free line-by-line coding of the original data (study participants' quotes) and the
43
44 149 study authors' interpretation of the original data. The process of coding involves summarising
45
46 150 text from the results and discussion sections of each article into one or more descriptive issues
47
48 151 (i.e. codes) to capture meaning. The second stage of the process involved grouping codes into
49
50 152 one or more descriptive themes. Subsequent articles were coded into pre-existing themes, and
51
52 153 new themes were created when considered necessary. To simplify the terminology throughout
53
54 154 this article, themes were interpreted as elements (i.e., influential elements) that could positively
55
56 155 (i.e., facilitators) or negatively (i.e., barriers) influence CPS implementation or practice change.
57
58
59
60

1
2
3 156 A barrier was defined as *"any type of obstacle (material or immaterial) which can impede the*
4
5 157 *dissemination, implementation and/or sustainability of a CPS"*; while a facilitator was defined as
6
7 158 *"any type of element (material or immaterial) which can help to overcome barriers and/or*
8
9
10 159 *accelerate the dissemination or implementation"* of a CPS.¹⁵ Themes that were related to similar
11
12 160 issues were further grouped to create one broad barrier or facilitator. The identified influential
13
14 161 elements were reviewed by a second researcher to assess clarity, consistency, and
15
16 162 understanding. At the third stage, barriers and facilitators were organised using an adapted
17
18 163 version of the Ecological Model (Table 1),²⁹ which classified them into four different levels:
19
20 164 patient, interpersonal, organisational, and community/system. Coding of papers that were
21
22 165 identified manually was conducted last. NVivo Version 10 software (QSR International Pty Ltd;
23
24 166 Australia) was used to help manage and analyse the data. Once all the influential elements
25
26 167 were identified, a second round of analysis was conducted to explore for the relationships
27
28 168 between them. Again, both study participants' quotes and study authors' data interpretation
29
30 169 were reviewed for this purpose. A network representing the identified relationships was
31
32 170 generated using a ForceAtlas2 layout³⁰ with Gephi, 0.8.
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Table 1. Levels where elements that can influence the implementation of community pharmacy services can exist (adapted from McLeroy et al²⁹)

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.

171 RESULTS

172 The systematic and manual search identified 243 articles once duplicates were removed. After
 173 title and abstract screening, 124 full-text articles were assessed for eligibility of which 29 articles
 174 were included in the qualitative meta-synthesis (all of them fulfilled the appraisal criteria) (Figure
 175 1). A description of the papers included in the review can be found in Table 2. Of the 29
 176 included papers, 15 addressed patients' perspectives only, 2 addressed nurses' perspectives
 177 only, 6 addressed GPs' perspectives only, 2 addressed nurses' and GPs' perspectives together,
 178 3 addressed patients' and GPs' perspectives together and 1 addressed the views of all three
 179 participants. Twenty-three articles were related to a specific CPS, 2 were related specifically to

1
2
3 180 inter-professional collaboration, 3 were related to both CPSs and inter-professional
4
5 181 collaboration, and 1 addressed concordance-based healthcare. The articles employed semi-
6
7 182 structured interviews (n=23) and/or focus groups (n=11) as methods of data collection.
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

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/trialed 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.

183

1
2
3
4 184 During the first stage of data extraction, 181 patient, 30 nurse and 91 GP codes were created.
5
6 185 At the completion of the coding process, 63 influential elements were identified (Table 3). In
7
8 186 several studies patients, nurses and GPs were able to describe approaches or strategies to
9
10 187 overcome specific barriers.^{16-19, 31-34, 37, 39, 41, 45, 49, 50, 55} These strategies have been reported in
11
12 188 Table 3 as additional facilitators (marked with an asterisk). During coding of the manually
13
14 189 identified papers, it seemed that conceptual saturation may have been reached, since no new
15
16 190 barriers or facilitators were identified.
17
18
19
20 191

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

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 [†]
<i>Elements at the individual patient level</i>		
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

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

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	
<i>Elements at interpersonal level</i>		
<i>a. Individual healthcare professionals (sub-level)</i>		
<i>a.1. Community pharmacist</i>		
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
<i>a.2. Other community pharmacy staff members (e.g. pharmacy assistants)</i>		
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
<i>a.3. General Practitioner</i>		
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}
<i>a.4. Nurse</i>		
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
<i>b. Relationships (or interactions) between individuals (sub-level)</i>		
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}
<i>Elements at the organisational level</i>		
<i>a. Community pharmacy setting (sub-level)</i>		
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

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

<i>b. Community pharmacy service</i>		
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*} ,
<i>Elements at the community and health system level</i>		

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	
<p>CPS: Community Pharmacy Service; GP: General Practitioner; Pt: Patient; N: Nurse</p> <p>‡ 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).</p>		

192

1
2
3 193 **Individual patient level.** All the 16 elements at the patient level were identified by patients.
4
5 194 GPs and nurses did not identify any additional patient-related barriers and facilitators.
6
7 195 Influential elements at this level were related to the patients' needs, preferences, perceptions
8
9 196 expectations, or previous experiences with community pharmacists and services. Patients'
10
11 197 health-related concerns, understanding or perception of their health problems are important
12
13 198 elements that influence patients' need for healthcare and so their decisions to utilise CPSs.
14
15 199 Most patients held positive views about CPSs and the role of the pharmacist in providing
16
17 200 such services.^{38, 39, 45} Some articles highlighted that positive experiences were related to the
18
19 201 patient feeling comfortable and welcomed in the pharmacy.^{36, 38, 40} When CPSs required a
20
21 202 formal referral from the GP, some patients deterred from requesting the services. These
22
23 203 patients perceived that by requesting a CPS they would be bothering the GP³⁴ or offending
24
25 204 and compromising their relationship with the GP.^{17, 45, 46} Patients also reported that having
26
27 205 negative experience with a CPS also deterred them from accessing and utilising such CPS
28
29 206 in the future.⁴⁰
30
31
32 207 **Interpersonal level.** Influential elements at the interpersonal level were related to two
33
34 208 categories or sub-levels: (1) *individual healthcare professionals* (which also includes
35
36 209 professional pharmacy staff), and (2) *relationships (or interactions) between individuals*
37
38 210 (which includes both the relationships between healthcare professionals and between those
39
40 211 professionals and patients). With respect to the *individual healthcare professionals*, 17
41
42 212 elements were identified and related to characteristics of the community pharmacists (n=4),
43
44 213 nurses (n=4) and GPs (n=4) and characteristics of non-provider personnel (i.e., other
45
46 214 community pharmacy staff members -e.g., pharmacy assistant) (n=5). Articles reported that
47
48 215 GPs' and nurses' service support varied depending on their perceptions or understanding of
49
50 216 CPSs and the role of pharmacists. Home medicine review services had a great deal of
51
52 217 approval and support from the GP perspective.^{45, 50} On the other side, pharmacists providing
53
54 218 immunisations raised some conflicting views among GPs since they believed this was the
55
56 219 role of the GP or nurse practitioner.⁵⁰ Some studies highlighted that GPs had a limited
57
58
59
60

1
2
3 220 understanding of the capabilities of the pharmacist as service providers with pharmacists
4
5 221 perceived as drug sellers in a retail environment.^{32-34, 51, 54} Regarding the second sub-level
6
7 222 (i.e., *relationships (or interactions) between individuals*), seven influential elements were
8
9 223 identified. Articles reported that well-established relationships between the pharmacist and
10
11 224 the nurse or the GP, were essential for the success of a CPS.^{19, 49} Similarly, characteristics
12
13 225 of the relationship between the patient and the pharmacist (e.g., trust) was a key element
14
15 226 that influenced pharmacy choice, contributed to the patient adhering to the CPS, and
16
17 227 accepting the intervention.^{17, 31, 34, 36, 38-40, 44} Some articles reported the influence of family and
18
19 228 friends on patient utilisation of CPSs (e.g., providing support, influencing motivation),^{33, 54}
20
21 229 and others commented on the integration of partners into the CPS (e.g., provision of group
22
23 230 sessions with partners).^{33, 36}

25
26 231 **Organizational level.** Also at the organisational level, influential elements were divided into
27
28 232 two sub-levels: (1) *the community pharmacy setting* (n=8) and (2) *the service itself* (n=8).
29
30 233 With respect to the pharmacy setting, many articles identified the accessibility of the
31
32 234 pharmacy facilitated inter-professional relationships between GPs and pharmacists,^{50, 51} and
33
34 235 influenced patient^{16, 36, 39} and nurse⁴⁹ participation in CPS. In some articles non-english
35
36 236 speaking patients reported that the lack of multilingual staff limited their awareness and
37
38 237 access to CPSs.^{42, 46} Other articles noted GP and nurse concerns regarding the lack of
39
40 238 pharmacies that provide CPSs⁴⁹ and insufficient accredited pharmacists to perform CPSs.^{45,}
41
42 239 ⁵⁵ Regarding the barriers and facilitators related to the CPS itself, concerns regarding the
43
44 240 validity and accuracy of the tools and instruments used (e.g. medical devices, medication
45
46 241 charts) were raised by GPs and nurses.^{18, 50} Patients and nurses commented that having the
47
48 242 same service provider at each encounter facilitated rapport building between the patient and
49
50 243 the pharmacist,^{36, 39, 44} and caused fewer errors when it came to preparing dose
51
52 244 administration aids.¹⁸ Furthermore, patients, nurses and GPs reported on the
53
54 245 involvement/participation of healthcare professionals other than pharmacists in the provision
55
56 246 of CPSs,³⁹ or to act as a point of liaison,¹⁹ to improve the quality and efficiency of the

1
2
3 247 service. The cost of the service was a key element, mentioned by all stakeholders, that could
4
5 248 either discourage^{49, 54} or motivate³⁶ patients to utilise services. In particular it was mentioned
6
7 249 that smaller, manageable cost payments for patients could facilitate CPS use.⁴⁹
8
9

10 250 **Community and healthcare system level.** Nine influential elements were identified at this
11
12 251 level. Several articles identified the need for adequate remuneration for GPs and
13
14 252 pharmacists for participating in and providing CPSs.^{16, 42, 50, 52} GPs also cited the availability
15
16 253 of competing, government-funded health programs as contributing to their low participation
17
18 254 in CPSs.⁴⁵ Where services were available, remunerated and widely supported by GPs and
19
20 255 patients, such as home medicine reviews (i.e., a medication review service), GPs mentioned
21
22 256 complex bureaucratic procedures (e.g. completing tedious documents) may discourage their
23
24 257 use.^{16, 19, 45, 51, 55} Despite this, the home medicine review service was generally considered
25
26 258 successful by GPs and a frequently reported reason for this was the presence of a clear
27
28 259 protocol guiding service delivery.^{19, 50, 51} Finally, some broad comments suggesting some
29
30 260 additional issues at the higher levels of the healthcare system were mentioned, such as
31
32 261 'better and more responsible organisation of the healthcare system'.⁵⁵
33
34

35 262 With regards to the interactions between the identified influential elements, 12 articles out of
36
37 263 29 mentioned some form of a relationship between certain elements.^{19, 31, 38, 40, 44, 46, 49-53, 56} As
38
39 264 shown in Appendix 2 (Supplementary File), a total of 27 relationships between 25 elements
40
41 265 were found, with 10 elements presenting 2 or more relationships with others (2 elements
42
43 266 showed 5 or more interactions). As a result of the limited, unsystematic information reported
44
45 267 in the articles, a sparse network disclosing the recognized relationships between elements
46
47 268 was obtained (Appendix 2 in Supplementary File).
48
49

50 269 **DISCUSSION**

51
52 270 To the best of our knowledge this is the first review that summarises comprehensive
53
54 271 information on the elements that, according to patients, nurses and GPs, can enable or
55
56 272 hinder the implementation of CPSs. Patients, GPs and nurses are key members of the
57
58
59
60

1
2
3 273 primary healthcare team and their support and expectations for CPSs can highly influence
4
5 274 their implementation.^{1, 18, 50, 56-59} Thus, by synthesising and organising the influential elements
6
7 275 identified by these key stakeholders, this review can optimize future analyses of barriers and
8
9 276 facilitators to the implementation of CPSs and so potentially enhance their integration into
10
11 277 primary practice. Importantly, this work was intentionally restricted to a specific
12
13 278 implementation context (i.e., Australia), to which its results are directly relevant and will be
14
15 279 immediately applied. Focusing only on Australia is not considered a limitation of the study;
16
17 280 rather it is a sensible decision that allows knowledge about a particular context of interest to
18
19 281 be gained. Including studies conducted in contexts or healthcare systems other than
20
21 282 Australia (e.g., United Kingdom, United States, etc.), where barriers and facilitators to CPS
22
23 283 implementation can be dissimilar in nature and expressed differently, may have brought
24
25 284 irrelevant or inappropriate information to this analysis, and so hinder the understanding of
26
27 285 the context of interest. However, it should be noted that Australia is a country with a large
28
29 286 experience in CPS implementation and where significant research has been conducted in
30
31 287 this regard. Therefore, it is expected that the comprehensive list of influential elements
32
33 288 demonstrated in this context may be relevant to start investigating barriers and facilitators to
34
35 289 CPS implementation in contexts with fewer experience.

36
37
38 290 Barriers and facilitators to the implementation of CPSs in Australia have been well
39
40 291 researched and reported from the perspective of community pharmacists.^{13, 14, 58, 60} In this
41
42 292 regard, the results of this review confirms that patients, nurses and GPs also recognise
43
44 293 some of the influential elements reported in previous pharmacist-informed studies, such as
45
46 294 the pharmacist's education and training, collaboration between the pharmacist and the GP,
47
48 295 internal pharmacy layout, and financial remuneration. However, this study provides
49
50 296 additional insight into further barriers and facilitators, across different ecological levels, that
51
52 297 are relevant to other key stakeholder and so are less likely to be reported by pharmacists; for
53
54 298 example: patients' capability to follow the procedures of the service, GPs' workload, nurses'
55
56 299 attitudes towards other healthcare professionals/services, the actual relationships between

1
2
3 300 GP and pharmacy professional bodies, or the availability of multidisciplinary training and
4
5 301 education. These results highlight the importance of engaging key stakeholders other than
6
7 302 pharmacists to better understand the contexts in which CPSs are implemented. In other
8
9 303 words, disregarding the input of these stakeholders (or considering only the views of
10
11 304 pharmacists), may lead to an incomplete and biased understanding of the implementation
12
13 305 context, which, in turn, can result in service underutilisation, unsuccessful implementation
14
15 306 and limited service impact.⁶¹ Generally, involving relevant stakeholders throughout the
16
17 307 development, implementation and evaluation of health programs is crucial to increase the
18
19 308 chances of any of those initiatives being effective and successfully implemented.^{6, 62-64}
20
21 309 Indeed, this is equally relevant to CPS planning.^{65, 66}
22
23

24 310 The results of this review can assist pharmacy service planners and researchers to better
25
26 311 identify the elements that may be enabling or hindering the implementation of existing CPSs.
27
28 312 To do so the list of influential elements generated in this review must be combined with the
29
30 313 previous findings in pharmacists-informed studies to produce a comprehensive framework to
31
32 314 assess barriers and facilitators to CPS implementation. Assessing and understanding the
33
34 315 elements influencing pharmacy practice and service implementation must be a key early
35
36 316 step in developing appropriate, multilevel programs (i.e., including interventions targeting
37
38 317 elements at different levels) aimed at enhancing the integration of CPSs into the healthcare
39
40 318 system.^{62, 64, 66, 67} Also, influential elements should be prompted and assessed when
41
42 319 designing new CPSs. In this scenario, an early analysis of those elements may guide both
43
44 320 the early adaptation of CPSs and the early development of tailored implementation programs
45
46 321 to better fit the implementation context. The analysis conducted in this review revealed two
47
48 322 concerns that must be considered to improve future studies aimed at identifying influential
49
50 323 elements. On the one hand, some influential elements at the community and healthcare
51
52 324 system level were too broadly described (i.e., 'organisation of the health system') and further
53
54 325 exploration is needed to clearly understand the specific 'items' that they encompass.
55
56 326 Presumably, the list determinants of practice described by Flottorp et al⁷ (i.e., Tailored
57
58
59
60

1
2
3 327 Implementation in Chronic Disease checklist) can provide more detail regarding influential
4
5 328 elements at the higher community and healthcare system level and so can initially assist to
6
7 329 better frame future analysis of barriers and facilitators to CPS implementation. Particularly,
8
9 330 the determinants under the domains 'Incentives and resources'; 'Capacity for organizational
10
11 331 change'; and 'Social political and legal factors' seem particularly relevant for this purpose.
12
13 332 Importantly, to bring further insight on the elements at the community and healthcare system
14
15 333 level it would be important to include and explore the perspectives of other potential key
16
17 334 stakeholders, such as other healthcare providers (e.g., specialists), caregivers,
18
19 335 representatives of healthcare organisations and professional bodies, policy makers, etc.
20
21 336 Furthermore, future studies aimed at identifying barriers and facilitators to CPS
22
23 337 implementation must better describe and understand the relationships between elements.^{2, 7}
24
25 338 This may help to understand how elements influence each other and which elements are
26
27 339 more suitable to be addressed (based on the overall effect that they can produce on other
28
29 340 elements) when designing implementation efforts.

31
32 341 **Limitations.** The network analysis intended in this study was strongly constrained by the
33
34 342 limited and unsystematically reported information about the relationships between influential
35
36 343 elements. As a result, it was decided not to report further results of the network analysis
37
38 344 beyond its pictorial representation. The potential of a full network analysis should be
39
40 345 considered in future studies aimed at analysing elements that influence the implementation
41
42 346 of CPSs. A suitable network analysis can help to better understand the complex
43
44 347 relationships between these elements; detect the core elements that may primarily explain
45
46 348 the implementation challenge; and provide insight on the key leverage points that should be
47
48 349 targeted within the network to enhance service implementation. Ideally, accurate information
49
50 350 on relevant attributes of the influential elements (and the interactions between them) should
51
52 351 be collected by the authors of the primary studies to increase the potential of a network
53
54 352 analysis; for example, the frequency of occurrence; the direction of the relationships; the
55
56 353 domain or level where the element is located (i.e., patients, healthcare professionals,
57
58
59
60

1
2
3 354 professional interactions, etc.); the relative relevance of each element; or the effect on
4
5 355 implementation outcomes (i.e., performance as barrier or facilitator). Following the particular
6
7 356 method chosen for this review (i.e., qualitative meta-synthesis),^{21, 22} only primary research
8
9 357 articles that used qualitative methods were included. Meta-synthesis enabled a rich
10
11 358 description of elements perceived by GPs, patients and nurses to influence implementation
12
13 359 of CPSs in Australia. Future reviews that synthesise the quantitative literature on this topic
14
15 360 are encouraged. Appraising qualitative research is controversial because of the difficulty of
16
17 361 using information about quality to inform syntheses (e.g. even studies with flaws in
18
19 362 methodology can provide valuable information).²⁷ Furthermore, there is no gold standard on
20
21 363 appraising qualitative studies.²⁴ The elementary quality assessment conducted in the current
22
23 364 review was aimed at ensuring minimal quality while identifying a broad range of elements
24
25 365 that might influence CPS implementation.

26 27 28 366 **CONCLUSION**

29
30
31 367 This qualitative meta-synthesis identified a broad range of elements that, according to
32
33 368 patients, GPs and nurses, can enable (i.e., facilitators) or hinder (i.e., barriers) the
34
35 369 implementation of CPSs. These influential elements are located at different ecological levels
36
37 370 and should be considered together with those previously identified in pharmacy-informed
38
39 371 studies to comprehensively analyse the barriers and facilitators to the implementation of
40
41 372 CPSs. Future studies aimed at that purpose must involve multiple stakeholder groups (i.e.,
42
43 373 others than only pharmacists) and better understand the relationships between influential
44
45 374 elements to increase the usefulness and interest of their findings. Further to the identification
46
47 375 of the influential elements, key stakeholders should keep involved in developing suitable,
48
49 376 multilevel programs aimed at enhancing CPS implementation.
50
51
52
53
54
55
56
57
58
59
60

1
2
3 377 **ACKNOWLEDGEMENTS**
4
5

6 378 We would like to acknowledge Antonio E. Mendes (Universidade Federal do Parana, Brazil)
7
8 379 for his collaboration in the network analysis.
9

10
11 380 **COMPETING INTERESTS**
12

13
14 381 All authors declare no competing interest
15

16
17 382 **FUNDING**
18

19
20 383 Lutfun N. Hossain was awarded a University of Technology Sydney (UTS) President's
21
22 384 Scholarship and a UTS Chancellors Research Scholarship.
23

24
25 385 This work is part of a larger UTS Chancellor's Postdoctoral Research Fellowship awarded to
26
27 386 Dr Daniel Sabater-Hernández (UTS ID number: 2013001605).
28

29
30 387 **DATA SHARING STATEMENT**
31

32
33 388 No additional data are available
34

35
36 389 **AUTHORS' CONTRIBUTION**
37

38
39 390 Conception or design of the work: Lutfun N. Hossain, Fernando Fernandez-Llimos, Tim
40
41 391 Lockett and Daniel Sabater-Hernández.
42

43
44 392 Data collection: Lutfun N. Hossain, Desire Durks and Lucia Franco-Trigo.
45

46
47 393 Data analysis and interpretation: Lutfun N. Hossain, Joanna C. Moullin, Charlie Benrimoj and
48
49 394 Daniel Sabater-Hernández.
50

51
52 395 Drafting the article: Lutfun N. Hossain, Fernando Fernandez-Llimos, Tim Lockett and Daniel
53
54 396 Sabater-Hernández.
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

397 Critical revision of the article: Lutfun N. Hossain, Joanna C. Moullin, Fernando Fernandez-
398 Llimos, Tim Lockett and Daniel Sabater-Hernández.
399 Final approval of the version to be published: Lutfun N. Hossain, Fernando Fernandez-
400 Llimos, Tim Lockett, Joanna C. Moullin, Desire Durks, Lucia Franco-Trigo, Charlie Benrimoj
401 and Daniel Sabater-Hernández.
402

For peer review only

403 **Reference**

- 404 1. Chaudoir SR, Dugan AG, Barr CH. Measuring factors affecting implementation of health
405 innovations: a systematic review of structural, organizational, provider, patient, and
406 innovation level measures. *Implement Sci* 2013;8:22.
- 407 2. Damschroder LJ, Aron DC, Keith RE, et al. Fostering implementation of health services
408 research findings into practice: a consolidated framework for advancing implementation
409 science. *Implement Sci* 2009;4:50.
- 410 3. Haines A, Kuruvilla S, Borchert M. Bridging the implementation gap between knowledge
411 and action for health. *Bull World Health Organ* 2004;82:724-31.
- 412 4. Grol R, Grimshaw J. From best evidence to best practice: effective implementation of
413 change in patients' care. *Lancet* 2003;362:1225-30.
- 414 5. Plsek PE, Greenhalgh T. Complexity science: The challenge of complexity in health
415 care. *BMJ* 2001;323:625-8.
- 416 6. Craig P, Dieppe P, Macintyre S, et al. Developing and evaluating complex interventions:
417 the new Medical Research Council guidance. *BMJ* 2008;337:a1655.
- 418 7. Flottorp SA, Oxman AD, Krause J, et al. A checklist for identifying determinants of
419 practice: a systematic review and synthesis of frameworks and taxonomies of factors
420 that prevent or enable improvements in healthcare professional practice. *Implement Sci*
421 2013;8:35.
- 422 8. Baker R, Camosso-Stefinovic J, Gillies C, et al. Tailored interventions to address
423 determinants of practice. *Cochrane Database Syst Rev* 2015;4:CD005470.
- 424 9. Gastelurrutia MA, Benrimoj SI, Castrillon CC, et al. Facilitators for practice change in
425 Spanish community pharmacy. *Pharm World Sci* 2009;31:32-9.

- 1
2
3 426 10. Moullin JC, Sabater-Hernández D, Benrimoj SI. Model for the evaluation of
4
5 427 implementation programs and professional pharmacy services. *Res Social Adm Pharm*
6
7 428 2016;12:515-22.
8
9
10 429 11. Mossialos E, Courtin E, Naci H, et al. From "retailers" to health care providers:
11
12 430 Transforming the role of community pharmacists in chronic disease management.
13
14 431 *Health Policy* 2015;119:628-39.
15
16
17 432 12. Kaae S, Christensen ST. Exploring long term implementation of cognitive services in
18
19 433 community pharmacies - a qualitative study. *Pharm Pract (Granada)* 2012;10:151-8.
20
21
22 434 13. Roberts A, Benrimoj S, Chen T, et al. Implementing cognitive services in community
23
24 435 pharmacy: a review of facilitators used in practice change. *Int J Clin Pharm*
25
26 436 2006;14:163-70.
27
28
29 437 14. Berbatis C, Sunderland V, Joyce A, et al. Enhanced pharmacy services, barriers and
30
31 438 facilitators in Australia's community pharmacies: Australia's National Pharmacy
32
33 439 Database Project. *Int J Clin Pharm* 2007;15:185-91.
34
35
36 440 15. Gastelurrutia MA, Fernandez-Llimos F, Garcia-Delgado P, et al. Barriers and facilitators
37
38 441 to the dissemination and implementation of cognitive services in Spanish community
39
40 442 pharmacies *Seguimiento Farmacoterapeutico* 2005;3:65-77.
41
42
43 443 16. Cvetkovski B, Armour C, Bosnic-Anticevich S. Asthma management in rural New South
44
45 444 Wales: Perceptions of health care professionals and people with asthma. *Austr J Rural*
46
47 445 *Health* 2009;17:195-200.
48
49
50 446 17. White L, Klinner C, Carter S. Consumer perspectives of the Australian Home Medicines
51
52 447 Review Program: benefits and barriers. *Res Social Adm Pharm* 2012;8:4-16.
53
54
55
56
57
58
59
60

- 1
2
3 448 18. Gilmartin JF, Marriott JL, Hussainy SY. Exploring factors that contribute to dose
4 administration aid incidents and identifying quality improvement strategies: the views of
5 449 pharmacy and nursing staff. *Int J Pharm Pract* 2014;22:407-14.
6
7 450
8
9
10 451 19. Dhillon AK, Hattingh HL, Stafford A, et al. General practitioners' perceptions on home
11 medicines reviews: a qualitative analysis. *BMC Fam Pract* 2015;16:16.
12 452
13
14
15 453 20. Rayes IK, Abduelkarem AR. A qualitative study exploring physicians' perceptions on the
16 role of community pharmacists in Dubai. *Pharm Pract (Granada)* 2016;14:738.
17 454
18
19
20 455 21. Mohammed MA, Moles RJ, Chen TF. Meta-synthesis of qualitative research: the
21 challenges and opportunities. *Int J Clin Pharm* 2016;38:695-704.
22 456
23
24
25 457 22. Walsh D, Downe S. Meta-synthesis method for qualitative research: a literature review.
26 *J Adv Nurs* 2005;50:204-11.
27 458
28
29
30 459 23. Higgins JP, Green S. *Cochrane Handbook for Systematic Reviews of Interventions*.
31 Hoboken: Wiley-Blackwell; 2008.
32 460
33
34
35 461 24. Tong A, Flemming K, McInnes E, et al. Enhancing transparency in reporting the
36 synthesis of qualitative research: ENTREQ. *BMC Med Res Methodol* 2012;12:181.
37 462
38
39
40 463 25. Moullin JC, Sabater-Hernández D, Fernandez-Llimos F, et al. Defining professional
41 pharmacy services in community pharmacy. *Res Social Adm Pharm* 2013;9:989-95.
42 464
43
44
45 465 26. Hennink MM, Hutter I, Bailey A. *Qualitative research methods*. Los Angeles, Calif. ;
46 London: SAGE; 2011.
47 466
48
49
50 467 27. Dixon-Woods M, Shaw RL, Agarwal S, et al. The problem of appraising qualitative
51 research. *Qual Saf Health Care* 2004;13:223-5.
52 468
53
54
55 469 28. Thomas J, Harden A. Methods for the thematic synthesis of qualitative research in
56 systematic reviews. *BMC Med Res Methodol* 2008;8:1-10.
57 470
58
59
60

- 1
2
3 471 29. McLeroy KR, Bibeau D, Steckler A, et al. An ecological perspective on health promotion
4
5 472 programs. *Health Educ Quart* 1988;15:351-77.
6
7
8 473 30. Jacomy M, Venturini T, Heymann S, et al. ForceAtlas2, a continuous graph layout
9
10 474 algorithm for handy network visualization designed for the Gephi software. *PLoS one*
11
12 475 2014;9:e98679.
13
14
15 476 31. McMillan SS, Sav A, Kelly F, et al. How to attract them and keep them: The pharmacy
16
17 477 attributes that matter to Australian residents with chronic conditions. *Int J Pharm Pract*
18
19 478 2014;22:238-45.
20
21
22 479 32. Rieck A, Pettigrew S. How physician and community pharmacist perceptions of the
23
24 480 community pharmacist role in Australian primary care influence the quality of
25
26 481 collaborative chronic disease management. *Qual Prim Care* 2013;21:105-11.
27
28
29 482 33. Barbara S, Krass I. Self management of type 2 diabetes by Maltese immigrants in
30
31 483 Australia: Can community pharmacies play a supporting role? *Int J Pharm Pract*
32
33 484 2013;21:305-13.
34
35
36 485 34. Bereznicki B, Peterson G, Jackson S, et al. Perceived feasibility of a community
37
38 486 pharmacy-based asthma intervention: A qualitative follow-up study. *J Clin Pharm Ther*
39
40 487 2011;36:348-55.
41
42
43 488 35. Saba M, Dan E, Bittoun R, et al. Asthma and smoking--healthcare needs and
44
45 489 preferences of adults with asthma who smoke. *J Asthma* 2014;51:934-42.
46
47
48 490 36. Shoukry G, Wong K, Bartlett D, et al. Treatment experience of people with obstructive
49
50 491 sleep apnoea seeking continuous positive airways pressure device provision through
51
52 492 community pharmacies: a role for pharmacists? *Int J Pharm Pract* 2011;19:318-27.
53
54
55 493 37. Um IS, Armour C, Krass I, et al. Weight management in community pharmacy: what do
56
57 494 the experts think? *Int J Clin Pharm* 2013;35:447-54.
58
59
60

- 1
2
3 495 38. Snell L, White L. An exploratory study of the role of emotional intelligence and self-
4 efficacy on service quality and adherence in a weight loss setting. *Serv Mark Q*
5 496
6 2011;32:228-46.
7
8
9
10 498 39. Maher JH, Hughes R, Anderson C, et al. An exploratory investigation amongst
11 Australian mothers regarding pharmacies and opportunities for nutrition promotion.
12 499
13 *Health Educ Res* 2013;28:1040-50.
14 500
15
16
17 501 40. Mey A, Knox K, Kelly F, et al. Trust and safe spaces: Mental health consumers' and
18 carers' relationships with community pharmacy staff. *Patient* 2013;6:281-9.
19 502
20
21
22 503 41. Hattingh HL, Knox K, Fejzic J, et al. Privacy and confidentiality: perspectives of mental
23 health consumers and carers in pharmacy settings. *Int J Pharm Pract* 2015;23:52-60.
24 504
25
26
27 505 42. Clark A, Gilbert A, Rao D, et al. 'Excuse me, do any of you ladies speak English?'
28 Perspectives of refugee women living in South Australia: barriers to accessing primary
29 506
30 health care and achieving the Quality Use of Medicines. *Aust J Prim Health* 2014;20:92-
31 507
32 7.
33 508
34
35
36 509 43. O'Connor M, Fisher C, French L, et al. Exploring the community pharmacist's role in
37 palliative care: Focusing on the person not just the prescription. *Patient Educ Couns*
38 510
39 2011;83:458-64.
40 511
41
42
43 512 44. Carter SR, Moles R, White L, et al. Exploring patients' motivation to participate in
44 Australia's Home Medicines Review program. *Int J Clin Pharm* 2012;34:658-66.
45 513
46
47
48 514 45. Lee CY, George J, Elliott RA, et al. Exploring stakeholder perspectives on medication
49 review services for older residents in retirement villages. *Int J Pharm Pract* 2012;20:249-
50 515
51 58.
52 516
53
54
55 517 46. White L, Klinner C. Medicine use of elderly Chinese and Vietnamese immigrants and
56 attitudes to home medicines review. *Aust J Prim Health* 2012;18:50-5.
57 518
58
59
60

- 1
2
3 519 47. Swain L, Barclay L. They've given me that many tablets, I'm bushed: I don't know where
4 I'm going: Aboriginal and Torres Strait Islander peoples' experiences with medicines.
5 520
6
7 521 *Austr J Rural Health* 2013;21:216-9.
8
9
10 522 48. Du Pasquier S, Aslani P. Concordance-based adherence support service delivery:
11
12 523 Consumer perspectives. *Pharm World Sci* 2008;30:846-53.
13
14
15 524 49. Bui J, Day C, Hanrahan J, et al. Senior nurses' perspectives on the transfer of opioid
16
17 525 substitution treatment clients from clinics to community pharmacy. *Drug Alcohol Rev*
18
19 526 2014;34:495-8.
20
21
22 527 50. Van C, Krass I, Mitchell B. General practitioner perceptions of extended pharmacy
23
24 528 services and modes of collaboration with pharmacists. *J Pharm Pract Res* 2007;37:182-
25
26 529 6.
27
28
29 530 51. Van C, Mitchell B, Krass I. General practitioner-pharmacist interactions in professional
30
31 531 pharmacy services. *J Interprof Care* 2011;25:366-72.
32
33
34 532 52. Dey RM, De Vries MJW, Bosnic-Anticevich S. Collaboration in chronic care: Unpacking
35
36 533 the relationship of pharmacists and general medical practitioners in primary care. *Int J*
37
38 534 *Pharm Pract* 2011;19:21-9.
39
40
41 535 53. Chong WW, Aslani P, Chen TF. Multiple perspectives on shared decision-making and
42
43 536 interprofessional collaboration in mental healthcare. *J Interprof Care* 2013;27:223-30.
44
45
46 537 54. Cheong LH, Armour CL, Bosnic-Anticevich SZ. Multidisciplinary collaboration in primary
47
48 538 care: Through the eyes of patients. *Aust J Prim Health* 2013;19:190-7.
49
50
51 539 55. Bajramovic J, Emmerton L, Tett SE. Perceptions around concordance--focus groups
52
53 540 and semi-structured interviews conducted with consumers, pharmacists and general
54
55 541 practitioners. *Health Expect* 2004;7:221-34.
56
57
58
59
60

- 1
2
3 542 56. McMillan SS, Emmerton L. Nurse practitioners: an insight into their integration into
4
5 543 Australian community pharmacies. *Res Social Adm Pharm* 2013;9:975-80.
6
7
8 544 57. Roberts AS, Benrimoj SI, Chen TF, et al. Understanding practice change in community
9
10 545 pharmacy: a qualitative study in Australia. *Res Social Adm Pharm* 2005;1:546-64.
11
12
13 546 58. Roberts AS, Benrimoj SI, Chen TF, et al. Practice change in community pharmacy:
14
15 547 quantification of facilitators. *Ann Pharmacother* 2008;42:861-8.
16
17
18 548 59. Alonso-Perales MD, Lasheras B, Beitia G, et al. Barriers to promote cardiovascular
19
20 549 health in community pharmacies: a systematic review. *Health Prompt Int* 2015:1-14.
21
22
23 550 60. Lowres N, Krass I, Neubeck L, et al. Atrial fibrillation screening in pharmacies using an
24
25 551 iPhone ECG: a qualitative review of implementation. *Int J Clin Pharm* 2015;37:1111-20.
26
27
28 552 61. Hughes CM, Cadogan CA, Ryan CA. Development of a pharmacy practice intervention:
29
30 553 lessons from the literature. *Int J Clin Pharm* 2015;38:601-6.
31
32
33 554 62. Bartholomew LK, Markham CM, Ruiter RAC, et al. Planning health promotion programs:
34
35 555 An Intervention Mapping approach. 4th ed. San Francisco, CA: Jossey-Bass; 2016.
36
37
38 556 63. McKenzie JF, Neiger BL, Thackeray R. Planning, implementing, and evaluating health
39
40 557 promotion programs: a primer. 6th ed. San Francisco, CA: Pearson - Benjamin
41
42 558 Cummings; 2013.
43
44
45 559 64. Green LW, Kreuter MW. Health program planning: An educational and ecological
46
47 560 approach. 4th ed. Boston: McGraw-Hill; 2005.
48
49
50 561 65. Franco-Trigo L, Hossain LN, Durks D, et al. Stakeholder analysis for the development of
51
52 562 a community pharmacy service aimed at preventing cardiovascular disease. *Res Social*
53
54 563 *Adm Pharm Epub* 2016 Jun 30.
55
56
57
58
59
60

1
2
3 564 66. Sabater-Hernández D, Moullin JC, Hossain LN, et al. Intervention mapping for
4
5 565 developing pharmacy-based services and health programs: A theoretical approach. *Am*
6
7 566 *J Health Syst Pharm* 2016;73:156-64.

8
9
10 567 67. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for
11
12 568 characterising and designing behaviour change interventions. *Implement Sci* 2011;6:42.

13
14
15 569
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

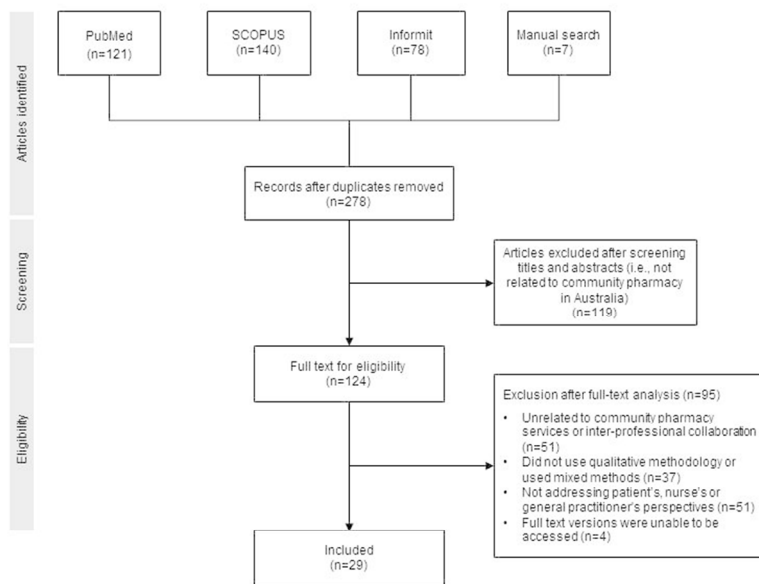
570



571

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

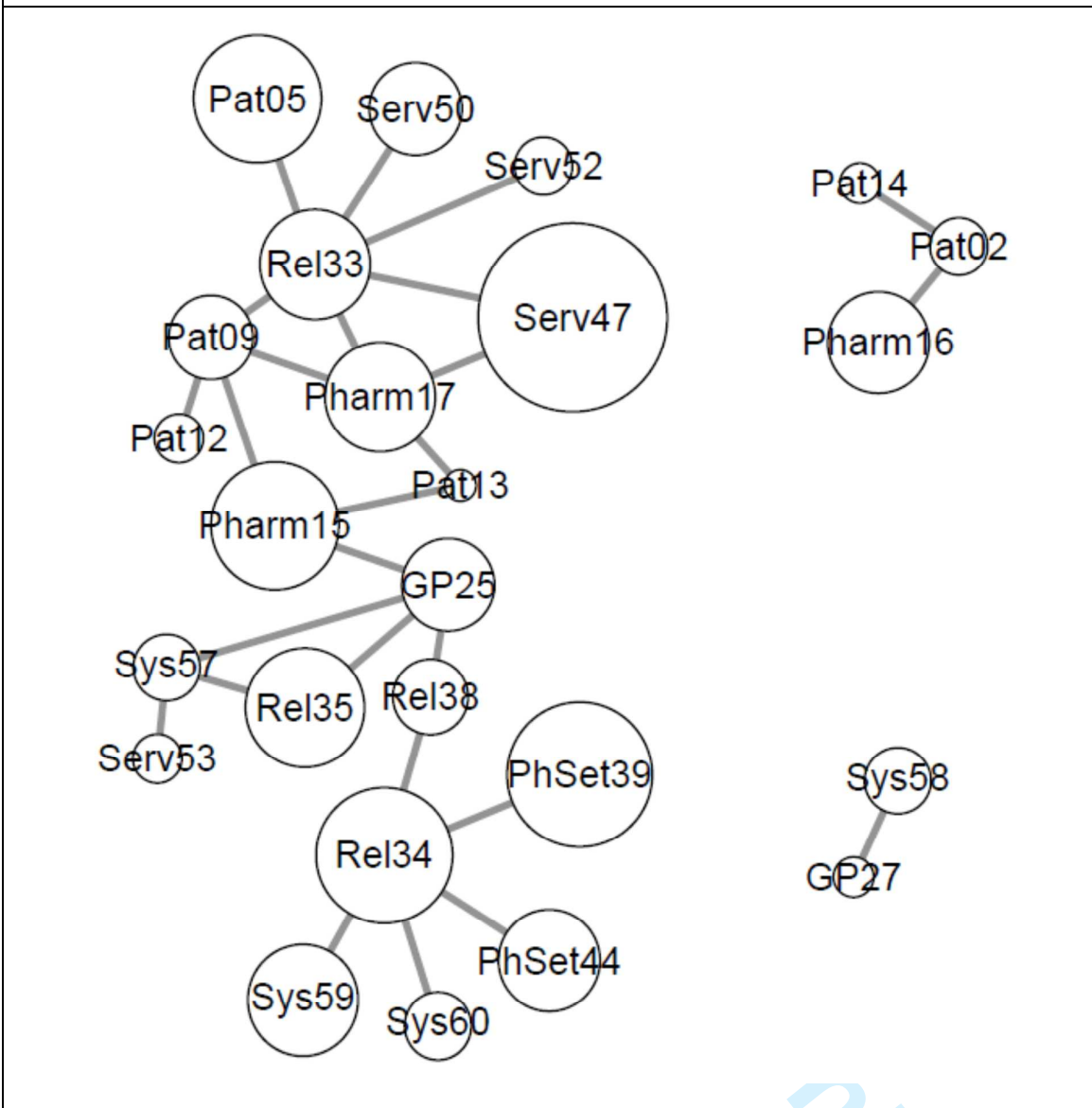


254x190mm (96 x 96 DPI)

ew only

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.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

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

References

1. Carter SR, Moles R, White L, et al. Exploring patients' motivation to participate in Australia's Home Medicines Review program. *Int J Clin Pharm* 2012;34:658-66.
2. White L, Klinner C, Carter S. Consumer perspectives of the Australian Home Medicines Review Program: benefits and barriers. *Res Social Adm Pharm* 2012;8:4-16.
3. Mey A, Knox K, Kelly F, et al. Trust and safe spaces: Mental health consumers' and carers' relationships with community pharmacy staff. *Patient* 2013;6:281-9.
4. Snell L, White L. An exploratory study of the role of emotional intelligence and self-efficacy on service quality and adherence in a weight loss setting. *Serv Mark Q* 2011;32:228-46.
5. McMillan SS, Emmerton L. Nurse practitioners: an insight into their integration into Australian community pharmacies. *Res Social Adm Pharm* 2013;9:975-80.
6. Chong WW, Aslani P, Chen TF. Multiple perspectives on shared decision-making and interprofessional collaboration in mental healthcare. *J Interprof Care* 2013;27:223-30.
7. Dey RM, De Vries MJW, Bosnic-Anticevich S. Collaboration in chronic care: Unpacking the relationship of pharmacists and general medical practitioners in primary care. *Int J Pharm Pract* 2011;19:21-9.
8. Van C, Krass I, Mitchell B. General practitioner perceptions of extended pharmacy services and modes of collaboration with pharmacists. *J Pharm Pract Res* 2007;37:182-6.
9. Van C, Mitchell B, Krass I. General practitioner-pharmacist interactions in professional pharmacy services. *J Interprof Care* 2011;25:366-72.
10. Bui J, Day C, Hanrahan J, et al. Senior nurses' perspectives on the transfer of opioid substitution treatment clients from clinics to community pharmacy. *Drug Alcohol Rev* 2014;34:495-8.
11. McMillan SS, Sav A, Kelly F, et al. How to attract them and keep them: The pharmacy attributes that matter to Australian residents with chronic conditions. *Int J Pharm Pract* 2014;22:238-45.

- 1
2
3 12. Dhillon AK, Hattingh HL, Stafford A, et al. General practitioners' perceptions on home
4 medicines reviews: a qualitative analysis. *BMC Fam Pract* 2015;16:16.
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

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)

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:	<i>BMJ Open</i>
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 Lockett, 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

SCHOLARONE™
Manuscripts

only

1
2
3
4 1 **A qualitative meta-synthesis of barriers and facilitators that influence the implementation**
5
6 2 **of community pharmacy services: perspectives of patients, nurses and general medical**
7
8 3 **practitioners**

10
11
12 4 **Authors:**

13
14
15 5 **Lutfun N. Hossain.** BPharm. Master Student; Graduate School of Health, University of
16
17 6 Technology, Sydney, Australia. Email: Lutfun.Hossain@student.uts.edu.au

18
19
20 7 **Fernando Fernandez-Llimos.** PharmD, PhD. Assistant Professor; Research Institute for
21
22 8 Medicines, Department of Social Pharmacy, Faculty of Pharmacy, University of Lisbon,
23
24 9 Portugal. Email: f-llimos@ff.ul.pt

25
26
27
28 10 **Tim Lockett.** BSc (Hons), PhD. Senior Lecturer; Faculty of Health, University of Technology
29
30 11 Sydney, Australia Email: Tim.Lockett@uts.edu.au

31
32
33 12 **Joanna C. Moullin.** BPharm. PhD; Research Fellow; Department of Psychiatry, University of
34
35 13 California, San Diego (USA). Email: jcmoullin@gmail.com

36
37
38 14 **Desire Durks.** BPharm. Master Student; Graduate School of Health, University of Technology,
39
40 15 Sydney, Australia. Email: desire.durks@student.uts.edu.au

41
42
43 16 **Lucia Franco-Trigo.** MPharm. PhD Student; Graduate School of Health, University of
44
45 17 Technology, Sydney, Australia. Email: lucia.francotrigo@student.uts.edu.au

46
47
48 18 **Charlie Benrimoj.** PharmD, PhD. Head of School; Graduate School of Health, University of
49
50 19 Technology, Sydney, Australia. Email: shalom.benrimoj@uts.edu.au

51
52
53 20 **Daniel Sabater-Hernández.** PharmD, PhD. Chancellor's Postdoctoral Research Fellow;
54
55 21 Graduate School of Health, University of Technology, Sydney, Australia. Fellow; Academic

22 Centre in Pharmaceutical Care, University of Granada, Spain. Email:

23 daniel.sabaterhernandez@uts.edu.au; daniel.sabaterhernandez@outlook.com

24 **Corresponding author: Daniel Sabater-Hernández**

25 Graduate School of Health, University of Technology Sydney.

26 Level 4, Building 7, 67 Thomas St, Ultimo (PO Box 123)

27 Phone: +61 2 9514 7201; Email: daniel.sabaterhernandez@uts.edu.au;

28 daniel.sabaterhernandez@outlook.com

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

1
2
3 30 **ABSTRACT**
4
5

6 31 **Objectives:** The integration of community pharmacy services (CPSs) into primary care practice
7
8 32 can be enhanced by assessing (and further addressing) the elements that enable (i.e.,
9
10 33 facilitators) or hinder (i.e., barriers) the implementation of such CPSs. These elements have
11
12 34 been widely researched from the perspective of pharmacists but not from the perspectives of
13
14 35 other stakeholders who can interact with, and influence the implementation of CPSs. The aim of
15
16 36 this study was to synthesise the literature on patients', general practitioners' (GPs) and nurses'
17
18 37 perspectives of CPSs to identify barriers and facilitators to their implementation in Australia.

19
20
21
22 38 **Methods:** A meta-synthesis of qualitative studies was performed. A systematic search in
23
24 39 PubMed, Scopus and Informit was conducted to identify studies that explored patients', GPs' or
25
26 40 nurses' views about CPSs in Australia. Thematic synthesis was performed to identify elements
27
28 41 influencing CPS implementation, which were further classified using an ecological approach.

29
30
31
32 42 **Results:** Twenty nine articles were included in the review, addressing sixty three elements
33
34 43 influencing CPS implementation. Elements were identified as a barrier, facilitator or both, and
35
36 44 were related to four ecological levels: individual patient (n=14); interpersonal (n=24);
37
38 45 organizational (n=16); and community and healthcare system (n=9). It was found that patients,
39
40 46 nurses and GPs identified elements reported in previous pharmacist-informed studies, such as
41
42 47 pharmacist's training/education or financial remuneration, but also new elements, such as
43
44 48 patients' capability to follow service's procedures, the relationships between GP and pharmacy
45
46 49 professional bodies, or the availability of multidisciplinary training/education.

47
48
49
50 50 **Conclusions:** Patients, GPs and nurses can describe a large number of elements influencing
51
52 51 CPS implementation. These elements can be combined with previous findings in pharmacists-
53
54 52 informed studies to produce a comprehensive framework to assess barriers and facilitators to
55
56
57
58
59
60

1
2
3 53 CPS implementation. This framework can be used by pharmacy service planners and policy
4
5 54 makers to improve the analysis of the contexts in which CPSs are implemented.
6
7

8 **KEY WORDS** 9

10
11 56 Community pharmacy services [MeSH]; health service research [MeSH]; qualitative meta-
12
13 57 synthesis; barriers; facilitators; determinants of practice.
14
15

16 **STRENGTHS AND LIMITATIONS OF THIS STUDY** 17

- 18
19
20 59 • Qualitative meta-synthesis aims to synthesise qualitative literature to provide a new,
21
22 60 more comprehensive interpretation of the findings that goes beyond the depth and
23
24 61 breadth of the original studies and to broaden the range of concepts identified.
25
26 62 Therefore, it is an appropriate method to suitably achieve the aim of this study, which
27
28 63 was to identify a comprehensive range of elements that, according to general
29
30 64 practitioners, patients and nurses, can enable (i.e., facilitators) or hinder (i.e., barriers)
31
32 65 the implementation of community pharmacy services in Australia.
33
34
35 66 • For the first time, a review focuses on synthesising the perspectives of these key
36
37 67 stakeholders who can strongly influence the implementation of community pharmacy
38
39 68 services at the primary care level.
40
41
42 69 • Qualitative studies in this review were checked against a minimum set of quality
43
44 70 appraisal criteria, but a comprehensive quality assessment was not conducted. This
45
46 71 decision was made due to the difficulty of using the information about studies' quality to
47
48 72 inform the synthesis (e.g. even studies with flaws in methodology can provide valuable
49
50 73 information), and to identify a larger number of possible influential elements.
51
52
53 74 • This review was purposively focused on a specific implementation context (i.e.,
54
55 75 Australia), to which its results are directly relevant and will be immediately applied and
56
57 76 actions will be taken. Australia is a country with a large experience in research and
58
59
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

77 implementation of community pharmacy services and, therefore, it is expected the
78 results of this review may be relevant to start investigating barriers and facilitators to
79 community pharmacy service implementation in contexts with less experience.
80

For peer review only

81 INTRODUCTION

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

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

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

1
2
3 106 been conducted to identify the elements that from the perspective of community pharmacists
4
5 107 (i.e., service provider) can influence the implementation of CPSs.¹⁴⁻¹⁶ However, considering the
6
7 108 view of a single stakeholder group is insufficient to comprehensively analyse the complexity of a
8
9
10 109 particular implementation context. These limited analyses can lead to the development of
11
12 110 inadequate implementation strategies and interventions. Patients, general practitioners (GPs),
13
14 111 and primary care nurses are key stakeholders who interact with or are affected by CPSs and
15
16 112 may be able to strongly influence the implementation of such services. These stakeholders may
17
18 113 have their own particular views about CPSs and so can complement the findings from previous
19
20 114 pharmacy-informed research.^{14, 15} Patients', nurses' and GPs' views and experiences regarding
21
22 115 CPSs have been explored in several qualitative studies¹⁷⁻²¹ but no review that collates and
23
24 116 analyses such information exists. Qualitative meta-synthesis aims to synthesise qualitative
25
26 117 literature to provide a new, more comprehensive interpretation of the findings that goes beyond
27
28 118 the depth and breadth of the original studies and to broaden the range of concepts identified.^{22,}
29
30 119 ²³ Thus, the aim of this study was to synthesise such qualitative literature to describe the broad
31
32
33 120 range of elements that, from the patients', GPs' and nurses' perspectives, can hinder or enable
34
35 121 the implementation of CPSs in Australia.

36 37 38 39 122 **METHODS**

40
41
42 123 **Search strategy, screening and eligibility criteria.** A systematic search was conducted in
43
44 124 May 2015 in three electronic databases (i.e., PubMed, Scopus and Informat), without time limits,
45
46 125 to identify qualitative studies addressing patients', nurses' or GPs' views about CPSs in
47
48 126 Australia. A CPS was assumed to refer to an action or set of actions delivered in or organised
49
50 127 by a community pharmacy to optimise the process of care, with the aim of improving health
51
52 128 outcomes and the value of healthcare.²⁴ For the purpose of this review, CPSs are specific
53
54 129 health programs that are implemented in addition to routine professional activities performed by
55
56 130 community pharmacists, which do not require any specific or extra implementation effort (i.e.,
57
58
59
60

1
2
3 131 they are part of normal community pharmacy practice). Since medicines dispensing is the main
4
5 132 routine activity in the community pharmacy, it was not considered as a CPS and so excluded.
6
7 133 Articles that did not address a specific CPS but inter-professional collaboration (i.e. between
8
9 134 community pharmacists and other healthcare professionals) were included as they can also
10
11 135 provide insight into the elements influencing the implementation of CPSs. Full search strategies
12
13 136 are available on Appendix 1 (Supplementary File). In addition, the references from the included
14
15 137 papers were searched manually for additional relevant studies. A two-step process was
16
17 138 performed by one researcher to select studies for the analysis. As a first step, titles and
18
19 139 abstracts were screened to identify and exclude non-relevant literature. In a second, full texts of
20
21 140 the remaining articles were reviewed to exclude those that: (1) were not related to CPSs; (2) did
22
23 141 not address patient, nurse and/or GP perspective; (3) did not use qualitative research
24
25 142 methodology;²⁵ (4) did not clearly identify the stakeholder (i.e., patient, nurse or GP) as the
26
27 143 source of the information; and (5) were not accessible in any of the research team university
28
29 144 libraries, or unattainable following contact with the authors.
30
31
32
33

34
35 145 All the included articles were checked by the same researcher for 'elementary quality
36
37 146 assessment' using the first three criteria delineated by Dixon-Woods et al²⁶ to appraise
38
39 147 qualitative research: (1) was the research question clear? (2) Was the research questions suited
40
41 148 to qualitative inquiry? (3) Were (a) sampling, (b) data collection, and (c) analysis clearly
42
43 149 described? Articles were excluded when no answer, or an unclear answer, was given to at least
44
45 150 one of the three questions.
46
47
48

49 151 **Synthesis.** Qualitative meta-synthesis was conducted by one researcher according to the
50
51 152 three-stage method for thematic synthesis described by Thomas et al²⁷ The first stage of
52
53 153 analysis involved free line-by-line coding of the original data (study participants' quotes) and the
54
55 154 study authors' interpretation of the original data. The process of coding involves summarising
56
57 155 text from the results and discussion sections of each article into one or more descriptive issues
58
59
60

1
2
3 156 (i.e. codes) to capture meaning. The second stage of the process involved grouping codes into
4
5 157 one or more descriptive themes. Subsequent articles were coded into pre-existing themes, and
6
7 158 new themes were created when considered necessary. To simplify the terminology throughout
8
9
10 159 this article, themes were interpreted as elements (i.e., influential elements) that could positively
11
12 160 (i.e., facilitators) or negatively (i.e., barriers) influence CPS implementation or practice change.
13
14 161 A barrier was defined as *"any type of obstacle (material or immaterial) which can impede the*
15
16 162 *dissemination, implementation and/or sustainability of a CPS"*; while a facilitator was defined as
17
18 163 *"any type of element (material or immaterial) which can help to overcome barriers and/or*
19
20 164 *accelerate the dissemination or implementation"* of a CPS.¹⁶ Themes that were related to similar
21
22 165 issues were further grouped to create one broad barrier or facilitator. The identified influential
23
24 166 elements were reviewed by a second researcher to assess clarity, consistency, and
25
26 167 understanding. At the third stage, barriers and facilitators were organised using an adapted
27
28 168 version of the Ecological Model (Table 1),²⁸ which classified them into four different levels:
29
30 169 patient, interpersonal, organisational, and community/system. The four levels defined in Table 1
31
32 170 were used as an overarching structure, with further sub-headings created during analysis, for
33
34 171 appropriate allocation and organisation of the influential elements into the levels. The ecological
35
36 172 model has been widely and successfully used for planning services in a variety of settings,
37
38 173 targeting different populations and problems.^{29, 30} Coding of papers that were identified manually
39
40 174 was conducted last. NVivo Version 10 software (QSR International Pty Ltd; Australia) was used
41
42 175 to help manage and analyse the data. Once all the influential elements were identified, a second
43
44 176 round of analysis was conducted to identify where a connection or relationship was mentioned
45
46 177 between two or more elements. Again, both study participants' quotes and study authors' data
47
48 178 interpretation were reviewed for this purpose. A network representing the identified relationships
49
50 179 was generated using a ForceAtlas2 layout³¹ with Gephi, 0.8. This article has been written
51
52 180 following existing guidelines for reporting the synthesis of qualitative research (the ENTREQ
53
54 181 Statement).³²
55
56
57
58
59
60

Table 1. Levels where elements that can influence the implementation of community pharmacy services can exist (adapted from McLeroy et al²⁸)

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 elements related 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,

1
2
3 189 3 addressed patients' and GPs' perspectives together and 1 addressed the views of all three
4
5 190 participants. Twenty-three articles were related to a specific CPS, 2 were related specifically to
6
7 191 inter-professional collaboration, 3 were related to both CPSs and inter-professional
8
9 192 collaboration, and 1 addressed concordance-based healthcare. The articles employed semi-
10
11 193 structured interviews (n=23), and/or focus groups (n=11) as methods of data collection.
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

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
<p>GP: General Practitioner; N: Nurse; Pt: Patient; SSI: Semi-structured interview; FG: Focus Group;</p> <p>* Total number of patients and carers. Opinions of carers were clearly differentiated in the article and excluded from this review.</p> <p>** No further description of participants was provided in the paper</p>						

194

1
2
3
4 195 During the first stage of data extraction, 181 patient, 30 nurse and 91 GP codes were created.
5
6 196 At the completion of the coding process, 63 influential elements were identified (Table 3). These
7
8 197 elements were found to exist as a barrier, facilitator or both. In several studies patients, nurses
9
10 198 and GPs were able to describe approaches or strategies to overcome specific barriers.^{17-20, 33-36,}
11
12 199 ^{39, 41, 43, 47, 51, 52, 57} These strategies have been reported in Table 3 as additional facilitators
13
14 200 (marked with an asterisk). During coding of the manually identified papers, it seemed that
15
16 201 conceptual saturation may have been reached, since no new barriers or facilitators were
17
18 202 identified.
19
20
21
22 203

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 [†]
<i>Elements at the individual patient level</i>		
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

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

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	
<i>Elements at interpersonal level</i>		
<i>a. Individual healthcare professionals (sub-level)</i>		
<i>a.1. Community pharmacist</i>		
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
<i>a.2. Other community pharmacy staff members (e.g. pharmacy assistants)</i>		
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
<i>a.3. General Practitioner</i>		
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}
<i>a.4. Nurse</i>		
28. Understanding, perceptions and expectations of their individual role within, or in regards to,	N ¹⁹	

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

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
<i>b. Relationships (or interactions) between individuals (sub-level)</i>		
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}
<i>Elements at the organisational level</i>		
<i>a. Community pharmacy setting (sub-level)</i>		
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	

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

46. Promotion of the CPS to facilitate its uptake		Pt ^{33*, 35*, 47.} ; GP ²⁰
<i>b. Community pharmacy service</i>		
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*.} ,

<i>Elements at the community and health system level</i>		
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		

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

(i.e., facilitator).

204

For peer review only

205 **Individual patient level.** All the 16 elements at the patient level were identified by patients.
206 GPs and nurses did not identify any additional patient-related barriers and facilitators.
207 Influential elements at this level were related to the patients' needs, preferences, perceptions
208 and expectations, capabilities or previous experiences with community pharmacists and
209 services. Patients' health-related concerns, understanding or perception of their health
210 problems are important elements that influence patients' need for healthcare and so their
211 decisions to utilise CPSs. Most patients held positive views about CPSs and the role of the
212 pharmacist in providing such services.^{40, 41, 47} Some articles highlighted that positive
213 experiences were related to the patient feeling comfortable and welcomed in the
214 pharmacy.^{38, 40, 42} When CPSs required a formal referral from the GP, some patients deterred
215 from requesting the services. These patients perceived that by requesting a CPS they would
216 be bothering the GP³⁶ or offending and compromising their relationship with the GP.^{18, 47, 48}
217 Patients also reported that having a negative experience with a CPS also deterred them
218 from accessing and utilising such CPSs in the future.⁴²

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

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

1
2
3 232 practitioner.⁵² Some studies highlighted that GPs had a limited understanding of the
4
5 233 capabilities of the pharmacist as service providers with pharmacists perceived as drug
6
7 234 sellers in a retail environment.^{34-36, 53, 56} Both patients and GPs implied the need for
8
9 235 pharmacists to undergo upskilling and training to be qualified to provide some CPSs.^{34, 39, 48}

10
11 236 *Relationships (or interactions) between individuals.* Seven influential elements were
12
13 237 identified. Articles reported that well-established relationships between the pharmacist and
14
15 238 the nurse or the GP, including collaborative relationships, were essential for the success of a
16
17 239 CPS.^{17, 19, 20, 35, 51, 54} Multidisciplinary education and training for healthcare professionals was
18
19 240 suggested as a way to improve healthcare professional competence.⁵⁶ Similarly,
20
21 241 characteristics of the relationship between the patient and the pharmacist (e.g., trust) was a
22
23 242 key element that influenced pharmacy choice, contributed to the patient adhering to the
24
25 243 CPS, and accepting the intervention.^{18, 33, 36, 38, 40-42, 46} Some articles reported the influence of
26
27 244 family and friends on patient utilisation of CPSs (e.g., providing support, influencing
28
29 245 motivation),^{35, 56} and others commented on the integration of partners into the CPS (e.g.,
30
31 246 provision of group sessions with partners).^{35, 38}

32
33
34
35 247 **Organizational level.** Also at the organisational level, influential elements were divided into
36
37 248 two sub-levels: (1) *the community pharmacy setting* (n=8) and (2) *the service itself* (n=8).

38
39
40 249 *The community pharmacy setting.* Some articles identified the accessibility of the pharmacy
41
42 250 facilitated inter-professional relationships between GPs and pharmacists,^{52, 53} and influenced
43
44 251 patient^{17, 38, 41} and nurse⁵¹ participation in CPS. In some articles non-english speaking
45
46 252 patients reported that the lack of multilingual staff limited their awareness and access to
47
48 253 CPSs.^{44, 48} Other articles noted GP and nurse concerns regarding the lack of pharmacies
49
50 254 that provide CPSs⁵¹ and insufficient accredited pharmacists to perform CPSs.^{47, 57}

51
52
53 255 *The community pharmacy service.* Concerns regarding the validity and accuracy of the tools
54
55 256 and instruments used (e.g. medical devices, medication charts) were raised by GPs and
56
57 257 nurses.^{19, 52} Patients and nurses commented that having the same service provider at each

1
2
3 258 encounter facilitated rapport building between the patient and the pharmacist,^{38, 41, 46} and
4
5 259 caused fewer errors when it came to preparing dose administration aids.¹⁹ Furthermore,
6
7 260 patients, nurses and GPs reported on the involvement/participation of healthcare
8
9 261 professionals other than pharmacists in the provision of CPSs,⁴¹ or to act as a point of
10
11 262 liaison,²⁰ to improve the quality and efficiency of the service. The cost of the service was a
12
13 263 key element, mentioned by all stakeholders, that could either discourage^{51, 56} or motivate³⁸
14
15 264 patients to utilise services. In particular it was mentioned that smaller, manageable cost
16
17 265 payments for patients could facilitate CPS use.⁵¹

18
19
20 266 **Community and healthcare system level.** Nine influential elements were identified at this
21
22 267 level. Several articles identified the need for adequate remuneration for GPs and
23
24 268 pharmacists for participating in and providing CPSs,^{17, 44, 52, 54} as well as the implementation
25
26 269 of an electronic system of information sharing between these two healthcare professionals.^{19,}
27
28 270 ^{20, 36, 57} GPs also cited the availability of competing, government-funded health programs,
29
30 271 and their high level of workload and lack of time as contributing to their low participation in
31
32 272 CPSs.⁴⁷ Where services were available, remunerated and widely supported by GPs and
33
34 273 patients, such as home medicine reviews (i.e., a medication review service), GPs mentioned
35
36 274 complex bureaucratic procedures (e.g. completing tedious documents) may discourage their
37
38 275 use.^{17, 20, 47, 53, 57} Despite this, the home medicine review service was generally considered
39
40 276 successful by GPs and a frequently reported reason for this was the presence of a clear
41
42 277 protocol guiding service delivery.^{20, 52, 53} GPs also suggested increased and improved
43
44 278 collaboration between pharmacy and GP professional representative bodies may improve
45
46 279 awareness of the services and encourage participation. The media was perceived to have
47
48 280 an important role in improving awareness of and promoting CPSs. Finally, some broad
49
50 281 comments suggesting some additional issues at the higher levels of the healthcare system
51
52 282 were mentioned, such as 'better and more responsible organisation of the healthcare
53
54 283 system'.⁵⁷

1
2
3 284 With regards to the interactions between the identified influential elements, 12 articles out of
4
5 285 29 mentioned some form of a relationship between certain elements.^{20, 33, 40, 42, 46, 48, 51-55, 58} As
6
7 286 shown in Appendix 2 (Supplementary File), a total of 27 relationships between 25 elements
8
9 287 were found, with 10 elements presenting 2 or more relationships with others (2 elements
10
11 288 showed 5 or more interactions). As a result of the limited, unsystematic information reported
12
13 289 in the articles, a sparse network disclosing the recognized relationships between elements
14
15 290 was obtained (Appendix 2 in Supplementary File).

17 18 291 **DISCUSSION**

19
20 292 To the best of our knowledge this is the first review that summarises comprehensive
21
22 293 information on the elements that, according to patients, nurses and GPs, can enable or
23
24 294 hinder the implementation of CPSs. Patients, GPs and nurses are key members of the
25
26 295 primary healthcare team and their support and expectations for CPSs can highly influence
27
28 296 their implementation.^{1, 19, 52, 58-61} Thus, by synthesising and organising the influential elements
29
30 297 identified by these key stakeholders, this review can optimize future analyses of barriers and
31
32 298 facilitators to the implementation of CPSs and so potentially enhance their integration into
33
34 299 primary practice. Importantly, this work was intentionally restricted to a specific
35
36 300 implementation context (i.e., Australia), to which its results are directly relevant and will be
37
38 301 immediately applied. Focusing only on Australia is not considered a limitation of the study;
39
40 302 rather it is a sensible decision that allows knowledge about a particular context of interest to
41
42 303 be gained. Including studies conducted in contexts or healthcare systems other than
43
44 304 Australia (e.g., United Kingdom, United States, etc.), where barriers and facilitators to CPS
45
46 305 implementation can be dissimilar in nature and expressed differently, may have brought
47
48 306 irrelevant or inappropriate information to this analysis, and so hinder the understanding of
49
50 307 the context of interest. However, it should be noted that Australia is a country with a large
51
52 308 experience in CPS implementation and where significant research has been conducted in
53
54 309 this regard compared to other countries worldwide. Therefore, it is expected that the
55
56 310 comprehensive list of influential elements identified in this context may be relevant to start
57
58
59
60

1
2
3 311 investigating barriers and facilitators to CPS implementation in countries with less
4
5 312 experience. Furthermore, the elements identified in this review can provide insight to
6
7 313 pharmacy service planners in other countries to guess and avoid some problems in the
8
9 314 implementation of CPSs beforehand.

10
11 315 Barriers and facilitators to the implementation of CPSs in Australia have been well
12
13 316 researched and reported from the perspective of community pharmacists.^{14, 15, 60, 62} In this
14
15 317 regard, the results of this review confirms that patients, nurses and GPs also recognise
16
17 318 some of the influential elements reported in previous pharmacist-informed studies, such as
18
19 319 the pharmacist's education and training, collaboration between the pharmacist and the GP,
20
21 320 accessibility of the pharmacy setting, and financial remuneration. However, this study
22
23 321 provides additional insight into further barriers and facilitators, across different ecological
24
25 322 levels, that are relevant to other key stakeholder and so are less likely to be reported by
26
27 323 pharmacists; for example: patients' capability to follow the procedures of the service, GPs'
28
29 324 workload, nurses' attitudes towards other healthcare professionals/services, the actual
30
31 325 relationships between GP and pharmacy professional bodies, or the availability of
32
33 326 multidisciplinary training and education. These results highlight the importance of engaging
34
35 327 key stakeholders other than pharmacists to better understand the contexts in which CPSs
36
37 328 are implemented. In other words, disregarding the input of these stakeholders (or
38
39 329 considering only the views of pharmacists), may lead to an incomplete and biased
40
41 330 understanding of the implementation context, which, in turn, can result in service
42
43 331 underutilisation, unsuccessful implementation and limited service impact.⁶³ Generally,
44
45 332 involving relevant stakeholders throughout the development, implementation and evaluation
46
47 333 of health programs is crucial to increase the chances of any of those initiatives being
48
49 334 effective and successfully implemented.^{6, 29, 30, 64} Indeed, this is equally relevant to CPS
50
51 335 planning.^{65, 66}

52
53
54
55
56 336 Semi-structured interviews, and/or focus group with healthcare professionals and patients
57
58 337 appear to be appropriate methods to identify a large number of unique influential elements.⁶⁷
59
60

1
2
3 338 Thus pharmacy service planners can continue to utilise these methods to identify
4
5 339 determinants of pharmacy practice in their own context. Although, the type of qualitative
6
7 340 method used may affect the type of barriers/facilitators identified, it is more likely that the
8
9 341 aims of the studies included in this review, their target population and/or the specific
10
11 342 service/topic addressed by the study may have had a stronger influence in the type of
12
13 343 barriers or facilitator identified.

14
15
16 344 The results of this review can assist pharmacy service planners and researchers to better
17
18 345 identify the elements that may be enabling or hindering the implementation of existing CPSs.
19
20 346 By combining the list of influential elements generated in this review with previous findings in
21
22 347 pharmacists-informed studies a comprehensive framework to assess barriers and facilitators
23
24 348 to CPS implementation can be produced. Assessing and understanding the elements
25
26 349 influencing pharmacy practice and service implementation must be a key early step in
27
28 350 developing appropriate, multilevel programs (i.e., including interventions targeting elements
29
30 351 at different levels) aimed at enhancing the integration of CPSs into the healthcare system.^{29,}
31
32 352 ^{30, 66, 68} Also, influential elements should be prompted and assessed when designing new
33
34 353 CPSs. Identifying elements prior to designing a new CPS may guide both the early
35
36 354 adaptation of the service to the context, as well as the early development of tailored
37
38 355 implementation programs to better fit (or change) the implementation context. As an analysis
39
40 356 of influential elements is likely to yield a large number of items, it would not be feasible to
41
42 357 address each and every one of those elements. Thus once elements have been identified for
43
44 358 a specific context, further efforts are required to prioritise those elements that are most
45
46 359 relevant and can be practically addressed.^{8, 69} In this regard, McMillan et al⁷⁰ provide a
47
48 360 summary of methods used to determine priorities and how they have been used in pharmacy
49
50 361 practice research, which can guide pharmacy service planners in this regard.

51
52
53
54 362 The analysis conducted in this review revealed three concerns that must be considered to
55
56 363 improve future studies aimed at identifying influential elements. On the one hand, some
57
58 364 influential elements at the community and healthcare system level were too broadly

1
2
3 365 described (i.e., 'organisation of the health system') and further exploration is needed to
4
5 366 clearly understand the specific 'items' that they encompass. Presumably, the list
6
7 367 determinants of practice described by Flottorp et al⁷ (i.e., Tailored Implementation in Chronic
8
9 368 Disease checklist) can provide more detail regarding influential elements at the higher
10
11 369 community and healthcare system level and so can initially assist to better frame future
12
13 370 analysis of barriers and facilitators to CPS implementation. Particularly, the determinants
14
15 371 under the domains 'Incentives and resources'; 'Capacity for organizational change'; and
16
17 372 'Social political and legal factors' seem particularly relevant for this purpose. Importantly, to
18
19 373 bring further insight on the elements at the community and healthcare system level it would
20
21 374 be important to include and explore the perspectives of other potential key stakeholders,
22
23 375 such as other healthcare providers (e.g., specialists), caregivers, representatives of
24
25 376 healthcare organisations and professional bodies, policy makers, etc. Furthermore, future
26
27 377 studies aimed at identifying barriers and facilitators to CPS implementation must better
28
29 378 describe and understand the relationships between elements.^{2, 7} This may help to
30
31 379 understand how elements influence each other and which elements are more suitable to be
32
33 380 addressed (based on the overall effect that they can produce on other elements) when
34
35 381 designing implementation efforts.

36
37
38 382 **Limitations.** The network analysis intended in this study was strongly constrained by the
39
40 383 limited and unsystematically reported information about the relationships between influential
41
42 384 elements. As a result, it was decided not to report further results of the network analysis
43
44 385 beyond its pictorial representation. The potential of a full network analysis should be
45
46 386 considered in future studies aimed at analysing elements that influence the implementation
47
48 387 of CPSs. A suitable network analysis can help to better understand the complex
49
50 388 relationships between these elements; detect the core elements that may primarily explain
51
52 389 the implementation challenge; and provide insight on the key leverage points that should be
53
54 390 targeted within the network to enhance service implementation. Ideally, accurate information
55
56 391 on relevant attributes of the influential elements (and the interactions between them) should
57
58
59
60

1
2
3 392 be collected by the authors of the primary studies to increase the potential of a network
4
5 393 analysis; for example, the frequency of occurrence; the direction of the relationships; the
6
7 394 domain or level where the element is located (i.e., patients, healthcare professionals,
8
9 395 professional interactions, etc.); the relative relevance of each element; or the effect on
10
11 396 implementation outcomes (i.e., performance as barrier or facilitator).

12
13
14 397 Following the particular method chosen for this review (i.e., qualitative meta-synthesis),^{22, 23}
15
16 398 only primary research articles that used qualitative methods were included. Meta-synthesis
17
18 399 enabled a rich description of elements perceived by GPs, patients and nurses to influence
19
20 400 implementation of CPSs in Australia. Future reviews that synthesise the quantitative
21
22 401 literature on this topic are encouraged. Appraising qualitative research is controversial
23
24 402 because of the difficulty of using information about quality to inform syntheses (e.g. even
25
26 403 studies with flaws in methodology can provide valuable information).²⁶ Furthermore, there is
27
28 404 no gold standard on appraising qualitative studies.³² The elementary quality assessment
29
30 405 conducted in the current review was aimed at ensuring minimal quality while identifying a
31
32 406 broad range of elements that might influence CPS implementation. Lastly, the papers
33
34 407 included in this review were not restricted by the time at which they were published, since
35
36 408 the aim of the study was to include all relevant papers that can inform about any influential
37
38 409 element that has been noted in practice. It is important to acknowledge that as contexts can
39
40 410 change over time, the effect of influential elements can also change, cease to exist or new
41
42 411 elements can emerge. It is therefore important to regularly monitor elements and prioritise
43
44 412 those that must be addressed.

47 **CONCLUSION**

48
49
50 414 This qualitative meta-synthesis identified a broad range of elements that, according to
51
52 415 patients, GPs and nurses, can enable (i.e., facilitators) or hinder (i.e., barriers) the
53
54 416 implementation of CPSs. These influential elements are located at different ecological levels
55
56 417 and should be considered together with those previously identified in pharmacy-informed
57
58
59
60

1
2
3 418 studies to comprehensively analyse the barriers and facilitators to the implementation of
4
5 419 CPSs. Future studies aimed at that purpose must involve multiple stakeholder groups (i.e.,
6
7 420 others than only pharmacists) and better understand the relationships between influential
8
9 421 elements to increase the usefulness and interest of their findings. Further to the identification
10
11 422 of the influential elements, key stakeholders should keep involved in developing suitable,
12
13 423 multilevel programs aimed at enhancing CPS implementation.
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

1
2
3 424 **ACKNOWLEDGEMENTS**
4
5

6 425 We would like to acknowledge Antonio E. Mendes (Universidade Federal do Parana, Brazil)
7
8 426 for his collaboration in the network analysis.
9

10
11 427 **COMPETING INTERESTS**
12

13
14 428 All authors declare no competing interest
15

16
17 429 **FUNDING**
18

19
20 430 Lutfun N. Hossain was awarded a University of Technology Sydney (UTS) President's
21
22 431 Scholarship and a UTS Chancellors Research Scholarship.
23

24
25 432 This work is part of a larger UTS Chancellor's Postdoctoral Research Fellowship awarded to
26
27 433 Dr Daniel Sabater-Hernández (UTS ID number: 2013001605).
28

29
30 434 **DATA SHARING STATEMENT**
31

32
33 435 No additional data are available
34

35
36 436 **AUTHORS' CONTRIBUTION**
37

38
39 437 Conception or design of the work: Lutfun N. Hossain, Fernando Fernandez-Llimos, Tim
40
41 438 Lockett and Daniel Sabater-Hernández.
42

43
44 439 Data collection: Lutfun N. Hossain, Desire Durks and Lucia Franco-Trigo.
45

46
47 440 Data analysis and interpretation: Lutfun N. Hossain, Joanna C. Moullin, Charlie Benrimoj and
48
49 441 Daniel Sabater-Hernández.
50

51
52 442 Drafting the article: Lutfun N. Hossain, Fernando Fernandez-Llimos, Tim Lockett and Daniel
53
54 443 Sabater-Hernández.
55
56
57
58
59
60

1
2
3 444 Critical revision of the article: Lutfun N. Hossain, Joanna C. Moullin, Fernando Fernandez-
4
5 445 Llimos, Tim Lockett and Daniel Sabater-Hernández.
6
7

8 446 Final approval of the version to be published: Lutfun N. Hossain, Fernando Fernandez-
9
10 447 Llimos, Tim Lockett, Joanna C. Moullin, Desire Durks, Lucia Franco-Trigo, Charlie Benrimoj
11
12 448 and Daniel Sabater-Hernández.
13

14
15 449
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

450 REFERENCE

- 451 1. Chaudoir SR, Dugan AG, Barr CH. Measuring factors affecting implementation of health
452 innovations: a systematic review of structural, organizational, provider, patient, and
453 innovation level measures. *Implement Sci* 2013;8:22.
- 454 2. Damschroder LJ, Aron DC, Keith RE, et al. Fostering implementation of health services
455 research findings into practice: a consolidated framework for advancing implementation
456 science. *Implement Sci* 2009;4:50.
- 457 3. Haines A, Kuruvilla S, Borchert M. Bridging the implementation gap between knowledge
458 and action for health. *Bull World Health Organ* 2004;82:724-31.
- 459 4. Grol R, Grimshaw J. From best evidence to best practice: effective implementation of
460 change in patients' care. *Lancet* 2003;362:1225-30.
- 461 5. Plsek PE, Greenhalgh T. Complexity science: The challenge of complexity in health
462 care. *BMJ* 2001;323:625-8.
- 463 6. Craig P, Dieppe P, Macintyre S, et al. Developing and evaluating complex interventions:
464 the new Medical Research Council guidance. *BMJ* 2008;337:a1655.
- 465 7. Flottorp SA, Oxman AD, Krause J, et al. A checklist for identifying determinants of
466 practice: a systematic review and synthesis of frameworks and taxonomies of factors
467 that prevent or enable improvements in healthcare professional practice. *Implement Sci*
468 2013;8:35.
- 469 8. Baker R, Camosso-Stefinovic J, Gillies C, et al. Tailored interventions to address
470 determinants of practice. *Cochrane Database Syst Rev* 2015;4:CD005470.
- 471 9. Gastelurrutia MA, Benrimoj SI, Castrillon CC, et al. Facilitators for practice change in
472 Spanish community pharmacy. *Pharm World Sci* 2009;31:32-9.

- 1
2
3 473 10. Moullin JC, Sabater-Hernández D, Benrimoj SI. Model for the evaluation of
4 implementation programs and professional pharmacy services. *Res Social Adm Pharm*
5 474 2016;12:515-22.
6
7 475
8
9
10 476 11. Sabater-Hernández D, Sabater-Galindo M, Fernandez-Llimos F, et al. A Systematic
11 Review of Evidence-Based Community Pharmacy Services Aimed at the Prevention of
12 Cardiovascular Disease. *J Manag Care Spec Pharm* 2016;22:699-713.
13 478
14
15
16
17 479 12. Mossialos E, Courtin E, Naci H, et al. From "retailers" to health care providers:
18 Transforming the role of community pharmacists in chronic disease management.
19 480
20
21 481 *Health Policy* 2015;119:628-39.
22
23
24 482 13. Kaae S, Christensen ST. Exploring long term implementation of cognitive services in
25 community pharmacies - a qualitative study. *Pharm Pract (Granada)* 2012;10:151-8.
26 483
27
28
29 484 14. Berbatis C, Sunderland V, Joyce A, Bulsara M, Mills C. Enhanced pharmacy services,
30 barriers and facilitators in Australia's community pharmacies: Australia's National
31 Pharmacy Database Project. *Int J Clin Pharm* 2007;15:185-91.
32 485
33 486
34
35
36 487 15. Roberts A, Benrimoj S, Chen T, et al. Implementing cognitive services in community
37 pharmacy: a review of facilitators used in practice change. *Int J Clin Pharm*
38 488 2006;14:163-70.
39 489
40
41
42
43 490 16. Gastelurrutia MA, Fernandez-Llimos F, Garcia-Delgado P, et al. Barriers and facilitators
44 to the dissemination and implementation of cognitive services in Spanish community
45 pharmacies. *Seguim Farmacoter* 2005;3:65-77.
46 491
47 492
48
49
50 493 17. Cvetkovski B, Armour C, Bosnic-Anticevich S. Asthma management in rural New South
51 Wales: Perceptions of health care professionals and people with asthma. *Austr J Rural*
52 494
53 495
54
55
56
57
58
59
60

- 1
2
3 496 18. White L, Klinner C, Carter S. Consumer perspectives of the Australian Home Medicines
4
5 497 Review Program: benefits and barriers. *Res Social Adm Pharm* 2012;8:4-16.
6
7
8 498 19. Gilmartin JF, Marriott JL, Hussainy SY. Exploring factors that contribute to dose
9
10 499 administration aid incidents and identifying quality improvement strategies: the views of
11
12 500 pharmacy and nursing staff. *Int J Pharm Pract* 2014;22:407-14.
13
14
15 501 20. Dhillon AK, Hattingh HL, Stafford A, et al. General practitioners' perceptions on home
16
17 502 medicines reviews: a qualitative analysis. *BMC Fam Pract* 2015;16:16.
18
19
20 503 21. Rayes IK, Abduelkarem AR. A qualitative study exploring physicians' perceptions on the
21
22 504 role of community pharmacists in Dubai. *Pharm Pract (Granada)* 2016;14:738.
23
24
25 505 22. Mohammed MA, Moles RJ, Chen TF. Meta-synthesis of qualitative research: the
26
27 506 challenges and opportunities. *Int J Clin Pharm* 2016;38:695-704.
28
29
30 507 23. Walsh D, Downe S. Meta-synthesis method for qualitative research: a literature review.
31
32 508 *J Adv Nurs* 2005;50:204-11.
33
34
35 509 24. Moullin JC, Sabater-Hernández D, Fernandez-Llimos F, Benrimoj SI. Defining
36
37 510 professional pharmacy services in community pharmacy. *Res Social Adm Pharm*
38
39 511 2013;9:989-95.
40
41
42 512
43
44
45 513 25. Hennink MM, Hutter I, Bailey A. Qualitative research methods. Los Angeles, Calif. ;
46
47 514 London: SAGE; 2011.
48
49
50 515 26. Dixon-Woods M, Shaw RL, Agarwal S, et al. The problem of appraising qualitative
51
52 516 research. *Qual Saf Health Care* 2004;13:223-5.
53
54
55 517 27. Thomas J, Harden A. Methods for the thematic synthesis of qualitative research in
56
57 518 systematic reviews. *BMC Med Res Methodol* 2008;8:1-10.
58
59
60

- 1
2
3 519 28. McLeroy KR, Bibeau D, Steckler A, et al. An ecological perspective on health promotion
4 programs. *Health Educ Quart* 1988;15:351-77.
5
6
7
8 521 29. Bartholomew LK, Markham CM, Ruiter RAC, Fernández ME, Kok G, Parcel GS.
9
10 522 Planning health promotion programs: An Intervention Mapping approach. 4th ed. San
11
12 523 Francisco, CA: Jossey-Bass; 2016.
13
14
15 524 30. Green LW, Kreuter MW. Health program planning: An educational and ecological
16
17 525 approach. 4th ed. Boston: McGraw-Hill; 2005.
18
19
20 526 31. Jacomy M, Venturini T, Heymann S, et al. ForceAtlas2, a continuous graph layout
21
22 527 algorithm for handy network visualization designed for the Gephi software. *PloS one*
23
24 528 2014;9:e98679.
25
26
27 529 32. Tong A, Flemming K, McInnes E, et al. Enhancing transparency in reporting the
28
29 530 synthesis of qualitative research: ENTREQ. *BMC Med Res Methodol* 2012;12:181.
30
31
32 531 33. McMillan SS, Sav A, Kelly F, et al. How to attract them and keep them: The pharmacy
33
34 532 attributes that matter to Australian residents with chronic conditions. *Int J Pharm Pract*
35
36 533 2014;22:238-45.
37
38
39 534 34. Rieck A, Pettigrew S. How physician and community pharmacist perceptions of the
40
41 535 community pharmacist role in Australian primary care influence the quality of
42
43 536 collaborative chronic disease management. *Qual Prim Care* 2013;21:105-11.
44
45
46 537 35. Barbara S, Krass I. Self management of type 2 diabetes by Maltese immigrants in
47
48 538 Australia: Can community pharmacies play a supporting role? *Int J Pharm Pract*
49
50 539 2013;21:305-13.
51
52
53 540 36. Bereznicki B, Peterson G, Jackson S, et al. Perceived feasibility of a community
54
55 541 pharmacy-based asthma intervention: A qualitative follow-up study. *J Clin Pharm Ther*
56
57 542 2011;36:348-55.
58
59
60

- 1
2
3 543 37. Saba M, Dan E, Bittoun R, et al. Asthma and smoking--healthcare needs and
4 preferences of adults with asthma who smoke. *J Asthma* 2014;51:934-42.
5 544
6
7
8 545 38. Shoukry G, Wong K, Bartlett D, et al. Treatment experience of people with obstructive
9 sleep apnoea seeking continuous positive airways pressure device provision through
10 546 community pharmacies: a role for pharmacists? *Int J Pharm Pract* 2011;19:318-27.
11 547
12
13 548 39. Um IS, Armour C, Krass I, et al. Weight management in community pharmacy: what do
14 the experts think? *Int J Clin Pharm* 2013;35:447-54.
15 549
16
17 550 40. Snell L, White L. An exploratory study of the role of emotional intelligence and self-
18 efficacy on service quality and adherence in a weight loss setting. *Serv Mark Q*
19 551 2011;32:228-46.
20 552
21
22 553 41. Maher JH, Hughes R, Anderson C, et al. An exploratory investigation amongst
23 Australian mothers regarding pharmacies and opportunities for nutrition promotion.
24 554 *Health Educ Res* 2013;28:1040-50.
25 555
26
27 556 42. Mey A, Knox K, Kelly F, et al. Trust and safe spaces: Mental health consumers' and
28 carers' relationships with community pharmacy staff. *Patient* 2013;6:281-9.
29 557
30
31 558 43. Hattingh HL, Knox K, Fejzic J, et al. Privacy and confidentiality: perspectives of mental
32 health consumers and carers in pharmacy settings. *Int J Pharm Pract* 2015;23:52-60.
33 559
34
35 560 44. Clark A, Gilbert A, Rao D, et al. 'Excuse me, do any of you ladies speak English?'
36 Perspectives of refugee women living in South Australia: barriers to accessing primary
37 561 health care and achieving the Quality Use of Medicines. *Aust J Prim Health* 2014;20:92-
38 562 7.
39 563
40
41 564 45. O'Connor M, Fisher C, French L, et al. Exploring the community pharmacist's role in
42 palliative care: Focusing on the person not just the prescription. *Patient Educ Couns*
43 565 2011;83:458-64.
44 566
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

- 1
2
3 567 46. Carter SR, Moles R, White L, et al. Exploring patients' motivation to participate in
4
5 568 Australia's Home Medicines Review program. *Int J Clin Pharm* 2012;34:658-66.
6
7
8 569 47. Lee CY, George J, Elliott RA, et al. Exploring stakeholder perspectives on medication
9
10 570 review services for older residents in retirement villages. *Int J Pharm Pract* 2012;20:249-
11
12 571 58.
13
14
15 572 48. White L, Klinner C. Medicine use of elderly Chinese and Vietnamese immigrants and
16
17 573 attitudes to home medicines review. *Aust J Prim Health* 2012;18:50-5.
18
19
20 574 49. Swain L, Barclay L. They've given me that many tablets, I'm bushed: I don't know where
21
22 575 I'm going: Aboriginal and Torres Strait Islander peoples' experiences with medicines.
23
24 576 *Austr J Rural Health* 2013;21:216-9.
25
26
27 577 50. Du Pasquier S, Aslani P. Concordance-based adherence support service delivery:
28
29 578 Consumer perspectives. *Pharm World Sci* 2008;30:846-53.
30
31
32 579 51. Bui J, Day C, Hanrahan J, et al. Senior nurses' perspectives on the transfer of opioid
33
34 580 substitution treatment clients from clinics to community pharmacy. *Drug Alcohol Rev*
35
36 581 2014;34:495-8.
37
38
39 582 52. Van C, Krass I, Mitchell B. General practitioner perceptions of extended pharmacy
40
41 583 services and modes of collaboration with pharmacists. *J Pharm Pract Res* 2007;37:182-
42
43 584 6.
44
45
46 585 53. Van C, Mitchell B, Krass I. General practitioner-pharmacist interactions in professional
47
48 586 pharmacy services. *J Interprof Care* 2011;25:366-72.
49
50
51 587 54. Dey RM, De Vries MJW, Bosnic-Anticevich S. Collaboration in chronic care: Unpacking
52
53 588 the relationship of pharmacists and general medical practitioners in primary care. *Int J*
54
55 589 *Pharm Pract* 2011;19:21-9.
56
57
58
59
60

- 1
2
3 590 55. Chong WW, Aslani P, Chen TF. Multiple perspectives on shared decision-making and
4
5 591 interprofessional collaboration in mental healthcare. *J Interprof Care* 2013;27:223-30.
6
7
8 592 56. Cheong LH, Armour CL, Bosnic-Anticevich SZ. Multidisciplinary collaboration in primary
9
10 593 care: Through the eyes of patients. *Aust J Prim Health* 2013;19:190-7.
11
12
13 594 57. Bajramovic J, Emmerton L, Tett SE. Perceptions around concordance--focus groups
14
15 595 and semi-structured interviews conducted with consumers, pharmacists and general
16
17 596 practitioners. *Health Expect* 2004;7:221-34.
18
19
20 597 58. McMillan SS, Emmerton L. Nurse practitioners: an insight into their integration into
21
22 598 Australian community pharmacies. *Res Social Adm Pharm* 2013;9:975-80.
23
24
25 599 59. Roberts AS, Benrimoj SI, Chen TF, et al. Understanding practice change in community
26
27 600 pharmacy: a qualitative study in Australia. *Res Social Adm Pharm* 2005;1:546-64.
28
29
30 601 60. Roberts AS, Benrimoj SI, Chen TF, et al. Practice change in community pharmacy:
31
32 602 quantification of facilitators. *Ann Pharmacother* 2008;42:861-8.
33
34
35 603 61. Alonso-Perales MD, Lasheras B, Beitia G, et al. Barriers to promote cardiovascular
36
37 604 health in community pharmacies: a systematic review. *Health Prompt Int* 2015:1-14.
38
39
40 605 62. Lowres N, Krass I, Neubeck L, et al. Atrial fibrillation screening in pharmacies using an
41
42 606 iPhone ECG: a qualitative review of implementation. *Int J Clin Pharm* 2015;37:1111-20.
43
44
45 607 63. Hughes CM, Cadogan CA, Ryan CA. Development of a pharmacy practice intervention:
46
47 608 lessons from the literature. *Int J Clin Pharm* 2015;38:601-6.
48
49
50 609 64. McKenzie JF, Neiger BL, Thackeray R. Planning, implementing, and evaluating health
51
52 610 promotion programs: a primer. 6th ed. San Francisco, CA: Pearson - Benjamin
53
54 611 Cummings; 2013.
55
56
57
58
59
60

- 1
2
3 612 65. Franco-Trigo L, Hossain LN, Durks D, et al. Stakeholder analysis for the development of
4 a community pharmacy service aimed at preventing cardiovascular disease. *Res Social*
5 613 *Adm Pharm* Epub 2016 Jun 30.
6
7 614
8
9
10 615 66. Sabater-Hernández D, Moullin JC, Hossain LN, et al. Intervention mapping for
11 developing pharmacy-based services and health programs: A theoretical approach. *Am*
12 616 *J Health Syst Pharm* 2016;73:156-64.
13
14 617
15
16
17 618 67. Krause J, Van Lieshout J, Klomp R, et al. Identifying determinants of care for tailoring
18 implementation in chronic diseases: an evaluation of different methods. *Implement Sci*
19 619 2014;9:102.
20
21 620
22
23
24 621 68. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for
25 characterising and designing behaviour change interventions. *Implement Sci* 2011;6:42.
26 622
27
28
29 623 69. Durks D, Fernandez-Llimos F, Hossain LN, Franco-Trigo L, Benrimoj SI, Sabater-
30 Hernández D. Use of Intervention Mapping to enhance healthcare professional practice:
31 624 a systematic review. *Health Educ Behav* *Forthcoming* 2017.
32
33 625
34
35
36 626 70. McMillan SS, King M, Tully MP. How to use the nominal group and Delphi techniques.
37 *Int J Clin Pharm* 2016;38:655-62.
38 627
39
40
41 628
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

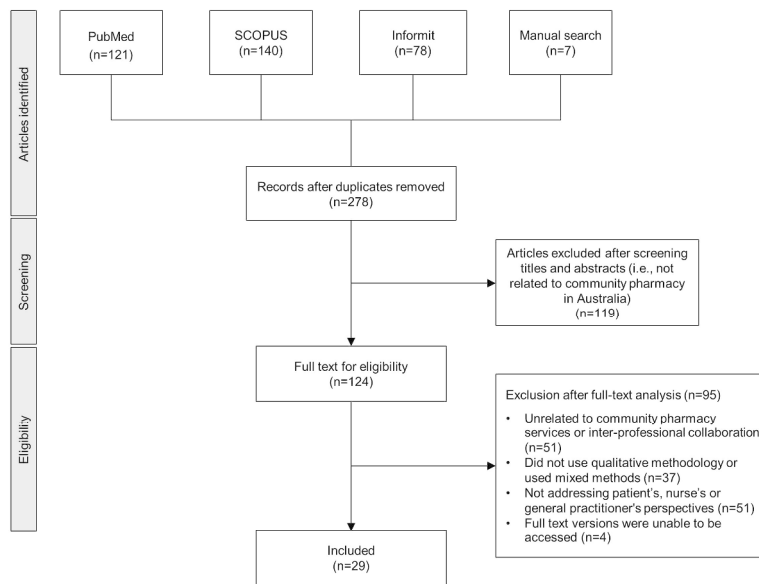
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

629

630
631
632



For peer review only



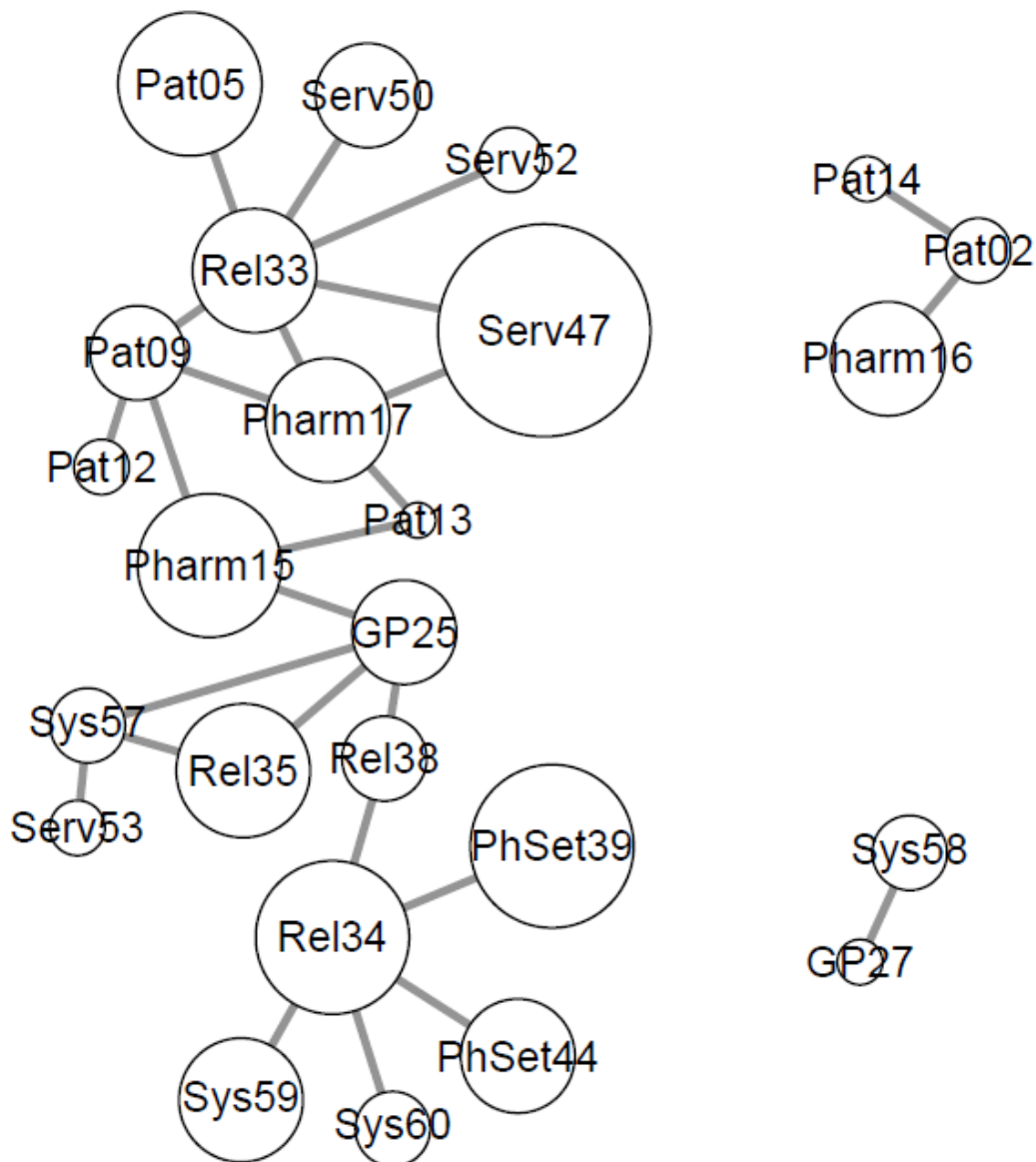
254x190mm (300 x 300 DPI)

ew only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

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

References

1. Carter SR, Moles R, White L, et al. Exploring patients' motivation to participate in Australia's Home Medicines Review program. *Int J Clin Pharm* 2012;34:658-66.
2. White L, Klinner C, Carter S. Consumer perspectives of the Australian Home Medicines Review Program: benefits and barriers. *Res Social Adm Pharm* 2012;8:4-16.
3. Mey A, Knox K, Kelly F, et al. Trust and safe spaces: Mental health consumers' and carers' relationships with community pharmacy staff. *Patient* 2013;6:281-9.
4. Snell L, White L. An exploratory study of the role of emotional intelligence and self-efficacy on service quality and adherence in a weight loss setting. *Serv Mark Q* 2011;32:228-46.
5. McMillan SS, Emmerton L. Nurse practitioners: an insight into their integration into Australian community pharmacies. *Res Social Adm Pharm* 2013;9:975-80.
6. Chong WW, Aslani P, Chen TF. Multiple perspectives on shared decision-making and interprofessional collaboration in mental healthcare. *J Interprof Care* 2013;27:223-30.
7. Dey RM, De Vries MJW, Bosnic-Anticevich S. Collaboration in chronic care: Unpacking the relationship of pharmacists and general medical practitioners in primary care. *Int J Pharm Pract* 2011;19:21-9.
8. Van C, Krass I, Mitchell B. General practitioner perceptions of extended pharmacy services and modes of collaboration with pharmacists. *J Pharm Pract Res* 2007;37:182-6.
9. Van C, Mitchell B, Krass I. General practitioner-pharmacist interactions in professional pharmacy services. *J Interprof Care* 2011;25:366-72.
10. Bui J, Day C, Hanrahan J, et al. Senior nurses' perspectives on the transfer of opioid substitution treatment clients from clinics to community pharmacy. *Drug Alcohol Rev* 2014;34:495-8.
11. McMillan SS, Sav A, Kelly F, et al. How to attract them and keep them: The pharmacy attributes that matter to Australian residents with chronic conditions. *Int J Pharm Pract* 2014;22:238-45.

- 1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
12. Dhillon AK, Hattingh HL, Stafford A, et al. General practitioners' perceptions on home medicines reviews: a qualitative analysis. *BMC Fam Pract* 2015;16:16.

For peer review only

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)

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:	<i>BMJ Open</i>
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 Lockett, 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

SCHOLARONE™
Manuscripts

only

1
2
3
4 1 **A qualitative meta-synthesis of barriers and facilitators that influence the implementation**
5
6 2 **of community pharmacy services: perspectives of patients, nurses and general medical**
7
8 3 **practitioners**

10
11
12 4 **Authors:**

13
14
15 5 **Lutfun N. Hossain.** BPharm. Master Student; Graduate School of Health, University of
16
17 6 Technology, Sydney, Australia. Email: Lutfun.Hossain@student.uts.edu.au

18
19
20 7 **Fernando Fernandez-Llimos.** PharmD, PhD. Assistant Professor; Research Institute for
21
22 8 Medicines, Department of Social Pharmacy, Faculty of Pharmacy, University of Lisbon,
23
24 9 Portugal. Email: f-llimos@ff.ul.pt

25
26
27
28 10 **Tim Lockett.** BSc (Hons), PhD. Senior Lecturer; Faculty of Health, University of Technology
29
30 11 Sydney, Australia Email: Tim.Lockett@uts.edu.au

31
32
33 12 **Joanna C. Moullin.** BPharm. PhD; Research Fellow; Department of Psychiatry, University of
34
35 13 California, San Diego (USA). Email: jcmoullin@gmail.com

36
37
38 14 **Desire Durks.** BPharm. Master Student; Graduate School of Health, University of Technology,
39
40 15 Sydney, Australia. Email: desire.durks@student.uts.edu.au

41
42
43 16 **Lucia Franco-Trigo.** MPharm. PhD Student; Graduate School of Health, University of
44
45 17 Technology, Sydney, Australia. Email: lucia.francotrigo@student.uts.edu.au

46
47
48 18 **Charlie Benrimoj.** PharmD, PhD. Head of School; Graduate School of Health, University of
49
50 19 Technology, Sydney, Australia. Email: shalom.benrimoj@uts.edu.au

51
52
53 20 **Daniel Sabater-Hernández.** PharmD, PhD. Chancellor's Postdoctoral Research Fellow;
54
55 21 Graduate School of Health, University of Technology, Sydney, Australia. Fellow; Academic

1
2
3 22 Centre in Pharmaceutical Care, University of Granada, Spain. Email:
4

5 23 daniel.sabaterhernandez@uts.edu.au; daniel.sabaterhernandez@outlook.com
6
7

8
9 24 **Corresponding author: Daniel Sabater-Hernández**

10 25 Graduate School of Health, University of Technology Sydney.

11 26 Level 4, Building 7, 67 Thomas St, Ultimo (PO Box 123)

12 27 Phone: +61 2 9514 7201; Email: daniel.sabaterhernandez@uts.edu.au;
13

14 28 daniel.sabaterhernandez@outlook.com
15
16
17
18

19
20 29 **Word count (excluding title page, abstract, references, figures and tables): 4263**
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3 30 **ABSTRACT**
4
5

6 31 **Objectives:** The integration of community pharmacy services (CPSs) into primary care practice
7
8 32 can be enhanced by assessing (and further addressing) the elements that enable (i.e.,
9
10 33 facilitators) or hinder (i.e., barriers) the implementation of such CPSs. These elements have
11
12 34 been widely researched from the perspective of pharmacists but not from the perspectives of
13
14 35 other stakeholders who can interact with, and influence the implementation of CPSs. The aim of
15
16 36 this study was to synthesise the literature on patients', general practitioners' (GPs) and nurses'
17
18 37 perspectives of CPSs to identify barriers and facilitators to their implementation in Australia.

19
20
21
22 38 **Methods:** A meta-synthesis of qualitative studies was performed. A systematic search in
23
24 39 PubMed, Scopus and Informit was conducted to identify studies that explored patients', GPs' or
25
26 40 nurses' views about CPSs in Australia. Thematic synthesis was performed to identify elements
27
28 41 influencing CPS implementation, which were further classified using an ecological approach.

29
30
31
32 42 **Results:** Twenty nine articles were included in the review, addressing sixty three elements
33
34 43 influencing CPS implementation. Elements were identified as a barrier, facilitator or both, and
35
36 44 were related to four ecological levels: individual patient (n=14); interpersonal (n=24);
37
38 45 organizational (n=16); and community and healthcare system (n=9). It was found that patients,
39
40 46 nurses and GPs identified elements reported in previous pharmacist-informed studies, such as
41
42 47 pharmacist's training/education or financial remuneration, but also new elements, such as
43
44 48 patients' capability to follow service's procedures, the relationships between GP and pharmacy
45
46 49 professional bodies, or the availability of multidisciplinary training/education.

47
48
49
50 50 **Conclusions:** Patients, GPs and nurses can describe a large number of elements influencing
51
52 51 CPS implementation. These elements can be combined with previous findings in pharmacists-
53
54 52 informed studies to produce a comprehensive framework to assess barriers and facilitators to
55
56
57
58
59
60

1
2
3 53 CPS implementation. This framework can be used by pharmacy service planners and policy
4
5 54 makers to improve the analysis of the contexts in which CPSs are implemented.
6
7

8 55 **KEY WORDS**

10
11 56 Community pharmacy services [MeSH]; health service research [MeSH]; qualitative meta-
12
13 57 synthesis; barriers; facilitators; determinants of practice.
14
15

16 58 **STRENGTHS AND LIMITATIONS OF THIS STUDY**

- 17
18
19
20 59 • The particular method chosen for this review (i.e., qualitative meta-synthesis) is aimed at
21
22 60 synthesising qualitative literature and so enabled a rich description of the barriers and
23
24 61 facilitators perceived by GPs, patients and nurses that can influence the implementation
25
26 62 of CPSs in Australia.
27
28 63 • A systematic search was conducted in three comprehensive electronic databases (i.e.,
29
30 64 PubMed, Scopus and Informat), one of which (i.e., Informat) is particularly relevant to the
31
32 65 specific context where the results will be applied.
33
34 66 • The papers included in this review were not restricted by the time at which they were
35
36 67 published, since the aim of the study was to include all relevant papers that can inform
37
38 68 about any influential element that has been noted in practice.
39
40 69 • A set of quality appraisal criteria was used to appraise all the studies included in this
41
42 70 review to ensure minimal quality. .
43
44 71 • Qualitative meta-synthesis was conducted by one researcher according to a three-stage
45
46 72 method for thematic synthesis.
47
48 73 • This review was restricted to a specific implementation context (i.e., Australia), to which
49
50 74 its results are directly relevant and will be immediately applied and actions will be taken.
51
52
53
54
55
56
57
58
59
60

76 INTRODUCTION

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

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

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

1
2
3 101 been conducted to identify the elements that from the perspective of community pharmacists
4
5 102 (i.e., service provider) can influence the implementation of CPSs.¹⁴⁻¹⁶ However, considering the
6
7 103 view of a single stakeholder group is insufficient to comprehensively analyse the complexity of a
8
9 104 particular implementation context. These limited analyses can lead to the development of
10
11 105 inadequate implementation strategies and interventions. Patients, general practitioners (GPs),
12
13 106 and primary care nurses are key stakeholders who interact with or are affected by CPSs and
14
15 107 may be able to strongly influence the implementation of such services. These stakeholders may
16
17 108 have their own particular views about CPSs and so can complement the findings from previous
18
19 109 pharmacy-informed research.^{14, 15} Patients', nurses' and GPs' views and experiences regarding
20
21 110 CPSs have been explored in several qualitative studies¹⁷⁻²¹ but no review that collates and
22
23 111 analyses such information exists. Qualitative meta-synthesis aims to synthesise qualitative
24
25 112 literature to provide a new, more comprehensive interpretation of the findings that goes beyond
26
27 113 the depth and breadth of the original studies and to broaden the range of concepts identified.^{22,}
28
29 114 ²³ Thus, the aim of this study was to synthesise such qualitative literature to describe the broad
30
31 115 range of elements that, from the patients', GPs' and nurses' perspectives, can hinder or enable
32
33 116 the implementation of CPSs in Australia.

39 117 **METHODS**

40
41
42 118 **Search strategy, screening and eligibility criteria.** A systematic search was conducted in
43
44 119 May 2015 in three electronic databases (i.e., PubMed, Scopus and Informit), without time limits,
45
46 120 to identify qualitative studies addressing patients', nurses' or GPs' views about CPSs in
47
48 121 Australia. A CPS was assumed to refer to an action or set of actions delivered in or organised
49
50 122 by a community pharmacy to optimise the process of care, with the aim of improving health
51
52 123 outcomes and the value of healthcare.²⁴ For the purpose of this review, CPSs are specific
53
54 124 health programs that are implemented in addition to routine professional activities performed by
55
56 125 community pharmacists, which do not require any specific or extra implementation effort (i.e.,
57
58
59
60

1
2
3 126 they are part of normal community pharmacy practice). Since medicines dispensing is the main
4
5 127 routine activity in the community pharmacy, it was not considered as a CPS and so excluded.
6
7 128 Articles that did not address a specific CPS but inter-professional collaboration (i.e. between
8
9 129 community pharmacists and other healthcare professionals) were included as they can also
10
11 130 provide insight into the elements influencing the implementation of CPSs. Full search strategies
12
13 131 are available on Appendix 1 (Supplementary File). In addition, the references from the included
14
15 132 papers were searched manually for additional relevant studies. A two-step process was
16
17 133 performed by one researcher to select studies for the analysis. As a first step, titles and
18
19 134 abstracts were screened to identify and exclude non-relevant literature. In a second, full texts of
20
21 135 the remaining articles were reviewed to exclude those that: (1) were not related to CPSs; (2) did
22
23 136 not address patient, nurse and/or GP perspective; (3) did not use qualitative research
24
25 137 methodology;²⁵ (4) did not clearly identify the stakeholder (i.e., patient, nurse or GP) as the
26
27 138 source of the information; and (5) were not accessible in any of the research team university
28
29 139 libraries, or unattainable following contact with the authors.
30
31
32
33

34
35 140 All the included articles were checked by the same researcher for 'elementary quality
36
37 141 assessment' using the first three criteria delineated by Dixon-Woods et al²⁶ to appraise
38
39 142 qualitative research: (1) was the research question clear? (2) Was the research questions suited
40
41 143 to qualitative inquiry? (3) Were (a) sampling, (b) data collection, and (c) analysis clearly
42
43 144 described? Articles were excluded when no answer, or an unclear answer, was given to at least
44
45 145 one of the three questions.
46
47

48
49 146 **Synthesis.** Qualitative meta-synthesis was conducted by one researcher according to the
50
51 147 three-stage method for thematic synthesis described by Thomas et al²⁷ The first stage of
52
53 148 analysis involved free line-by-line coding of the original data (study participants' quotes) and the
54
55 149 study authors' interpretation of the original data. The process of coding involves summarising
56
57 150 text from the results and discussion sections of each article into one or more descriptive issues
58
59
60

1
2
3 151 (i.e. codes) to capture meaning. The second stage of the process involved grouping codes into
4
5 152 one or more descriptive themes. Subsequent articles were coded into pre-existing themes, and
6
7 153 new themes were created when considered necessary. To simplify the terminology throughout
8
9
10 154 this article, themes were interpreted as elements (i.e., influential elements) that could positively
11
12 155 (i.e., facilitators) or negatively (i.e., barriers) influence CPS implementation or practice change.
13
14 156 A barrier was defined as *"any type of obstacle (material or immaterial) which can impede the*
15
16 157 *dissemination, implementation and/or sustainability of a CPS"*; while a facilitator was defined as
17
18 158 *"any type of element (material or immaterial) which can help to overcome barriers and/or*
19
20 159 *accelerate the dissemination or implementation"* of a CPS.¹⁶ Themes that were related to similar
21
22 160 issues were further grouped to create one broad barrier or facilitator. The identified influential
23
24 161 elements were reviewed by a second researcher to assess clarity, consistency, and
25
26 162 understanding. At the third stage, barriers and facilitators were organised using an adapted
27
28 163 version of the Ecological Model (Table 1),²⁸ which classified them into four different levels:
29
30 164 patient, interpersonal, organisational, and community/system. The four levels defined in Table 1
31
32 165 were used as an overarching structure, with further sub-headings created during analysis, for
33
34 166 appropriate allocation and organisation of the influential elements into the levels. The ecological
35
36 167 model has been widely and successfully used for planning services in a variety of settings,
37
38 168 targeting different populations and problems.^{29, 30} Coding of papers that were identified manually
39
40 169 was conducted last. NVivo Version 10 software (QSR International Pty Ltd; Australia) was used
41
42 170 to help manage and analyse the data. Once all the influential elements were identified, a second
43
44 171 round of analysis was conducted to identify where a connection or relationship was mentioned
45
46 172 between two or more elements. Again, both study participants' quotes and study authors' data
47
48 173 interpretation were reviewed for this purpose. A network representing the identified relationships
49
50 174 was generated using a ForceAtlas2 layout³¹ with Gephi, 0.8. This article has been written
51
52 175 following existing guidelines for reporting the synthesis of qualitative research (the ENTREQ
53
54 176 Statement).³²
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41

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 elements related 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.

42 **RESULTS**

43
44
45 178 The systematic and manual search identified 243 articles once duplicates were removed. After
46
47 179 title and abstract screening, 124 full-text articles were assessed for eligibility of which 29 articles
48
49 180 were included in the qualitative meta-synthesis (all of them fulfilled the appraisal criteria) (Figure
50
51 181 1). A description of the papers included in the review can be found in Table 2. Of the 29
52
53 182 included papers, 15 addressed patients' perspectives only, 2 addressed nurses' perspectives
54
55 183 only, 6 addressed GPs' perspectives only, 2 addressed nurses' and GPs' perspectives together,
56
57
58
59
60

1
2
3 184 3 addressed patients' and GPs' perspectives together and 1 addressed the views of all three
4
5 185 participants. Twenty-three articles were related to a specific CPS, 2 were related specifically to
6
7 186 inter-professional collaboration, 3 were related to both CPSs and inter-professional
8
9 187 collaboration, and 1 addressed concordance-based healthcare. The articles employed semi-
10
11 188 structured interviews (n=23), and/or focus groups (n=11) as methods of data collection.
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

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/trialed 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

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

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
<p>GP: General Practitioner; N: Nurse; Pt: Patient; SSI: Semi-structured interview; FG: Focus Group;</p> <p>* Total number of patients and carers. Opinions of carers were clearly differentiated in the article and excluded from this review.</p> <p>** No further description of participants was provided in the paper</p>						

189

For peer review only

1
2
3
4 190 During the first stage of data extraction, 181 patient, 30 nurse and 91 GP codes were created.
5
6 191 At the completion of the coding process, 63 influential elements were identified (Table 3). These
7
8 192 elements were found to exist as a barrier, facilitator or both. In several studies patients, nurses
9
10 193 and GPs were able to describe approaches or strategies to overcome specific barriers.^{17-20, 33-36,}
11
12 194 ^{39, 41, 43, 47, 51, 52, 57} These strategies have been reported in Table 3 as additional facilitators
13
14 195 (marked with an asterisk). During coding of the manually identified papers, it seemed that
15
16 196 conceptual saturation may have been reached, since no new barriers or facilitators were
17
18 197 identified.
19
20
21
22 198

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

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 [†]
<i>Elements at the individual patient level</i>		
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	
<i>Elements at interpersonal level</i>		
<i>a. Individual healthcare professionals (sub-level)</i>		
<i>a.1. Community pharmacist</i>		
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}

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

18. Willingness, interest, motivation to provide CPSs and/or participate in multidisciplinary collaboration	N ^{33, 37, 51, 56} , GP ⁴⁷	Pt ³⁵
<i>a.2. Other community pharmacy staff members (e.g. pharmacy assistants)</i>		
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
<i>a.3. General Practitioner</i>		
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}
<i>a.4. Nurse</i>		
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
<i>b. Relationships (or interactions) between individuals (sub-level)</i>		
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}

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

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}
<i>Elements at the organisational level</i>		
<i>a. Community pharmacy setting (sub-level)</i>		
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
<i>b. Community pharmacy service</i>		
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*} ,

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

<i>Elements at the community and health system level</i>		
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		

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

(i.e., facilitator).

199

For peer review only

1
2
3 200 **Individual patient level.** All the 16 elements at the patient level were identified by patients.
4
5 201 GPs and nurses did not identify any additional patient-related barriers and facilitators.
6
7 202 Influential elements at this level were related to the patients' needs, preferences, perceptions
8
9 203 and expectations, capabilities or previous experiences with community pharmacists and
10
11 204 services. Patients' health-related concerns, understanding or perception of their health
12
13 205 problems are important elements that influence patients' need for healthcare and so their
14
15 206 decisions to utilise CPSs. Most patients held positive views about CPSs and the role of the
16
17 207 pharmacist in providing such services.^{40, 41, 47} Some articles highlighted that positive
18
19 208 experiences were related to the patient feeling comfortable and welcomed in the
20
21 209 pharmacy.^{38, 40, 42} When CPSs required a formal referral from the GP, some patients deterred
22
23 210 from requesting the services. These patients perceived that by requesting a CPS they would
24
25 211 be bothering the GP³⁶ or offending and compromising their relationship with the GP.^{18, 47, 48}
26
27 212 Patients also reported that having a negative experience with a CPS also deterred them
28
29 213 from accessing and utilising such CPSs in the future.⁴²

30
31
32 214 **Interpersonal level.** Influential elements at the interpersonal level were related to two
33
34 215 categories or sub-levels: (1) *individual healthcare professionals* (which also includes
35
36 216 professional pharmacy staff), and (2) *relationships (or interactions) between individuals*
37
38 217 (which includes both the relationships between healthcare professionals and between those
39
40 218 professionals and patients).

41
42
43 219 *Individual healthcare professionals.* 17 elements were identified and related to
44
45 220 characteristics of the community pharmacists (n=4), nurses (n=4) and GPs (n=4) and
46
47 221 characteristics of non-provider personnel (i.e., other community pharmacy staff members -
48
49 222 e.g., pharmacy assistant) (n=5). Articles reported that GPs' and nurses' service support
50
51 223 varied depending on their perceptions or understanding of CPSs and the role of
52
53 224 pharmacists. Home medicine review services had a great deal of approval and support from
54
55 225 the GP perspective.^{47, 52} On the other side, pharmacists providing immunisations raised
56
57 226 some conflicting views among GPs since they believed this was the role of the GP or nurse
58
59
60

1
2
3 227 practitioner.⁵² Some studies highlighted that GPs had a limited understanding of the
4
5 228 capabilities of the pharmacist as service providers with pharmacists perceived as drug
6
7 229 sellers in a retail environment.^{34-36, 53, 56} Both patients and GPs implied the need for
8
9 230 pharmacists to undergo upskilling and training to be qualified to provide some CPSs.^{34, 39, 48}

10
11 231 *Relationships (or interactions) between individuals.* Articles reported that well-established
12
13 232 relationships between the pharmacist and the nurse or the GP, including collaborative
14
15 233 relationships, were essential for the success of a CPS.^{17, 19, 20, 35, 51, 54} Multidisciplinary
16
17 234 education and training for healthcare professionals was suggested as a way to improve
18
19 235 healthcare professional competence.⁵⁶ Similarly, characteristics of the relationship between
20
21 236 the patient and the pharmacist (e.g., trust) was a key element that influenced pharmacy
22
23 237 choice, contributed to the patient adhering to the CPS, and accepting the intervention.^{18, 33, 36,}
24
25 238 ^{38, 40-42, 46} Some articles reported the influence of family and friends on patient utilisation of
26
27 239 CPSs (e.g., providing support, influencing motivation),^{35, 56} and others commented on the
28
29 240 integration of partners into the CPS (e.g., provision of group sessions with partners).^{35, 38}

30
31
32
33 241 **Organizational level.** Also at the organisational level, influential elements were divided into
34
35 242 two sub-levels: (1) *the community pharmacy setting* (n=8) and (2) *the service itself* (n=8).

36
37
38 243 *The community pharmacy setting.* Some articles identified the accessibility of the pharmacy
39
40 244 facilitated inter-professional relationships between GPs and pharmacists,^{52, 53} and influenced
41
42 245 patient^{17, 38, 41} and nurse⁵¹ participation in CPS. In some articles non-english speaking
43
44 246 patients reported that the lack of multilingual staff limited their awareness and access to
45
46 247 CPSs.^{44, 48} Other articles noted GP and nurse concerns regarding the lack of pharmacies
47
48 248 that provide CPSs⁵¹ and insufficient accredited pharmacists to perform CPSs.^{47, 57}

49
50
51 249 *The community pharmacy service.* Concerns regarding the validity and accuracy of the tools
52
53 250 and instruments used (e.g. medical devices, medication charts) were raised by GPs and
54
55 251 nurses.^{19, 52} Patients and nurses commented that having the same service provider at each
56
57 252 encounter facilitated rapport building between the patient and the pharmacist,^{38, 41, 46} and

1
2
3 253 caused fewer errors when it came to preparing dose administration aids.¹⁹ Furthermore,
4
5 254 patients, nurses and GPs reported on the involvement/participation of healthcare
6
7 255 professionals other than pharmacists in the provision of CPSs,⁴¹ or to act as a point of
8
9 256 liaison,²⁰ to improve the quality and efficiency of the service. The cost of the service was a
10
11 257 key element, mentioned by all stakeholders, that could either discourage^{51, 56} or motivate³⁸
12
13 258 patients to utilise services. In particular it was mentioned that smaller, manageable cost
14
15 259 payments for patients could facilitate CPS use.⁵¹

16
17
18 260 **Community and healthcare system level.** Nine influential elements were identified at this
19
20 261 level. Several articles identified the need for adequate remuneration for GPs and
21
22 262 pharmacists for participating in and providing CPSs,^{17, 44, 52, 54} as well as the implementation
23
24 263 of an electronic system of information sharing between these two healthcare professionals.^{19,}
25
26 264 ^{20, 36, 57} GPs also cited the availability of competing, government-funded health programs,
27
28 265 and their high level of workload and lack of time as contributing to their low participation in
29
30 266 CPSs.⁴⁷ Where services were available, remunerated and widely supported by GPs and
31
32 267 patients, such as home medicine reviews (i.e., a medication review service), GPs mentioned
33
34 268 complex bureaucratic procedures (e.g. completing tedious documents) may discourage their
35
36 269 use.^{17, 20, 47, 53, 57} Despite this, the home medicine review service was generally considered
37
38 270 successful by GPs and a frequently reported reason for this was the presence of a clear
39
40 271 protocol guiding service delivery.^{20, 52, 53} GPs also suggested increased and improved
41
42 272 collaboration between pharmacy and GP professional representative bodies may improve
43
44 273 awareness of the services and encourage participation. The media was perceived to have
45
46 274 an important role in improving awareness of and promoting CPSs. Finally, some broad
47
48 275 comments suggesting some additional issues at the higher levels of the healthcare system
49
50 276 were mentioned, such as 'better and more responsible organisation of the healthcare
51
52 277 system'.⁵⁷

53
54
55
56 278 With regards to the interactions between the identified influential elements, 12 articles out of
57
58 279 29 mentioned some form of a relationship between certain elements.^{20, 33, 40, 42, 46, 48, 51-55, 58} As

1
2
3 280 shown in Appendix 2 (Supplementary File), a total of 27 relationships between 25 elements
4
5 281 were found, with 10 elements presenting 2 or more relationships with others (2 elements
6
7 282 showed 5 or more interactions). As a result of the limited, unsystematic information reported
8
9 283 in the articles, a sparse network disclosing the recognized relationships between elements
10
11 284 was obtained (Appendix 2 in Supplementary File).

14 285 **DISCUSSION**

16 286 To the best of our knowledge this is the first review that summarises comprehensive
17
18 287 information on the elements that, according to patients, nurses and GPs, can enable or
19
20 288 hinder the implementation of CPSs. Patients, GPs and nurses are key members of the
21
22 289 primary healthcare team and their support and expectations for CPSs can highly influence
23
24 290 their implementation.^{1, 19, 52, 58-61} Thus, by synthesising and organising the influential elements
25
26 291 identified by these key stakeholders, this review can optimize future analyses of barriers and
27
28 292 facilitators to the implementation of CPSs and so potentially enhance their integration into
29
30 293 primary practice. Importantly, this work was intentionally restricted to a specific
31
32 294 implementation context (i.e., Australia), to which its results are directly relevant and will be
33
34 295 immediately applied. Focusing only on Australia is not considered a limitation of the study;
35
36 296 rather it is a sensible decision that allows knowledge about a particular context of interest to
37
38 297 be gained. Including studies conducted in contexts or healthcare systems other than
39
40 298 Australia (e.g., United Kingdom, United States, etc.), where barriers and facilitators to CPS
41
42 299 implementation can be dissimilar in nature and expressed differently, may have brought
43
44 300 irrelevant or inappropriate information to this analysis, and so hinder the understanding of
45
46 301 the context of interest. However, it should be noted that Australia is a country with a large
47
48 302 experience in CPS implementation and where significant research has been conducted in
49
50 303 this regard compared to other countries worldwide. Therefore, it is expected that the
51
52 304 comprehensive list of influential elements identified in this context may be relevant to start
53
54 305 investigating barriers and facilitators to CPS implementation in countries with less
55
56 306 experience. Furthermore, the elements identified in this review can provide insight to

1
2
3 307 pharmacy service planners in other countries to guess and avoid some problems in the
4
5 308 implementation of CPSs beforehand.

6
7
8 309 Barriers and facilitators to the implementation of CPSs in Australia have been well
9
10 310 researched and reported from the perspective of community pharmacists.^{14, 15, 60, 62} In this
11
12 311 regard, the results of this review confirms that patients, nurses and GPs also recognise
13
14 312 some of the influential elements reported in previous pharmacist-informed studies, such as
15
16 313 the pharmacist's education and training, collaboration between the pharmacist and the GP,
17
18 314 accessibility of the pharmacy setting, and financial remuneration. However, this study
19
20 315 provides additional insight into further barriers and facilitators, across different ecological
21
22 316 levels, that are relevant to other key stakeholder and so are less likely to be reported by
23
24 317 pharmacists; for example: patients' capability to follow the procedures of the service, GPs'
25
26 318 workload, nurses' attitudes towards other healthcare professionals/services, the actual
27
28 319 relationships between GP and pharmacy professional bodies, or the availability of
29
30 320 multidisciplinary training and education. These results highlight the importance of engaging
31
32 321 key stakeholders other than pharmacists to better understand the contexts in which CPSs
33
34 322 are implemented. In other words, disregarding the input of these stakeholders (or
35
36 323 considering only the views of pharmacists), may lead to an incomplete and biased
37
38 324 understanding of the implementation context, which, in turn, can result in service
39
40 325 underutilisation, unsuccessful implementation and limited service impact.⁶³ Generally,
41
42 326 involving relevant stakeholders throughout the development, implementation and evaluation
43
44 327 of health programs is crucial to increase the chances of any of those initiatives being
45
46 328 effective and successfully implemented.^{6, 29, 30, 64} Indeed, this is equally relevant to CPS
47
48 329 planning.^{65, 66}

49
50
51 330 Semi-structured interviews, and/or focus group with healthcare professionals and patients
52
53 331 appear to be appropriate methods to identify a large number of unique influential elements.⁶⁷
54
55 332 Thus pharmacy service planners can continue to utilise these methods to identify
56
57 333 determinants of pharmacy practice in their own context. Although, the type of qualitative
58
59
60

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

338 The results of this review can assist pharmacy service planners and researchers to better
339 identify the elements that may be enabling or hindering the implementation of existing CPSs.
340 By combining the list of influential elements generated in this review with previous findings in
341 pharmacists-informed studies a comprehensive framework to assess barriers and facilitators
342 to CPS implementation can be produced. Assessing and understanding the elements
343 influencing pharmacy practice and service implementation must be a key early step in
344 developing appropriate, multilevel programs (i.e., including interventions targeting elements
345 at different levels) aimed at enhancing the integration of CPSs into the healthcare system.^{29,}
346 ^{30, 66, 68} Also, influential elements should be prompted and assessed when designing new
347 CPSs. Identifying elements prior to designing a new CPS may guide both the early
348 adaptation of the service to the context, as well as the early development of tailored
349 implementation programs to better fit (or change) the implementation context. As an analysis
350 of influential elements is likely to yield a large number of items, it would not be feasible to
351 address each and every one of those elements. Thus once elements have been identified for
352 a specific context, further efforts are required to prioritise those elements that are most
353 relevant and can be practically addressed.^{8, 69} In this regard, McMillan et al⁷⁰ provide a
354 summary of methods used to determine priorities and how they have been used in pharmacy
355 practice research, which can guide pharmacy service planners in this regard.

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

1
2
3 361 determinants of practice described by Flottorp et al⁷ (i.e., Tailored Implementation in Chronic
4
5 362 Disease checklist) can provide more detail regarding influential elements at the higher
6
7 363 community and healthcare system level and so can initially assist to better frame future
8
9 364 analysis of barriers and facilitators to CPS implementation. Particularly, the determinants
10
11 365 under the domains 'Incentives and resources'; 'Capacity for organizational change'; and
12
13 366 'Social political and legal factors' seem particularly relevant for this purpose. Importantly, to
14
15 367 bring further insight on the elements at the community and healthcare system level it would
16
17 368 be important to include and explore the perspectives of other potential key stakeholders,
18
19 369 such as other healthcare providers (e.g., specialists), caregivers, representatives of
20
21 370 healthcare organisations and professional bodies, policy makers, etc. Furthermore, future
22
23 371 studies aimed at identifying barriers and facilitators to CPS implementation must better
24
25 372 describe and understand the relationships between elements.^{2, 7} This may help to
26
27 373 understand how elements influence each other and which elements are more suitable to be
28
29 374 addressed (based on the overall effect that they can produce on other elements) when
30
31 375 designing implementation efforts.

32
33
34 376 **Limitations.** The network analysis intended in this study was strongly constrained by the
35
36 377 limited and unsystematically reported information about the relationships between influential
37
38 378 elements. As a result, it was decided not to report further results of the network analysis
39
40 379 beyond its pictorial representation. The potential of a full network analysis should be
41
42 380 considered in future studies aimed at analysing elements that influence the implementation
43
44 381 of CPSs. A suitable network analysis can help to better understand the complex
45
46 382 relationships between these elements; detect the core elements that may primarily explain
47
48 383 the implementation challenge; and provide insight on the key leverage points that should be
49
50 384 targeted within the network to enhance service implementation. Ideally, accurate information
51
52 385 on relevant attributes of the influential elements (and the interactions between them) should
53
54 386 be collected by the authors of the primary studies to increase the potential of a network
55
56 387 analysis; for example, the frequency of occurrence; the direction of the relationships; the
57
58
59
60

1
2
3 388 domain or level where the element is located (i.e., patients, healthcare professionals,
4
5 389 professional interactions, etc.); the relative relevance of each element; or the effect on
6
7 390 implementation outcomes (i.e., performance as barrier or facilitator).
8
9

10 391 Following the particular method chosen for this review (i.e., qualitative meta-synthesis),^{22, 23}
11
12 392 only primary research articles that used qualitative methods were included. Meta-synthesis
13
14 393 enabled a rich description of elements perceived by GPs, patients and nurses to influence
15
16 394 implementation of CPSs in Australia. Future reviews that synthesise the quantitative
17
18 395 literature on this topic are encouraged. Appraising qualitative research is controversial
19
20 396 because of the difficulty of using information about quality to inform syntheses (e.g. even
21
22 397 studies with flaws in methodology can provide valuable information).²⁶ Furthermore, there is
23
24 398 no gold standard on appraising qualitative studies.³² The elementary quality assessment
25
26 399 conducted in the current review was aimed at ensuring minimal quality while identifying a
27
28 400 broad range of elements that might influence CPS implementation. Lastly, the papers
29
30 401 included in this review were not restricted by the time at which they were published, since
31
32 402 the aim of the study was to include all relevant papers that can inform about any influential
33
34 403 element that has been noted in practice. It is important to acknowledge that as contexts can
35
36 404 change over time, the effect of influential elements can also change, cease to exist or new
37
38 405 elements can emerge. It is therefore important to regularly monitor elements and prioritise
39
40 406 those that must be addressed.
41
42

43 407 **CONCLUSION**

44
45
46 408 This qualitative meta-synthesis identified a broad range of elements that, according to
47
48 409 patients, GPs and nurses, can enable (i.e., facilitators) or hinder (i.e., barriers) the
49
50 410 implementation of CPSs. These influential elements are located at different ecological levels
51
52 411 and should be considered together with those previously identified in pharmacy-informed
53
54 412 studies to comprehensively analyse the barriers and facilitators to the implementation of
55
56 413 CPSs. Future studies aimed at that purpose must involve multiple stakeholder groups (i.e.,
57
58
59
60

1
2
3 414 others than only pharmacists) and better understand the relationships between influential
4
5 415 elements to increase the usefulness and interest of their findings. Further to the identification
6
7 416 of the influential elements, key stakeholders should keep involved in developing suitable,
8
9 417 multilevel programs aimed at enhancing CPS implementation.
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

1
2
3 418 **ACKNOWLEDGEMENTS**

4
5
6 419 We would like to acknowledge Antonio E. Mendes (Universidade Federal do Parana, Brazil)
7
8 420 for his collaboration in the network analysis.

9
10
11 421 **COMPETING INTERESTS**

12
13
14 422 All authors declare no competing interest

15
16
17 423 **FUNDING**

18
19
20 424 Lutfun N. Hossain was awarded a University of Technology Sydney (UTS) President's
21
22 425 Scholarship and a UTS Chancellors Research Scholarship.

23
24
25 426 This work is part of a larger UTS Chancellor's Postdoctoral Research Fellowship awarded to
26
27 427 Dr Daniel Sabater-Hernández (UTS ID number: 2013001605).

28
29
30 428 **DATA SHARING STATEMENT**

31
32
33 429 No additional data are available

34
35
36 430 **AUTHORS' CONTRIBUTION**

37
38
39 431 Conception or design of the work: Lutfun N. Hossain, Fernando Fernandez-Llimos, Tim
40
41 432 Lockett and Daniel Sabater-Hernández.

42
43
44 433 Data collection: Lutfun N. Hossain, Desire Durks and Lucia Franco-Trigo.

45
46
47 434 Data analysis and interpretation: Lutfun N. Hossain, Joanna C. Moullin, Charlie Benrimoj and
48
49 435 Daniel Sabater-Hernández.

50
51
52 436 Drafting the article: Lutfun N. Hossain, Fernando Fernandez-Llimos, Tim Lockett and Daniel
53
54 437 Sabater-Hernández.

1
2
3 438 Critical revision of the article: Lutfun N. Hossain, Joanna C. Moullin, Fernando Fernandez-
4
5 439 Llimos, Tim Lockett and Daniel Sabater-Hernández.
6
7
8 440 Final approval of the version to be published: Lutfun N. Hossain, Fernando Fernandez-
9
10 441 Llimos, Tim Lockett, Joanna C. Moullin, Desire Durks, Lucia Franco-Trigo, Charlie Benrimoj
11
12 442 and Daniel Sabater-Hernández.
13

14
15 443
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For peer review only

444 **REFERENCE**

- 445 1. Chaudoir SR, Dugan AG, Barr CH. Measuring factors affecting implementation of health
446 innovations: a systematic review of structural, organizational, provider, patient, and
447 innovation level measures. *Implement Sci* 2013;8:22.
- 448 2. Damschroder LJ, Aron DC, Keith RE, et al. Fostering implementation of health services
449 research findings into practice: a consolidated framework for advancing implementation
450 science. *Implement Sci* 2009;4:50.
- 451 3. Haines A, Kuruvilla S, Borchert M. Bridging the implementation gap between knowledge
452 and action for health. *Bull World Health Organ* 2004;82:724-31.
- 453 4. Grol R, Grimshaw J. From best evidence to best practice: effective implementation of
454 change in patients' care. *Lancet* 2003;362:1225-30.
- 455 5. Plsek PE, Greenhalgh T. Complexity science: The challenge of complexity in health
456 care. *BMJ* 2001;323:625-8.
- 457 6. Craig P, Dieppe P, Macintyre S, et al. Developing and evaluating complex interventions:
458 the new Medical Research Council guidance. *BMJ* 2008;337:a1655.
- 459 7. Flottorp SA, Oxman AD, Krause J, et al. A checklist for identifying determinants of
460 practice: a systematic review and synthesis of frameworks and taxonomies of factors
461 that prevent or enable improvements in healthcare professional practice. *Implement Sci*
462 2013;8:35.
- 463 8. Baker R, Camosso-Stefinovic J, Gillies C, et al. Tailored interventions to address
464 determinants of practice. *Cochrane Database Syst Rev* 2015;4:CD005470.
- 465 9. Gastelurrutia MA, Benrimoj SI, Castrillon CC, et al. Facilitators for practice change in
466 Spanish community pharmacy. *Pharm World Sci* 2009;31:32-9.

- 1
2
3 467 10. Moullin JC, Sabater-Hernández D, Benrimoj SI. Model for the evaluation of
4
5 468 implementation programs and professional pharmacy services. *Res Social Adm Pharm*
6
7 469 2016;12:515-22.
8
9
10 470 11. Sabater-Hernández D, Sabater-Galindo M, Fernandez-Llimos F, et al. A Systematic
11
12 471 Review of Evidence-Based Community Pharmacy Services Aimed at the Prevention of
13
14 472 Cardiovascular Disease. *J Manag Care Spec Pharm* 2016;22:699-713.
15
16
17 473 12. Mossialos E, Courtin E, Naci H, et al. From "retailers" to health care providers:
18
19 474 Transforming the role of community pharmacists in chronic disease management.
20
21 475 *Health Policy* 2015;119:628-39.
22
23
24 476 13. Kaae S, Christensen ST. Exploring long term implementation of cognitive services in
25
26 477 community pharmacies - a qualitative study. *Pharm Pract (Granada)* 2012;10:151-8.
27
28
29 478 14. Berbatis C, Sunderland V, Joyce A, Bulsara M, Mills C. Enhanced pharmacy services,
30
31 479 barriers and facilitators in Australia's community pharmacies: Australia's National
32
33 480 Pharmacy Database Project. *Int J Clin Pharm* 2007;15:185-91.
34
35
36 481 15. Roberts A, Benrimoj S, Chen T, et al. Implementing cognitive services in community
37
38 482 pharmacy: a review of facilitators used in practice change. *Int J Clin Pharm*
39
40 483 2006;14:163-70.
41
42
43 484 16. Gastelurrutia MA, Fernandez-Llimos F, Garcia-Delgado P, et al. Barriers and facilitators
44
45 485 to the dissemination and implementation of cognitive services in Spanish community
46
47 486 pharmacies. *Seguim Farmacoter* 2005;3:65-77.
48
49
50 487 17. Cvetkovski B, Armour C, Bosnic-Anticevich S. Asthma management in rural New South
51
52 488 Wales: Perceptions of health care professionals and people with asthma. *Austr J Rural*
53
54 489 *Health* 2009;17:195-200.
55
56
57
58
59
60

- 1
2
3 490 18. White L, Klinner C, Carter S. Consumer perspectives of the Australian Home Medicines
4
5 491 Review Program: benefits and barriers. *Res Social Adm Pharm* 2012;8:4-16.
6
7
8 492 19. Gilmartin JF, Marriott JL, Hussainy SY. Exploring factors that contribute to dose
9
10 493 administration aid incidents and identifying quality improvement strategies: the views of
11
12 494 pharmacy and nursing staff. *Int J Pharm Pract* 2014;22:407-14.
13
14
15 495 20. Dhillon AK, Hattingh HL, Stafford A, et al. General practitioners' perceptions on home
16
17 496 medicines reviews: a qualitative analysis. *BMC Fam Pract* 2015;16:16.
18
19
20 497 21. Rayes IK, Abduelkarem AR. A qualitative study exploring physicians' perceptions on the
21
22 498 role of community pharmacists in Dubai. *Pharm Pract (Granada)* 2016;14:738.
23
24
25 499 22. Mohammed MA, Moles RJ, Chen TF. Meta-synthesis of qualitative research: the
26
27 500 challenges and opportunities. *Int J Clin Pharm* 2016;38:695-704.
28
29
30 501 23. Walsh D, Downe S. Meta-synthesis method for qualitative research: a literature review.
31
32 502 *J Adv Nurs* 2005;50:204-11.
33
34
35 503 24. Moullin JC, Sabater-Hernández D, Fernandez-Llimos F, Benrimoj SI. Defining
36
37 504 professional pharmacy services in community pharmacy. *Res Social Adm Pharm*
38
39 505 2013;9:989-95.
40
41
42 506
43
44
45 507 25. Hennink MM, Hutter I, Bailey A. Qualitative research methods. Los Angeles, Calif. ;
46
47 508 London: SAGE; 2011.
48
49
50 509 26. Dixon-Woods M, Shaw RL, Agarwal S, et al. The problem of appraising qualitative
51
52 510 research. *Qual Saf Health Care* 2004;13:223-5.
53
54
55 511 27. Thomas J, Harden A. Methods for the thematic synthesis of qualitative research in
56
57 512 systematic reviews. *BMC Med Res Methodol* 2008;8:1-10.
58
59
60

- 1
2
3 513 28. McLeroy KR, Bibeau D, Steckler A, et al. An ecological perspective on health promotion
4
5 514 programs. *Health Educ Quart* 1988;15:351-77.
6
7
8 515 29. Bartholomew LK, Markham CM, Ruiter RAC, Fernández ME, Kok G, Parcel GS.
9
10 516 Planning health promotion programs: An Intervention Mapping approach. 4th ed. San
11
12 517 Francisco, CA: Jossey-Bass; 2016.
13
14
15 518 30. Green LW, Kreuter MW. Health program planning: An educational and ecological
16
17 519 approach. 4th ed. Boston: McGraw-Hill; 2005.
18
19
20 520 31. Jacomy M, Venturini T, Heymann S, et al. ForceAtlas2, a continuous graph layout
21
22 521 algorithm for handy network visualization designed for the Gephi software. *PloS one*
23
24 522 2014;9:e98679.
25
26
27 523 32. Tong A, Flemming K, McInnes E, et al. Enhancing transparency in reporting the
28
29 524 synthesis of qualitative research: ENTREQ. *BMC Med Res Methodol* 2012;12:181.
30
31
32 525 33. McMillan SS, Sav A, Kelly F, et al. How to attract them and keep them: The pharmacy
33
34 526 attributes that matter to Australian residents with chronic conditions. *Int J Pharm Pract*
35
36 527 2014;22:238-45.
37
38
39 528 34. Rieck A, Pettigrew S. How physician and community pharmacist perceptions of the
40
41 529 community pharmacist role in Australian primary care influence the quality of
42
43 530 collaborative chronic disease management. *Qual Prim Care* 2013;21:105-11.
44
45
46 531 35. Barbara S, Krass I. Self management of type 2 diabetes by Maltese immigrants in
47
48 532 Australia: Can community pharmacies play a supporting role? *Int J Pharm Pract*
49
50 533 2013;21:305-13.
51
52
53 534 36. Bereznicki B, Peterson G, Jackson S, et al. Perceived feasibility of a community
54
55 535 pharmacy-based asthma intervention: A qualitative follow-up study. *J Clin Pharm Ther*
56
57 536 2011;36:348-55.
58
59
60

- 1
2
3 537 37. Saba M, Dan E, Bittoun R, et al. Asthma and smoking--healthcare needs and
4 preferences of adults with asthma who smoke. *J Asthma* 2014;51:934-42.
5 538
6
7
8 539 38. Shoukry G, Wong K, Bartlett D, et al. Treatment experience of people with obstructive
9 sleep apnoea seeking continuous positive airways pressure device provision through
10 540 community pharmacies: a role for pharmacists? *Int J Pharm Pract* 2011;19:318-27.
11 541
12
13
14
15 542 39. Um IS, Armour C, Krass I, et al. Weight management in community pharmacy: what do
16 the experts think? *Int J Clin Pharm* 2013;35:447-54.
17 543
18
19
20 544 40. Snell L, White L. An exploratory study of the role of emotional intelligence and self-
21 efficacy on service quality and adherence in a weight loss setting. *Serv Mark Q*
22 545 2011;32:228-46.
23 546
24
25
26
27 547 41. Maher JH, Hughes R, Anderson C, et al. An exploratory investigation amongst
28 Australian mothers regarding pharmacies and opportunities for nutrition promotion.
29 548 *Health Educ Res* 2013;28:1040-50.
30 549
31
32
33
34 550 42. Mey A, Knox K, Kelly F, et al. Trust and safe spaces: Mental health consumers' and
35 carers' relationships with community pharmacy staff. *Patient* 2013;6:281-9.
36 551
37
38
39 552 43. Hattingh HL, Knox K, Fejzic J, et al. Privacy and confidentiality: perspectives of mental
40 health consumers and carers in pharmacy settings. *Int J Pharm Pract* 2015;23:52-60.
41 553
42
43
44 554 44. Clark A, Gilbert A, Rao D, et al. 'Excuse me, do any of you ladies speak English?'
45 Perspectives of refugee women living in South Australia: barriers to accessing primary
46 555 health care and achieving the Quality Use of Medicines. *Aust J Prim Health* 2014;20:92-
47 556 7.
48 557
49
50
51
52
53 558 45. O'Connor M, Fisher C, French L, et al. Exploring the community pharmacist's role in
54 palliative care: Focusing on the person not just the prescription. *Patient Educ Couns*
55 559 2011;83:458-64.
56 560
57
58
59
60

- 1
2
3 561 46. Carter SR, Moles R, White L, et al. Exploring patients' motivation to participate in
4
5 562 Australia's Home Medicines Review program. *Int J Clin Pharm* 2012;34:658-66.
6
7
8 563 47. Lee CY, George J, Elliott RA, et al. Exploring stakeholder perspectives on medication
9
10 564 review services for older residents in retirement villages. *Int J Pharm Pract* 2012;20:249-
11
12 565 58.
13
14
15 566 48. White L, Klinner C. Medicine use of elderly Chinese and Vietnamese immigrants and
16
17 567 attitudes to home medicines review. *Aust J Prim Health* 2012;18:50-5.
18
19
20 568 49. Swain L, Barclay L. They've given me that many tablets, I'm bushed: I don't know where
21
22 569 I'm going: Aboriginal and Torres Strait Islander peoples' experiences with medicines.
23
24 570 *Austr J Rural Health* 2013;21:216-9.
25
26
27 571 50. Du Pasquier S, Aslani P. Concordance-based adherence support service delivery:
28
29 572 Consumer perspectives. *Pharm World Sci* 2008;30:846-53.
30
31
32 573 51. Bui J, Day C, Hanrahan J, et al. Senior nurses' perspectives on the transfer of opioid
33
34 574 substitution treatment clients from clinics to community pharmacy. *Drug Alcohol Rev*
35
36 575 2014;34:495-8.
37
38
39 576 52. Van C, Krass I, Mitchell B. General practitioner perceptions of extended pharmacy
40
41 577 services and modes of collaboration with pharmacists. *J Pharm Pract Res* 2007;37:182-
42
43 578 6.
44
45
46 579 53. Van C, Mitchell B, Krass I. General practitioner-pharmacist interactions in professional
47
48 580 pharmacy services. *J Interprof Care* 2011;25:366-72.
49
50
51 581 54. Dey RM, De Vries MJW, Bosnic-Anticevich S. Collaboration in chronic care: Unpacking
52
53 582 the relationship of pharmacists and general medical practitioners in primary care. *Int J*
54
55 583 *Pharm Pract* 2011;19:21-9.
56
57
58
59
60

- 1
2
3 584 55. Chong WW, Aslani P, Chen TF. Multiple perspectives on shared decision-making and
4
5 585 interprofessional collaboration in mental healthcare. *J Interprof Care* 2013;27:223-30.
6
7
8 586 56. Cheong LH, Armour CL, Bosnic-Anticevich SZ. Multidisciplinary collaboration in primary
9
10 587 care: Through the eyes of patients. *Aust J Prim Health* 2013;19:190-7.
11
12
13 588 57. Bajramovic J, Emmerton L, Tett SE. Perceptions around concordance--focus groups
14
15 589 and semi-structured interviews conducted with consumers, pharmacists and general
16
17 590 practitioners. *Health Expect* 2004;7:221-34.
18
19
20 591 58. McMillan SS, Emmerton L. Nurse practitioners: an insight into their integration into
21
22 592 Australian community pharmacies. *Res Social Adm Pharm* 2013;9:975-80.
23
24
25 593 59. Roberts AS, Benrimoj SI, Chen TF, et al. Understanding practice change in community
26
27 594 pharmacy: a qualitative study in Australia. *Res Social Adm Pharm* 2005;1:546-64.
28
29
30 595 60. Roberts AS, Benrimoj SI, Chen TF, et al. Practice change in community pharmacy:
31
32 596 quantification of facilitators. *Ann Pharmacother* 2008;42:861-8.
33
34
35 597 61. Alonso-Perales MD, Lasheras B, Beitia G, et al. Barriers to promote cardiovascular
36
37 598 health in community pharmacies: a systematic review. *Health Prompt Int* 2015:1-14.
38
39
40 599 62. Lowres N, Krass I, Neubeck L, et al. Atrial fibrillation screening in pharmacies using an
41
42 600 iPhone ECG: a qualitative review of implementation. *Int J Clin Pharm* 2015;37:1111-20.
43
44
45 601 63. Hughes CM, Cadogan CA, Ryan CA. Development of a pharmacy practice intervention:
46
47 602 lessons from the literature. *Int J Clin Pharm* 2015;38:601-6.
48
49
50 603 64. McKenzie JF, Neiger BL, Thackeray R. Planning, implementing, and evaluating health
51
52 604 promotion programs: a primer. 6th ed. San Francisco, CA: Pearson - Benjamin
53
54 605 Cummings; 2013.
55
56
57
58
59
60

- 1
2
3 606 65. Franco-Trigo L, Hossain LN, Durks D, et al. Stakeholder analysis for the development of
4 a community pharmacy service aimed at preventing cardiovascular disease. *Res Social*
5 607 *Adm Pharm* Epub 2016 Jun 30.
6
7 608
8
9
10 609 66. Sabater-Hernández D, Moullin JC, Hossain LN, et al. Intervention mapping for
11 developing pharmacy-based services and health programs: A theoretical approach. *Am*
12 610 *J Health Syst Pharm* 2016;73:156-64.
13 611
14
15
16
17 612 67. Krause J, Van Lieshout J, Klomp R, et al. Identifying determinants of care for tailoring
18 613 implementation in chronic diseases: an evaluation of different methods. *Implement Sci*
19 614 2014;9:102.
20
21
22
23
24 615 68. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for
25 616 characterising and designing behaviour change interventions. *Implement Sci* 2011;6:42.
26
27
28
29 617 69. Durks D, Fernandez-Llimos F, Hossain LN, Franco-Trigo L, Benrimoj SI, Sabater-
30 618 Hernández D. Use of Intervention Mapping to enhance healthcare professional practice:
31 619 a systematic review. *Health Educ Behav* *Forthcoming* 2017.
32
33
34
35
36 620 70. McMillan SS, King M, Tully MP. How to use the nominal group and Delphi techniques.
37 621 *Int J Clin Pharm* 2016;38:655-62.
38
39
40
41 622
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

623

Figure 1. PRISMA flow diagram

624

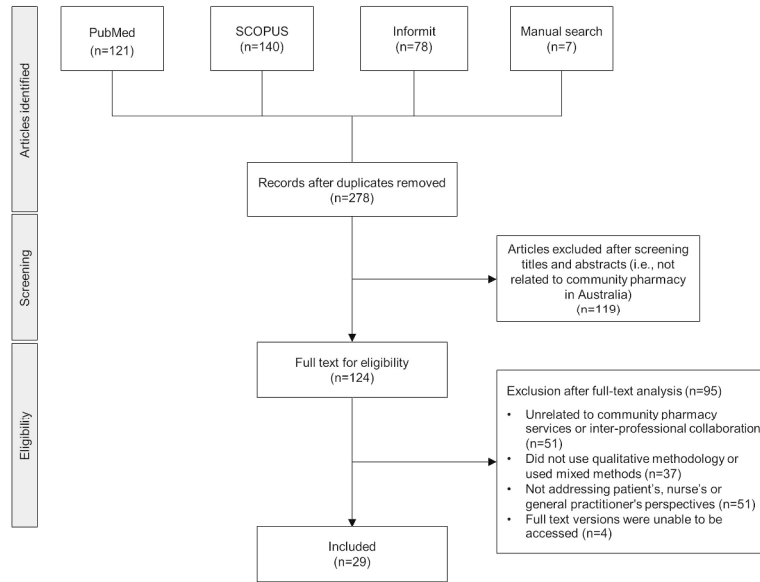
625

626

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

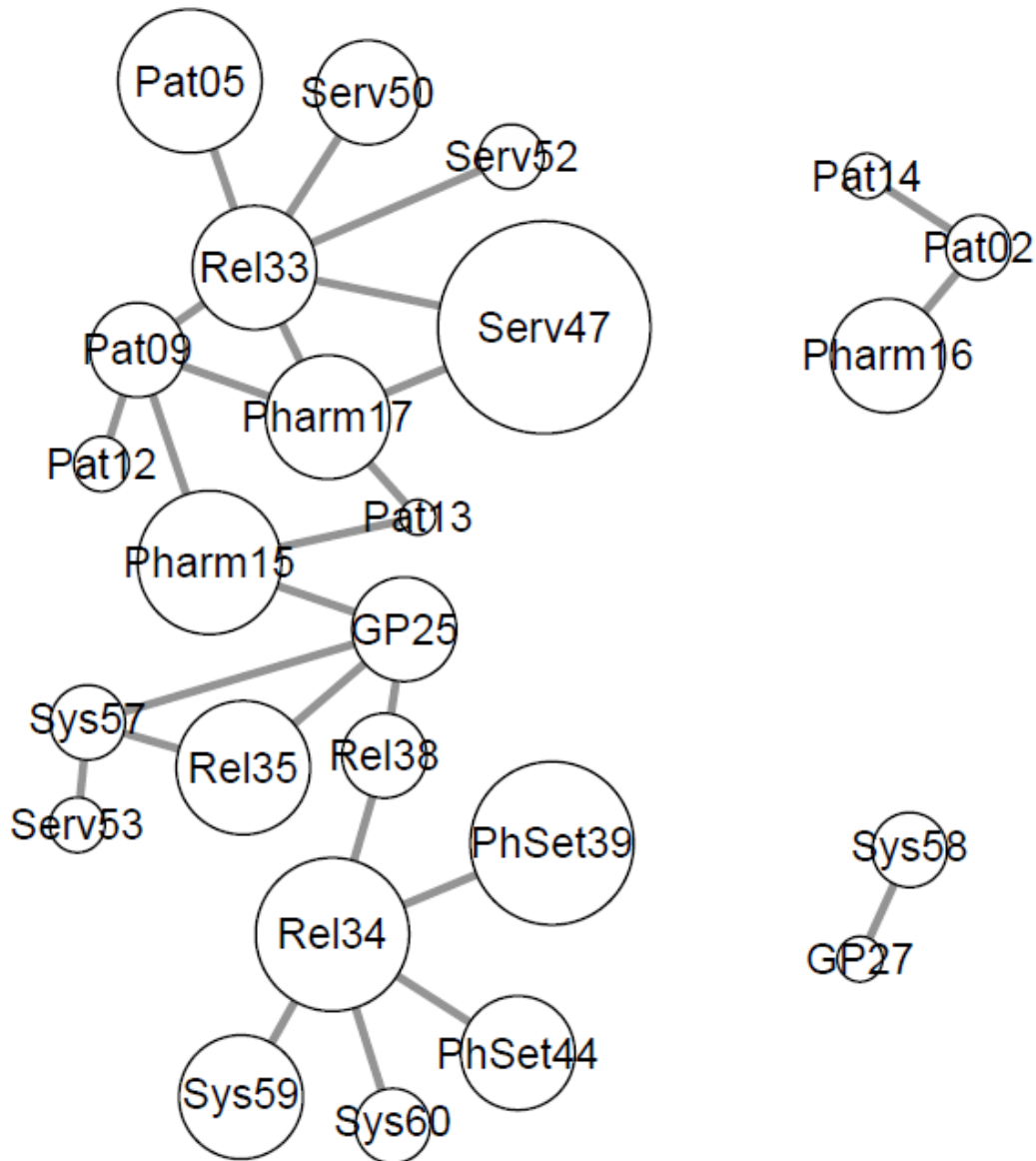


254x190mm (300 x 300 DPI)

ew only

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

References

1. Carter SR, Moles R, White L, et al. Exploring patients' motivation to participate in Australia's Home Medicines Review program. *Int J Clin Pharm* 2012;34:658-66.
2. White L, Klinner C, Carter S. Consumer perspectives of the Australian Home Medicines Review Program: benefits and barriers. *Res Social Adm Pharm* 2012;8:4-16.
3. Mey A, Knox K, Kelly F, et al. Trust and safe spaces: Mental health consumers' and carers' relationships with community pharmacy staff. *Patient* 2013;6:281-9.
4. Snell L, White L. An exploratory study of the role of emotional intelligence and self-efficacy on service quality and adherence in a weight loss setting. *Serv Mark Q* 2011;32:228-46.
5. McMillan SS, Emmerton L. Nurse practitioners: an insight into their integration into Australian community pharmacies. *Res Social Adm Pharm* 2013;9:975-80.
6. Chong WW, Aslani P, Chen TF. Multiple perspectives on shared decision-making and interprofessional collaboration in mental healthcare. *J Interprof Care* 2013;27:223-30.
7. Dey RM, De Vries MJW, Bosnic-Anticevich S. Collaboration in chronic care: Unpacking the relationship of pharmacists and general medical practitioners in primary care. *Int J Pharm Pract* 2011;19:21-9.
8. Van C, Krass I, Mitchell B. General practitioner perceptions of extended pharmacy services and modes of collaboration with pharmacists. *J Pharm Pract Res* 2007;37:182-6.
9. Van C, Mitchell B, Krass I. General practitioner-pharmacist interactions in professional pharmacy services. *J Interprof Care* 2011;25:366-72.
10. Bui J, Day C, Hanrahan J, et al. Senior nurses' perspectives on the transfer of opioid substitution treatment clients from clinics to community pharmacy. *Drug Alcohol Rev* 2014;34:495-8.
11. McMillan SS, Sav A, Kelly F, et al. How to attract them and keep them: The pharmacy attributes that matter to Australian residents with chronic conditions. *Int J Pharm Pract* 2014;22:238-45.

- 1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
12. Dhillon AK, Hattingh HL, Stafford A, et al. General practitioners' perceptions on home medicines reviews: a qualitative analysis. *BMC Fam Pract* 2015;16:16.

For peer review only

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

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

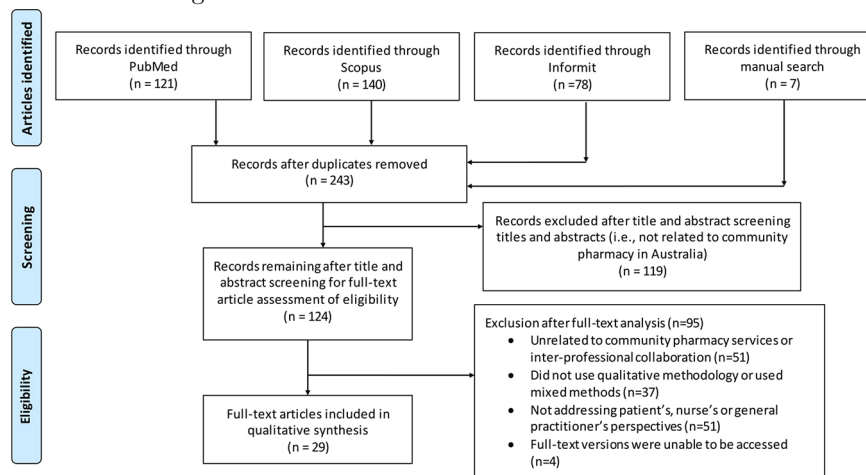
For peer review only

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, Lockett 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.



Open Access This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

© Article author(s) (or their employer(s) unless otherwise stated in the text of the article) 2018. All rights reserved. No commercial use is permitted unless otherwise expressly granted.

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

