

Review of patient-reported experience within Patient-Centered Medical Homes: insights for Australian Health Care Homes

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Abstract. Understanding patient experience is necessary to advance the patient-centred approach to health service delivery. Australia’s primary healthcare model, the ‘Health Care Home’, is based on the ‘Patient-Centered Medical Home’ (PCMH) model developed in the United States. Both these models aim to improve patient experience; however, the majority of existing PCMH model evaluations have focussed on funding, management and quality assurance measures. This review investigated the scope of evidence reported by adult patients using a PCMH. Using a systematic framework, the review identified 39 studies, sourced from 33 individual datasets, which used both quantitative and qualitative approaches. Patient experience was reported for model attributes, including the patient–physician and patient–practice relationships; care-coordination; access to care; and, patient engagement, goal setting and shared decision-making. Results were mixed, with the patient experience improving under the PCMH model for some attributes, and some studies indicating no difference in patient experience following PCMH implementation. The scope and quality of existing evidence does not demonstrate improvement in adult patient experience when using the PCMH. Better measures to evaluate patient experience in the Australian Health Care Home model are required.

Additional keywords: healthcare evaluation, health services research, quality of health care.

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Introduction

Managing the healthcare needs of people living with chronic conditions is an ongoing challenge, with many people suffering from multiple conditions. A coordinated approach to care management is needed, although for people already disadvantaged by ill-health, the challenge of navigating a complex healthcare system increases the burden on individuals, their families and carers. Derived from the Chronic Care Model (Green *et al.* 2012), the concept of patients having a Medical Home to manage their primary healthcare needs has been widely supported across the United States through the Patient-Centered Medical Home (PCMH) model (Peikes *et al.* 2012). Australia’s Health Care Home model has been adapted from the PCMH to address the complex healthcare needs of people living with chronic conditions within a different fiscal environment (Commonwealth of Australia 2016).

Key attributes of the PCMH model include: (i) each patient has a primary care physician responsible for fostering a supportive relationship to deliver whole-person, coordinated health care; (ii) the physician is located as part of a wider practice team working collaboratively to support the primary

physician–patient partnership; (iii) care is coordinated, with a focus on using technology to support health information exchange; (iv) care is available and accessible as required; and (v) patients are actively encouraged to participate in healthcare decisions (American Academy of Family Physicians 2008). Fig. 1 shows the PCMH model. Although paediatric Medical Homes were developed in the 1960s, Medical Homes for adult populations have only been widely established after 2007, following endorsement of the PCMH by leading American physician organisations (Baird *et al.* 2014).

Both the PCMH and Health Care Home models aim to deliver sustainable health care and improve patient outcomes and experience (American Academy of Family Physicians 2008; Commonwealth of Australia 2016). Since endorsement in 2007, evaluations of the PCMH have primarily been instigated by insurers to appraise service funding or by practice managers as part of quality improvement strategies. Although understanding patient experience is a crucial part of the continuous quality improvement cycle of PCMHs, very few studies have specifically focussed on examining this in detail (Aysola *et al.* 2015). There have been some evaluations in

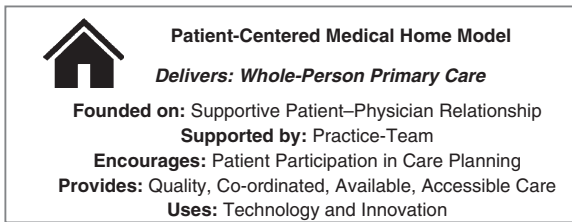


Fig. 1. Patient-Centered Medical Home (PCMH) model of care.

paediatric populations; however, the experience of adults living with chronic conditions differs from this cohort.

A search of PROSPERO in May 2016 for systematic reviews of patient experience in the PCMH identified nil results. Searches using Medline, CINAHL and Scopus identified several reviews of the implementation of the PCMH, some of which examined patient experience as part of a range of influencing factors, but none of which specifically scrutinised the adult patient experience in the Medical Home. Our review was conducted to address this knowledge gap, by assessing the scope of literature in which adult patients have reported their experiences of using a PCMH model of care.

Methods

A five-step methodological framework was used for this scoping review (Arksey and O'Malley 2005; Levac *et al.* 2010; The Joanna Briggs Institute 2015).

Step 1. Identify research question

The primary research question was: what is the adult patient-reported experience of using the Patient Centered Medical Home model?

Step 2. Search literature; and Step 3. Select studies

The strategy for article inclusion is outlined in Box 1. Using these strategies, 631 articles were identified for review. Fig. 2 outlines the selection process for articles.

Step 4. Extract data

Data were extracted for each study using a charting table. Information recorded included: author(s); year of publication; study aim; population of interest; methods including study design, sample size, data collection instrument; study outcome; and, study strengths and limitations.

Step 5. Compile results

Results were collated and summarised to address the research question, then examined to determine if the individual PCMH model attributes had been measured or described. A thematic approach derived from individual PCMH model attributes was used to describe patient-reported experience within PCMHs.

Results

The majority of studies were classified as quantitative ($n=29$), followed by qualitative ($n=8$) and mixed methods ($n=2$) (Table 1). Quantitative studies collected data from patients using a mix of validated ($n=24$) and non-validated survey tools

Box 1. Strategy for article inclusion

Databases

MEDLINE, CINAHL, Scopus and Informat.

Key terms

('Patient-Centered Medical Home' OR 'PCMH' OR 'Patient Centered Medical Home' OR 'Patient-Centred Medical Home' OR 'Patient Centred Medical Home' OR 'medical home' OR 'health home' OR 'health care home' OR 'health-care home' OR 'Patient-Centered Medical Homes' OR 'Patient Centered Medical Homes' OR 'Patient-Centred Medical Homes' OR 'Patient Centred Medical Homes' OR 'medical homes' OR 'health homes' OR 'health care homes' OR 'health-care homes') AND ('Attitude to Health' OR 'Patient Attitude' OR 'patient perception' OR 'Patient Attitudes' OR 'patient perceptions' OR 'patient preference' OR 'patient preferences' OR 'Patient Satisfaction' OR 'patient experience' OR 'patient experiences' OR 'patient perspective' OR 'patient satisfaction' OR 'patient perspectives' OR 'patient feelings').

Inclusion criteria

- English language
- Published from January 2007 (Medical Homes for adult populations have been established post 2007) to May 2016
- Primary research publications
- Adult populations
- Patient responses from within existing PCMH

Exclusion criteria

- News and commentary articles
- Examination of stakeholder perception of patient response, such as provider perception of patient experience
- Examination of patient experience using health service utilisation data

Study selection undertaken by two academic clinicians using a consultative approach.

Bibliographic details from PCMH review were articles checked to ensure inclusion of all relevant studies.

($n=5$) (Table 1). Validated tools included the Consumer Assessment of Healthcare Providers and Systems Clinician & Group (CAHPS-CG) (Agency for Healthcare Research and Quality 2017) and Press Ganey surveys (Press Ganey 2017). The quantitative studies included a mix of descriptive only and comparative study designs (Table 1), with comparisons being made pre-post PCMH implementation ($n=3$) (Coleman *et al.* 2010; Kern *et al.* 2013; Carrillo *et al.* 2014); between PCMH and non-PCMH sites ($n=3$) (Christensen *et al.* 2013; Maeng *et al.* 2013); and both pre-post implementation, PCMH and non-PCMH sites, using a quasi-experimental study design ($n=6$) (Reid *et al.* 2009, 2010; Jaén *et al.* 2010a; Nutting *et al.* 2010; Fishman *et al.* 2012; Heyworth *et al.* 2014). Analyses from existing large-scale survey datasets were also undertaken ($n=6$) (Beal *et al.* 2009; Solberg *et al.* 2011; Thygeson *et al.* 2012; Lebrun-Harris *et al.* 2013; Nelson *et al.* 2014; Reddy *et al.* 2015). There were 23 independent data sources identified, as some articles used the same research investigation technique, specifically, studies that examined the Group Health Medical Home pilot ($n=4$) (Reid *et al.* 2009, 2010; Coleman *et al.* 2010; Fishman *et al.* 2012); evaluations conducted as part of the

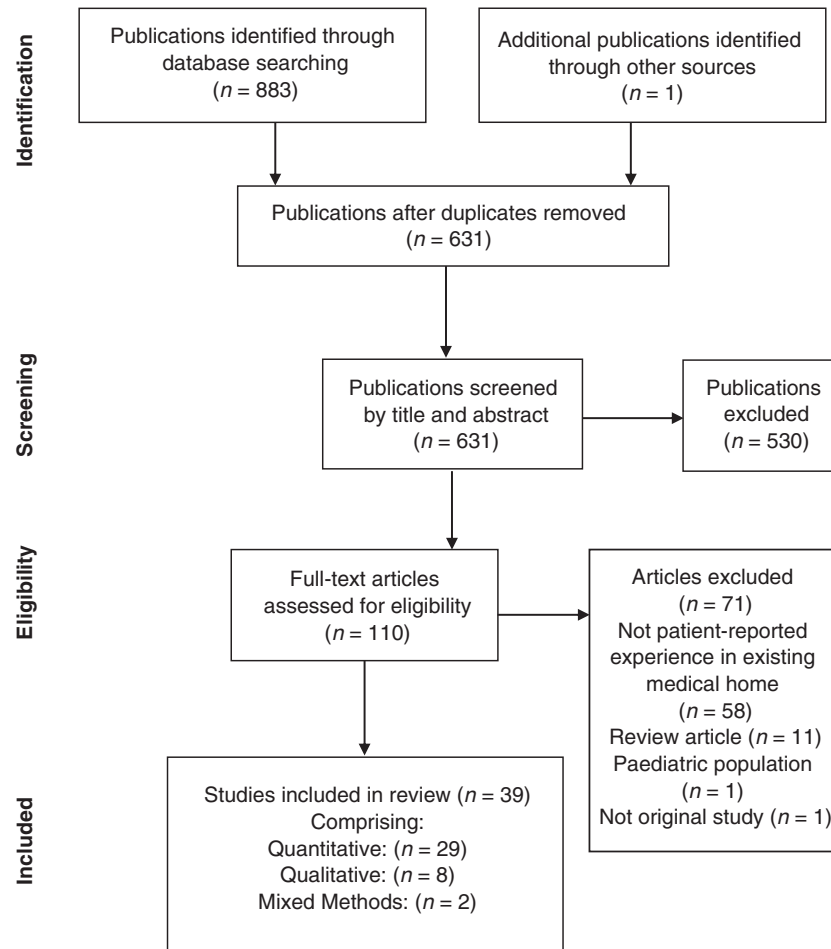


Fig. 2. Flow diagram illustrating process for article inclusion.

National Demonstration Project ($n=2$) (Jaén *et al.* 2010a; Nutting *et al.* 2010); studies that examined Medical Home implementation in Florida ($n=2$) (Cook *et al.* 2015, 2016); and studies from Health Partners Medical Group ($n=2$) (Solberg *et al.* 2011; Thygeson *et al.* 2012). The majority of quantitative studies examined patient experience as part of a broader evaluation of PCMH implementation.

Attributes derived from the Joint Principles of the Patient-Centered Medical Home model were identified within each study. Table 2 identifies each attribute and outlines the study designs used to measure patient experience of the attribute.

Patient-provider relationship

Although a significant portion of studies investigated the patient-provider relationship in the PCMH (Table 2), the results were mixed. Four studies reported a slightly higher level of satisfaction among patients regarding the care they received from their physician following implementation of the Medical Home model (Solberg *et al.* 2011; Carrillo *et al.* 2014; Hall *et al.* 2014; Heyworth *et al.* 2014). One study reported an improvement in patient satisfaction after 12 (Reid *et al.* 2009) and 24 months (Reid *et al.* 2010) of PCMH care; however, this improvement

in doctor-patient interaction diminished over time. Three studies that examined improvement in patients' perception of their relationship with a primary care physician found no change following implementation of the PCMH model (Jaén *et al.* 2010a; Kern *et al.* 2013; Reddy *et al.* 2015).

Other studies reported a high level of patient satisfaction with their provider in the PCMH model, although these studies reported on satisfaction with care at only one point in time (Day *et al.* 2013; Kennedy *et al.* 2013; Lebrun-Harris *et al.* 2013; Cook *et al.* 2015, 2016; Wagner *et al.* 2015) with no comparison to a non-PCMH site or to any change in the care model over time.

Two studies comparing the experience of patients in a PCMH with traditional care sites reported a slightly better patient experience of provider communication in the Medical Home (Beal *et al.* 2009; Christensen *et al.* 2013). A study of the Geisinger Health System, ProvenHealth Navigator, PCMH model found no improvement in the patient-provider relationship between the PCMH and non-PCMH sites, although this was measured using a non-validated survey tool (Maeng *et al.* 2013).

Some investigations that examined influencing factors in the patient-physician relationship found that personal physician engagement and communication with patients significantly improved post implementation (Christensen *et al.* 2013;

Table 1. Summary characteristics of studies included in this review (n = 39)

Reference	Study aim	Study design	Study outcome	Validated tool
Quantitative studies (n = 29) Bastian <i>et al.</i> (2014)	Patient perception of PCMH-designated Veterans women's health providers. Determine if racial disparities affect access to PCMH.	Comparative within PCMHs, single measure postal survey.	Patient experience improves in women's only PCMH.	Yes
Beal <i>et al.</i> (2009)		Large-scale survey analysis using MEPS.	Within Latino subgroup: unequal access to PCMH. For patients with access to PCMH: improved access to preventative care and a better patient experience. High satisfaction for integration of RN into team.	Yes
Biernacki <i>et al.</i> (2015)	Patient satisfaction with RN coordinating care in PCMH.	Comparative within PCMHs survey.	Improvement in patient satisfaction for all measures pre-post PCMH implementation.	Yes
Carrillo <i>et al.</i> (2014)	Patient experience following implementation of PCMH in a poor community.	Comparative pre-post survey. Press Ganey survey tool. New York Regional Health Collaborative.	Better patient experience overall at teaching sites. Accessing care was poorer at teaching sites. No difference for provider communication or reception courtesy between sites.	Yes
Carvajal <i>et al.</i> (2014)	Comparing patient experiences at teaching or non-teaching PCMH practices.	Descriptive face-to-face survey. CAHPS-CG and PACIC survey tools.	Increased satisfaction for chronic-condition patients across all areas in PCMH.	Yes
Christensen <i>et al.</i> (2013)	Veteran patient satisfaction comparative PCMH and traditional care model.	Comparative PCMH and non-PCMH, postal survey. CAHPS-CG, Insignia Health Patient Activation Measure and the PCAS tools.	No difference in patient satisfaction after reassignment to a new physician.	Yes
Coleman <i>et al.</i> (2010)	Patient experience when reassigned to a new physician in PCMH.	Comparative pre-post, postal survey. ACES-SF and PACIC survey tools. Group Health medical home pilot.	High level of positive experience in PCMH for practice-patient relationship; quality of care from primary care provider; and, reminders and administration. Moderate level of positive experience for setting goals and test follow up. Limited level for access to care and very limited for recommendation for education to improve own health.	Yes
Cook <i>et al.</i> (2015)	Patient experience in PCMH.	Descriptive face-to-face survey. Modified CAHPS-CG survey tool. Florida PCMHs.	Patients with chronic conditions that require more than three visits per year reported better coordination and service experience than patients who attended less frequently. High level of positive experience in PCMH for practice-patient relationship and care coordination. Limited level for access to care.	Yes
Cook <i>et al.</i> (2016)	Patient experience of access and coordination of care in PCMH, underserved population.	Descriptive face-to-face survey. Modified CAHPS-CG survey tool. Participatory research methodology. Florida PCMHs.	Overall satisfied, with high satisfaction for clinician interaction. Poor satisfaction for in-clinic waiting time. Improved experience with continuity of care, access to care and shared decision-making, compared to controls, for seniors in PCMH.	Yes
Day <i>et al.</i> (2013)	Patient satisfaction in the PCMH.	Descriptive email survey. Press Ganey survey tool.		Yes
Fishman <i>et al.</i> (2012)	Experience of seniors in PCMH.	Comparative pre-post PCMH and non-PCMH postal survey. ACES-SF and PACIC survey tools. Group Health medical home pilot.		Yes

PCMH, Patient-Centered Medical Home; MEPS, Medical Expenditure Panel Survey; RN, Registered Nurse; CAHPS-CG, Consumer Assessment of Healthcare Providers and Systems Clinician & Group; PACIC, Patient Assessment of Chronic Illness Care; PCAS, Primary Care Assessment Survey; ACES-SF, Ambulatory Care Experiences Survey; ACGME, American Council for Graduate Medical Education; SHEP, Survey of Healthcare Experiences of Patients; CPCI, Components of Primary Care Index; DDSM-QM, Diabetes Disease State Management Questionnaire

Heyworth <i>et al.</i> (2014)	Change in experience post implementation of PCMH.	Comparative pre-post PCMH and non-PCMH postal survey. Press Ganey survey tool.	Higher satisfaction post intervention compared with controls. Personal physician engagement and communication improved. Access and care coordination did not improve.	Yes
Jaén <i>et al.</i> (2010a)	Evaluate change in patient experience during transformation to PCMH.	Comparative pre-post PCMH and non-PCMH survey. ACES-SF and ACGME Survey tools. National Demonstration Project.	No improvement in patient experience.	Yes
Jubelt <i>et al.</i> (2014)	Effect of case manager on PCMH patient satisfaction.	Retrospective study using repeated, post-only postal survey data. Adapted from CAHPS-CG survey tool. Geisinger Health System, ProvenHealth Navigator.	Good case management improves patient satisfaction with care.	Yes
Kem <i>et al.</i> (2013)	Patient experience in the PCMH.	Comparative pre-post telephone survey. CAHPS-CG and additional survey tools.	Improved access to care. Mixed results for patient-practitioner and patient-practice relationship. No improvement in care coordination.	Yes
Lebrun-Harris <i>et al.</i> (2013)	Patient ratings of PCMH, vulnerable population.	Descriptive large-scale survey analysis, using Health Center Patient Survey. Range of tools.	Excellent or very good quality of service in PCMH for vulnerable population. Access and communication influence positive satisfaction ratings.	Yes
Maeng <i>et al.</i> (2013)	Experience of adults with chronic conditions in PCMH.	Comparative PCMH and non-PCMH postal survey. Geisinger Health System, ProvenHealth Navigator.	Improvements for PCMH patients in terms of quality of care, care coordination and service delivery. No improvement for access to care and patient perception of physician performance.	No
Thygeson <i>et al.</i> (2012)	Measure quality in PCMHs.	Survey analysis, using fuzzy set technique. Existing data on patient satisfaction from postal surveys: Picker Survey and Consumer Choice insurer satisfaction survey. Health Partners Medical Group.	Good provider-patient communication improves patient experience.	Yes
Moran <i>et al.</i> (2011)	Patient satisfaction with nurse diabetes educator in PCMH.	Descriptive survey.	Patients highly satisfied with nurse educator care.	No
Nelson <i>et al.</i> (2014)	Index measure of patient satisfaction in Veteran PCMHs.	Descriptive large-scale survey analysis. CAHPS-CG and SHEP surveys.	Higher level of PCMH clinic implementation associated with higher patient satisfaction.	Yes
Nocon <i>et al.</i> (2014)	Safety-net patient perception of support for patient activation in the PCMH.	Descriptive postal survey. PACIC and CAHPS-CG survey tools.	For patients with poor or fair health, PCMH was associated with patient perception of increased clinic support for patient activation.	Yes
Nutting <i>et al.</i> (2010)	Patient experience with implementation of PCMH model.	Comparative pre-post PCMH and non-PCMH survey. ACES-SF, CPCI and additional Likert scale survey tools. National Demonstration Project.	Patient experience of care diminished during implementation period for both facilitated and self-directed PCMH implementation sites.	Yes
Reddy <i>et al.</i> (2015)	Veteran experience with implementation of PCMH model.	Large-scale survey analysis using SHEP survey tool.	No difference in patient experience.	Yes
Reid <i>et al.</i> (2009)	Patient experience in the PCMH.	Comparative pre-post PCMH and non-PCMH postal survey. ACES-SF and PACIC survey tools. Group Health medical home pilot.	At 12 months: PCMH patients reported better care experience on six of seven scales, especially care coordination access and patient activation.	Yes
Reid <i>et al.</i> (2010)	Patient experience in the PCMH.	Comparative pre-post PCMH and non-PCMH postal survey. ACES-SF and PACIC survey tools. Group Health medical home pilot.	At 24 months: PCMH patients continue to have better experience for three scales: co-ordination, access and goal setting, some improvement in physician-patient interaction and patient involvement. Diminishment in rate of improvement over time.	Yes

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Table 1. (continued)

Reference	Study aim	Study design	Study outcome	Validated tool
Schmidt <i>et al.</i> (2013)	Effect of uptake of PCMH improvements on patient experience, safety-net population.	Descriptive face-to-face survey.	Positive rating for accessibility of care and poor rating for care coordination. Increased PCMH uptake improves care coordination.	No
Shawn McFarland <i>et al.</i> (2014)	Patient satisfaction with pharmacist in veteran PCMH.	Descriptive postal survey. Modified DDSM-QM survey tool.	'Very satisfied overall' with clinical pharmacy specialist in PCMH.	Yes
Solberg <i>et al.</i> (2011)	Patient experience during transformation to PCMH.	Large-scale survey trend analysis using Picker Survey and Consumer Choice insurer satisfaction survey. Health Partners Medical Group.	Small increase in patient satisfaction.	Yes
Wennerstrom <i>et al.</i> (2015)	Evaluation of Community Health Workers in PCMH.	Descriptive survey.	High satisfaction with Community Health Workers for education and self-management support.	No
Qualitative studies ($n = 8$) Aysola <i>et al.</i> (2015)	Patient experience of PCMH.	Comparative PCMH and less-PCMH-orientated clinics. Semi-structured telephone interviews and Likert scale questions. Grounded theory approach.	Relationship with primary physician is the most important factor, issues with team-based coordination not as important. From patient perspective, no change with or without PCMH care model. Lack of awareness of PCMH adoption. Patients did not recognise care model. Patients working with care teams reported improved relationship with provider and care experience.	
Fix <i>et al.</i> (2014)	Determine if Veterans in HIV clinics receive care aligned with PCMH model.	Comparative PCMH and less-PCMH-orientated interviews. Semi-structured face-to-face interviews. Methodology not identified. Convenience sample. Sample size pre-determined.		
Janiszewski <i>et al.</i> (2015)	Patient experience of diabetes self-management education program in PCMH.	Focus groups. Convenience sample. Constant comparative analysis, coding and thematic determination.	Access to care and support the most prominent themes, with the program being identified as useful.	
Kangovi <i>et al.</i> (2015)	High-risk patient perceptions of PCMH.	Semi-structured face-to-face interviews. Modified grounded theory approach. Convenience sampling, based on inclusion criteria. Interview guide based on PCMH model of care. Member checking.	Patients reported: limited computer literacy, which prevented use of electronic communication; preference for a continuous relationship with one primary care provider; and a trade-off between continuity of care and access to care, due to physician limitations.	
Kennedy <i>et al.</i> (2013)	Patient experience within PCMH.	Cognitive interviews using validated face-to-face, patient experience survey. Instrument not specified. Focus groups using Nominal Group Technique. Non-validated exit survey.	Patients perceive inadequacies for access to care. Positive experience for quality of care.	
Kennedy <i>et al.</i> (2015)	Patient experience within PCMH.	Cognitive interviews using validated face-to-face, patient experience survey, across three MHs. Instrument not specified. Focus groups using Nominal Group Technique. Non-validated exit survey.	Patients wanted improvement in access to care, increased staff numbers and increased range of services.	
Kozminski <i>et al.</i> (2011)	Patient attitude to pharmacist in PCMH.	Non-validated, written survey tool. Brief, structured face-to-face interviews, across four MHs. Convenience sample until data saturated. Coding and thematic analysis. Triangulation.	Pharmacist is valued in the PCMH.	

<p>Takane and Hunt (2012)</p>	<p>Patient perception of PCMH during transition.</p>	<p>Qualitative, focus groups. Sample based on practice recommendation. Thematic analysis.</p>	<p>Patients identified the importance of the practitioner–patient and practice–patient relationships; the need for self-management of care. Challenges identified included: access to care and concern about confidentiality in small community.</p>
<p>Mixed-method studies (n = 2) Hall <i>et al.</i> (2014)</p>	<p>Experience in different PCMHs for adults with diabetes.</p>	<p>Comparative PCMH and less-PCMH-orientated clinics, validated telephone survey. ACES-SF survey tool. Interviews to determine adherence to PCMH principles.</p>	<p>Higher ratings of care across all domains for clinic with greatest adherence to PCMH principles.</p>
<p>Wagner <i>et al.</i> (2015)</p>	<p>Veteran patient satisfaction with dimensions of PCMH care model.</p>	<p>Descriptive validated survey and face-to-face interview. SHEP survey tool. Interviews: purposeful sampling from survey cohort. Coding and identification of core themes.</p>	<p>Patients satisfied with provider communication and shared decision-making. Mixed results for access to care and care coordination. Qualitative findings included: difficulty with accessing care when needed. Patients' value good communication with provider and care that is well-coordinated.</p>

Heyworth *et al.* 2014; Cook *et al.* 2015). Contrastingly, another study found that patient–provider communication did not improve and overall physician rating did not improve with implementation of the PCMH model (Kern *et al.* 2013). Patients reported an improvement in their perception of the time spent in consultation with the physician in the PCMH model (Kern *et al.* 2013), and a positive correlation was observed in several studies for physician continuity and patient satisfaction in the PCMH (Fishman *et al.* 2012; Takane and Hunt 2012; Day *et al.* 2013; Wagner *et al.* 2015).

The importance of the patient–provider relationship was explored in qualitative studies, with a range of positive experiences reported (Takane and Hunt 2012; Fix *et al.* 2014; Aysola *et al.* 2015; Wagner *et al.* 2015). If patients had a positive relationship with their physician, this was seen to be of greater importance than any challenges encountered when accessing care (Aysola *et al.* 2015).

Patient–practice relationship

There was insufficient evidence to determine if implementing the PCMH model improves patient experience with practice staff. Two studies demonstrated an increase in patient satisfaction with office staff within the PCMH model compared with the traditional model of care (Christensen *et al.* 2013; Hall *et al.* 2014). Other researchers described a high level of positive patient experience in the PCMH when it came to practice staff providing respectful, helpful care (Cook *et al.* 2015, 2016) and in terms of friendly, helpful staff (Kennedy *et al.* 2015). Contrastingly, two independent cross-sectional studies, using the traditional care model as the comparative group, found no difference in the helpfulness of practice staff between the groups (Reid *et al.* 2009; Maeng *et al.* 2013). In a study that measured the change in patient experience over time, the perceived helpfulness of office staff improved; however, across a 15-month timeframe, overall patient experience with office staff did not improve (Kern *et al.* 2013).

Care coordination and integration

Current evidence indicates that the PCMH may improve care coordination, although the results are mixed. Several studies reported an improvement in the patient experience of care coordination in PCMHs (Reid *et al.* 2009, 2010; Maeng *et al.* 2013; Schmidt *et al.* 2013; Carrillo *et al.* 2014; Hall *et al.* 2014). However, it is worth noting that two of these studies did not use validated survey tools.

In contrast, five other studies identified no improvement in patient satisfaction with care coordination in the PCMH model (Jaén *et al.* 2010a; Nutting *et al.* 2010; Kern *et al.* 2013; Heyworth *et al.* 2014; Reddy *et al.* 2015). There was no improvement for the patient experience of follow up of test results in the PCMH following implementation (Kern *et al.* 2013) or when compared with a non-PCMH site (Maeng *et al.* 2013).

For studies that described patient experience, one study reported no patient concern relating to care coordination in the PCMH (Aysola *et al.* 2015), whereas other studies had mixed results for care coordination (Fix *et al.* 2014; Wagner *et al.* 2015). Patients reported very positive experiences in the PCMH model for provision of reminders and administration (87 and 93.7%

agreement) (Cook *et al.* 2015, 2016) and for support provided by health navigators (Janiszewski *et al.* 2015). A more moderate level of positive experience was reported for test follow up (83.9 and 78.6% agreement) (Solberg *et al.* 2011; Cook *et al.* 2016). Patients with chronic conditions that required more than three visits per year reported better coordination and service experience than patients who had fewer visits (Cook *et al.* 2016).

Access to care

Accessing service in the Medical Home is a priority for patients (Janiszewski *et al.* 2015) and there was some evidence to suggest that the PCMH model can improve patient access to care. Along with care coordination, access to care was the most commonly investigated attribute of the PCMH model across the range of studies included in this review (Table 2). Kern *et al.* (2013) observed that access to care had the least patient satisfaction at baseline and the most potential for improvement under the PCMH model.

A range of studies reported improvement in patient perceived access to care in the PCMH (Reid *et al.* 2009, 2010; Solberg *et al.* 2011; Fishman *et al.* 2012; Christensen *et al.* 2013; Kern *et al.* 2013; Schmidt *et al.* 2013; Carrillo *et al.* 2014; Hall *et al.* 2014; Jubelt *et al.* 2014). Specific areas of improvement were: ease of appointment scheduling; access to routine appointments; ability to obtain urgent appointments; and, reduced in-office waiting time. In the Group Health studies, better access to care was observed at 12 months (Reid *et al.* 2009), with continuing improvement in access to care at 24 months (Reid *et al.* 2010). This is in direct contrast with the patient–provider relationship model attribute, which in these studies, was shown to improve, albeit at a diminishing rate over time. Another study reported overall positive ratings (63%) for patient experience in accessing care across 26 safety-net clinics. Safety-net clinics deliver care to vulnerable populations, and there was a positive association for increased access to care to small- and medium-sized clinics when compared with larger clinic sites (Schmidt *et al.* 2013).

Although a range of studies demonstrated that the PCMH care model can enhance patient access to care, there were also a collection of studies that found no significant improvement (Jaén *et al.* 2010a; Nutting *et al.* 2010; Solberg *et al.* 2011; Maeng *et al.* 2013; Schmidt *et al.* 2013; Heyworth *et al.* 2014; Aysola *et al.*

2015; Reddy *et al.* 2015). Two studies of PCMHs in Florida using the same cohort reported limited access to care, both in and out of hours (Cook *et al.* 2015, 2016). Patients reported poor satisfaction for in-clinic waiting time (Day *et al.* 2013); getting an appointment (Kennedy *et al.* 2013, 2015); and no improvement in patient satisfaction for post-appointment access to care in the Medical Home (Solberg *et al.* 2011). Patients provided mixed results for timely access to care in the Veterans Woman’s PCMH (Wagner *et al.* 2015).

Descriptive studies examined a range of characteristics related to access to care in the PCMH. Access to care was an important component of improving patient satisfaction and patient perception of care quality (Lebrun-Harris *et al.* 2013). Patients identified that improvements in appointment scheduling and reduced in-clinic wait time would improve their experience in the PCMH model (Kennedy *et al.* 2013, 2015).

Patient engagement, activation and shared decision-making

There was limited investigation into the patient engagement, activation and shared decision-making model attribute. A military population study that compared PCMH with non-PCMH sites found a higher level of patient activation in the PCMH (Christensen *et al.* 2013). The Group Health PCMH evaluation identified improvements in patient activation, involvement and goal setting at 12 months (Reid *et al.* 2009). At 24 months, the improvement continued for patient activation and goal setting (Reid *et al.* 2010), and although patient involvement was still improving, it was at a diminishing rate (Reid *et al.* 2010). Senior patients in the Group Health’s PCMH study reported an improved experience with shared decision-making, when compared with controls (Fishman *et al.* 2012).

By contrast, most patients in 24 safety-net clinics did not identify that patient activation improved under the PCMH care model; however, for the cohort of patients experiencing the poorest level of health, there was an association between an increased uptake of the PCMH model and perceived clinic support for patient activation (Nocon *et al.* 2014). This result is important as it signals the potential for the PCMH model to promote patient activation in underserved minority groups.

Table 2. Investigation of Patient-Centered Medical Home (PCMH) model attributes, by study type

Data are presented as *n* (%)

PCMH model attribute	(i) Patient–provider relationship	(ii) Patient–practice relationship	(iii) Care-coordination and integration	(iv) Access to care	(v) Patient engagement
Quantitative studies (<i>n</i> = 23) ^A					
Studies that investigated attribute	15 (65%)	10 (43%)	16 (70%)	17 (74%)	10 (43%)
Of which:					
Demonstrated improvement	6	1	4	6	2
Demonstrated no improvement	4	3	4	4	0
Qualitative studies (<i>n</i> = 8)					
Studies that investigated attribute	6 (75%)	5 (63%)	8 (100%)	7 (88%)	5 (63%)
Mixed method studies (<i>n</i> = 2)					
Studies that investigated attribute	2 (100%)	1 (50%)	2 (100%)	2 (100%)	1 (50%)
Of which:					
Demonstrated improvement	1	1	1	1	0

^ATwenty-nine studies identified using only twenty-three separate datasets.

Aspects of patient activation were explored in a survey of patients enrolled in five Florida PCMHs, and a moderate level of positive experience was described for patient goal setting. Very few patients, however, reported that they received recommendations on education to improve their own health (23.6%) (Cook *et al.* 2015). Patients were satisfied with their opportunities for shared decision-making in the Veterans Woman's PCMH (Wagner *et al.* 2015). In a qualitative investigation, most participants identified the importance of a supportive patient–doctor relationship to promote shared decision-making (Aysola *et al.* 2015).

Discussion

Overall, this review found mixed evidence that the PCMH model improves adult patient-reported experience across the five attributes described in the 'Joint Principles of the Patient-Centered Medical Home' (American Academy of Family Physicians 2008). The importance of the primary patient–physician relationship was supported, but the extent to which PCMH implementation affects this relationship is unclear. Evidence suggests that some aspects of care coordination and access may improve for patients in the PCMH. Results for all model attributes are limited by the scope of existing evidence, with the patient–practice relationship and patient engagement, activation and shared decision-making attributes being the least investigated.

A lack of discernible effect on patient experience following PCMH implementation may be attributable to the model structure. Some approaches, such as improvements in care coordination, are in the background to service delivery. These strategies may not directly affect patient's perceptions of their experience of care. Further, patients who currently utilise practices with high levels of service delivery may not be notably affected by changes resulting from PCMH implementation (Maeng *et al.* 2013). This observation has the potential to affect patient experience evaluation of the Health Care Home, as practice site participation is voluntary, indicating a willingness by the practice to participate in strategies that aim to improve quality of service.

This review was conducted using a structured framework reflecting a leading methodological approach; a comprehensive search strategy was used and references were checked in the identified literature. Given, however, that 'patient satisfaction' and 'patient experience' are terms not clearly defined, there is potential for literature to exist and not have been included in this review. Similarly, although the search strategy for the 'Patient-Centered Medical Home' was detailed, there is the potential for derivatives of the terminology to have been missed.

Research that examines the experience of patients as they interact with healthcare services is difficult to assess with consistency. The measurement of patient experience is subject to potential bias, as it is based on a perception of care not an objective measure of care delivery, generating ongoing debate on ways to measure patient experience (Berkowitz 2016). Further, our study found there was an absence of quantity and rigor when evaluating the patient experience in the PCMH. A significant portion of quantitative studies used descriptive, single-measure designs generating commentary, but without the

ability to determine the effect of model implementation. Identifying a paucity of investigation into patient experience in the PCMH is consistent with previous studies (Nocon *et al.* 2014; Aysola *et al.* 2015), although this is the first review to specifically quantify the evidence for individual PCMH model attributes.

Using validated measuring tools enables comparison across populations and within populations and has the potential to promote consistency in evaluation. In Australia, the validated Patient Partnership in Care (PPiC) tool (Powell *et al.* 2009), which incorporates patient-reported experience and outcome, is indicated to evaluate trials of the Health Care Home. Examining patient experience within the Australian primary healthcare context is challenged, however, by a lack of publicly available survey instruments, the limited publication of survey responses and a corresponding absence of independent review (Gardner *et al.* 2016). Australian policymakers have the opportunity to learn from international experience. In the United States, patient experience is measured as part of the quality improvement cycle of PCMH accreditation (Quigley *et al.* 2015). A standard survey tool used to measure patient experience is the freely available Consumer Assessment of Healthcare Providers and Systems (CAHPS) instrument, which includes a subset of PCMH-specific questions (Agency for Healthcare Research and Quality 2017). Results from the CAHPS surveys are publicly available, enabling practices to benchmark their performance and providing the opportunity for comparative evaluation. In the United Kingdom, patient experience is measured annually by the large-scale GP Survey, with the results being utilised to inform patient decision-making through an easily accessed consumer website (NHS England, see <https://gp-patient.co.uk/practices-search>, accessed 19 July 2017).

It is worth appraising survey measures to ensure they are population-appropriate and that variability between practices is considered. Given that the Health Care Home trial sites include practices in metropolitan, regional and remote communities, as well as Aboriginal Community-Controlled Health Services, there is a need to tailor the evaluation to include a diverse range of patient experiences. Several study authors have espoused the use of mixed-methods approaches to measure patient experience in the Medical Home (Jaén *et al.* 2010b; Goldman *et al.* 2015), combining qualitative investigation, to determine contextual detail from the distinctive patient group, with quantitative investigation, using rigorous, validated survey methods to promote generalisability of results to the wider population.

Conclusion

Improving patient experience has been identified as one of the key reasons to implement the PCMH care model by primary care physicians in the United States. This is the first study to explore the patient-reported evidence for each attribute of the PCMH model.

Our results suggest that the patient experience of their relationship with providers and access to care in the Medical Home were the most commonly investigated model attributes, with some positive findings for implementation of the care model. Patient engagement, activation and shared decision-making, along with patient experience with practice staff and

other team-care health professionals were model attributes that had a significantly limited scope of existing evidence. Generally, all model attributes lacked rigorous, detailed investigation, and an increased research agenda is proposed to determine whether implementation of the Health Care Home model can improve the patient experience of health service.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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