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REVIEW ARTICLE

Culturally and linguistically diverse patients' perspectives and experiences on medicines management in Australia: a systematic review

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Abstract

Background Within the quality use of medicines (QUM)—which entails timely access to, and the rational use of, medicines—medicine safety is a global health priority. In multicultural countries, such as Australia, national medicines policies are focused on achieving QUM, although this is more challenging among their Culturally and Linguistically Diverse (CALD) patients (i.e., those from ethnic minority groups).

Aim This review aimed to identify and explore the specific challenges to achieving QUM, as experienced by CALD patients living in Australia.

Method A systematic literature search was conducted using Web of Science, Scopus, Academic search complete, CINHAL, PubMed and Medline. Qualitative studies describing any aspects of QUM among CALD patients in Australia were included.

Results Major challenges in facilitating QUM among CALD patients in Australia were identified, particularly in relation to the following medicines management pathway steps: difficulties around participation in treatment decision-making alongside deficiencies in information provision about medicines. Furthermore, medication non-adherence was commonly observed and reported. When mapped against the bio-psycho-socio-systems model, the main contributors to the medicine management challenges identified related to "social" and "system" factors, reflecting the current health-system's lack of capacity and resourcing to respond to patients' low health literacy levels, communication and language barriers, and cultural and religious perceptions about medicines.

Conclusion QUM challenges were different among different ethnic groups. This review suggests a need to engage with CALD patients in co-designing culturally appropriate resources and/or interventions to enable the health-system to address the identified barriers to QUM.

Keywords Adverse drug events · Culturally and linguistically diverse patients · Drug utilization · Ethnicity · Medicine-related problems · Medicine management · Medicine safety · Quality use of medicines

Impact statements

- Critical deficiencies in current clinical practice exist that significantly challenge the QUM in ethnoculturally diverse patients, which go beyond basic language barriers.
- Pharmacists must proactively seek to recognise the needs of their local communities, implement strategies to overcome barriers, and ensure that the pharmaceutical care needs of CALD patients are appropriately addressed.
- Health-system managers must provide the capacity and resources to support pharmacists in promoting safe medicine use.

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- Professional organisations and educational institutions must better support the professional development of pharmacists in the context of QUM for CALD patients.
- There is a clear need for collaboration between healthcare researchers, CALD communities and pharmacists to co-design culturally and linguistically appropriate resources and/or interventions that will help to overcome the identified challenges to QUM.

Introduction

The quality use of medicines (QUM) is a global priority and a key objective of national health policies [1]. In Australia National Medicines Policy requires that healthcare providers (HCPs) adhere to the fundamental principles that promote QUM to optimise patient outcomes [2]. These QUM principles include: ensuring that medicine selection is clinically appropriate for the patient's condition/s and needs; using medicines rationally alongside non-pharmacological treatment; and ensuring the safe and effective use of medicines [2]. Alongside these QUM principles, medicines safety is officially recognised as national health priority in Australia [1].

In current international pharmacy practice, there are many challenges to achieving QUM, as evidenced by limited access to essential medicines, improper medicine-taking behaviours and medicine-related problems (MRPs) observed in patients [3–6]. MRPs refer to any adverse issue involving medicines [7], and these may occur at any step along the medicines management pathway (MMP), which includes: decision to treat and prescribe, record medicine order, review of medicine order, issue of medicine, provision of medicine information, distribution and storage of medicine, administration of medicine, monitor for response and transfer of verified information [8]. MRPs are more likely to occur among culturally and linguistically diverse (CALD) patients mainly due to language barriers but also cultural beliefs [3]. CALD populations are defined as individuals born overseas or with parents or ancestors born overseas for whom English is not the primary language spoken at home [9]. High-income countries, such as the USA, the UK and Australia, have been regarded as preferred destinations for migration. Therefore, in such countries, increasing numbers of CALD patients, with unique needs and expectations, trying to navigate the healthcare system [10].

Australia continues to witness a significant increase in migrant and refugee arrivals [11], rapidly diversifying its ethnic fabric, and presenting several challenges in meeting the pressing health needs of its CALD population. Research to date highlights that CALD patients are more likely to face difficulties in navigating health care due to language and communication barriers, low health literacy (HL), limited social support, and the complexity of Australian healthcare system [12, 13]. In addition, cultural rituals influence health beliefs and behaviours, healthcare system utilisation, engagement in decision-making processes, and perceptions about medicines among CALD patients [14].

Although the effectiveness of pharmacotherapy is well recognised, emerging evidence indicates that CALD patients are more vulnerable to adverse medicine events than the mainstream population [12, 13]. However, limited evidence is available on the type of MRPs experienced by CALD patients in Australia.

Aim

This review aimed to fill this knowledge gap by exploring the challenges to achieving QUM among CALD patients in Australia. The specific objectives were to: identify the nature of MRPs experienced by CALD patients along the steps of MMP, and to identify the factors contributing to these challenges from the patients' perspective.

Method

Search strategy

This systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines [15]. In August 2022, the following databases were searched: Web of Science, Scopus, Academic Search Complete, CINHAL (Cumulative Index to Nursing and Allied Health Literature), PubMed and Medline. The search strategy (Supplementary Table 1) utilised search terms that were compiled using a composite of Medical Subject Headings (MeSH) terms plus keywords used in published literature [14, 16]. The bibliographies of the reviewed literature were also searched. The search timeframe was limited to the year 1999 onwards; the apparent start of QUM research among CALD groups in Australia.

Study selection and inclusion criteria

A phenomenological lens was applied to this review to ensure that it focused on the essence of patient experience. Therefore, only patient-focused qualitative studies were included. Studies that explored any aspect of the QUM and/or MRPs among CALD patients in Australia were eligible for inclusion. Those reporting on tangential topics and/or non-CALD populations, or had other study designs, were excluded (Table 1).

The initial search was conducted by two reviewers (RS, BB), who initially screened all titles and abstracts for relevance. The three authors independently reviewed the

Table 1 Inclusion and exclusion criteria of the systematic review

	PICO	Inclusion criteria	Exclusion criteria
P	Population	Ethnic minority patients living in Australia	General population Australian patients
I	Interest	Qualitative studies exploring patients' experiences and perspectives on medicine use, medicine-related problems, and possible causing factors. No restrictions on participants' gender, age, or medical condition	Other aspects not related to medicine use.Non-qualitative studies such as quantitative, mixed-methods or reports. Healthcare providers' or community leaders' perspectives
Co	Context	Any healthcare setting in Australia	Any country other than Australia

remaining studies against the inclusion and exclusion criteria (BB, RS, HH). Any disagreements were resolved by discussion and mutual agreement. Figure 1 outlines the search process and study selection.

Data synthesis and analysis

The data extracted were as follows: author(s), publication year, study design/type, setting and sites, sample/study population and key findings regarding MRPs and contributing factors as perceived by the patients. An inductive, and consensus-building process was used to analyse the data; author agreement on categories and themes was attained through iterative process. To categorise MRPs, data extracted from qualitative studies were synthesised via a meta-ethnographic approach [17], using the steps of the MMP [8]. Concerning contributing factors, the emerging key themes were categorised against one of the four components of the bio-psycho-socio-systems model: biological, psychological, social, and health-system factors [18, 19].

Quality assessment

The methodological quality of the reviewed studies was assessed using the Critical Appraisal Skills Programme (CASP) for qualitative studies to determine the validity of each study's results, the findings, and their value for research [20]. Two authors conducted the quality assessment independently, with any disagreements resolved by consensus-building discussion. Most studies reported 9 of the 10 CASP checklist items (Table 2).

Results

The initial search returned 685 articles; after removal of duplicates, 236 remained. After screening, 41 articles were subsequently eligible for full-text review. Finally, 17 articles were included in this review, collectively reporting the experiences of participants recruited from a wide range of ethnic communities in Australia, including Chinese [21–25], Vietnamese [22, 26, 27], Greek [21, 25, 26], Italian [21, 26], Arabic-speaking backgrounds [21, 23, 28–30], Indian [31], African [32] and other various ethnic backgrounds [33–35]. Four studies recruited elderly participants [21, 24, 27, 36], and two recruited refugees [32, 34]. Table 3 describes the characteristics and key findings of the reviewed studies.

Medicine-related problems

Decisions to treat and prescribe

Participants from various ethnic backgrounds reported relatively limited access to treatments, including medicines [22, 23, 28, 32, 34]. In particular, African refugees reported limited access to medicines and pharmacy services [32]. Vietnamese and Chinese patients who were eligible for a pharmacist-led home medicine review (HMR) reported having limited access to this service [22]. In addition, Chinese, Vietnamese and Arabic-speaking participants delayed seeking care from HCPs [23, 28].

Participants from some ethnicities were disengaged in making decisions regarding their preferred treatment and, instead, tended to passively follow instructions from their general practitioners (GPs) [25, 33, 36]. Although some CALD patients expressly preferred herbal and complementary medicines as a treatment option over conventional Western medicines [21, 23, 25], there were wide differences in their use patterns across different cultural groups. Arabic-speaking participants used herbal remedies in combination with prescribed conventional medicines or as a first option for minor illnesses [28, 29]. Chinese and Vietnamese participants used traditional therapies routinely as a first-line option to manage their conditions without consulting their physicians [23, 27]. In contrast, Italian participants reported a preference for prescription medicines, preferring medicines to be administered as suppositories and injections over oral formulations as these were perceived to be more effective with faster onset of action [23]. Among Arabic-speaking participants, religious prayers were used to treat illness, especially in the early stages after diagnosis [37].

Medicines sharing with family members was commonly reported among Chinese, Indian and Arabic-speaking participants [23, 25, 29]. Whilst the overuse of some types of

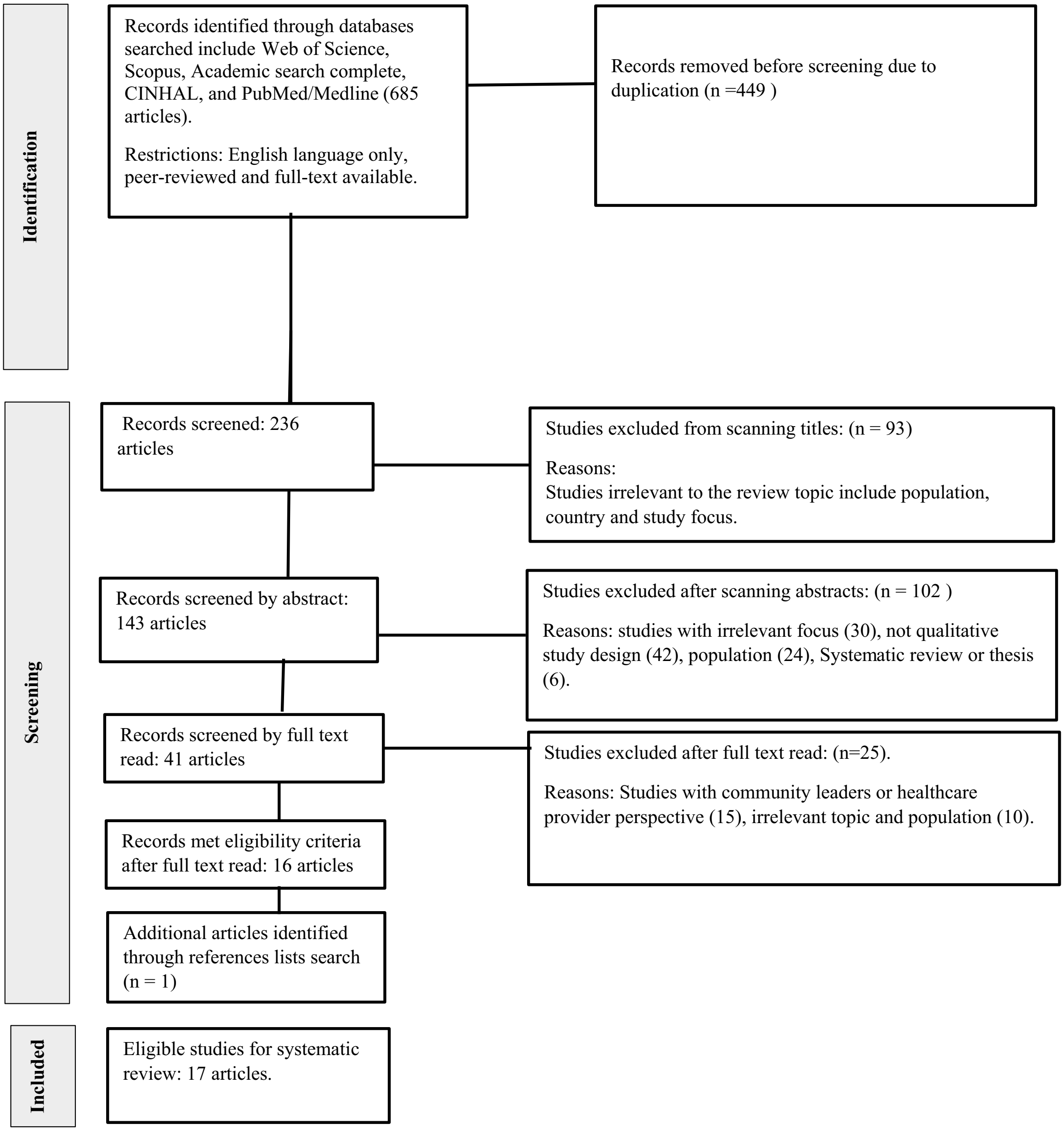


Fig. 1 The Preferred Reporting Items for Systematic reviews and Meta-analysis (PRISMA) Flowchart for study search and selection for systematic review

medicines, namely antibiotics, was described among different cultures, this was not observed among Asian participants who considered antibiotics less appealing [35].

Provision of medicine information

Deficiencies in information regarding medicines and their indications, and related problems stemming from this, were prevalent among participants from all ethnic backgrounds [22, 23, 25, 26, 28, 29, 36]. It was noted that Indian participants who had been initially diagnosed with diabetes in their home country (where they could access information in their language) were more deficient in knowledge about diabetes and antidiabetic medicines than participants who were diagnosed in Australia [31]. Overall, all participants—especially Arabic and Italian participants—who had accessed the Australian healthcare system expressed the need for more information to be provided about their medicines [23, 25].

CALD participants relied on accessible sources of information about their medicines and diseases, such as the internet and social media [25, 35]. CALD participants with low HL reported a reliance on family and friends as informational support [25, 33], whilst others preferred using visual aids to help convey medicine-taking instructions [33]. In

Table 2 Quality assessment of the included studies using the Critical Appraisal Skills Programme (CASP) qualitative study checklist

Study (N = 17)	Validity of the results						The results			Value of the results locally
	Q1:Was there a clear statement of the aims of the research?	Q2:Is a qualitative methodology appropriate?	Q3: Was the research design appropriate to address the aims of the research?	Q4: Was the recruitment strategy appropriate to the aims of the research?	Q5: Were the data collected in a way that addressed the research issue?	Q6: Has the relationship between researcher and participants been adequately considered?	Q7: Have ethical issues been taken into consideration?	Q8: Was the data analysis sufficiently rigorous?	Q9: Is there a clear statement of findings?	Q10: How valuable is the research?
Alzubaidi et al. [29]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
El Samman and Chaar [36]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bolton et al. [23]	✓	✓	✓	✓	✓	?	?	✓	✓	✓
Alzayer et al. [28]	✓	✓	✓	✓	✓	?	✓	✓	✓	✓
Almansour et al. [30]	✓	✓	✓	✓	✓	?	✓	✓	✓	✓
Quine [21]	✓	✓	✓	✓	✓	?	✓	✓	✓	✓
Abdelmessih et al. [38]	✓	✓	✓	✓	✓	?	✓	✓	✓	✓
Bellamy et al. [32]	✓	✓	✓	✓	✓	?	✓	✓	✓	✓
Whittaker et al. [35]	✓	✓	✓	✓	✓	?	✓	✓	✓	✓
Williams et al. [26]	✓	✓	✓	✓	✓	?	✓	✓	✓	✓
Mohammad et al. [33]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
O’Callaghan and Quine [27]	✓	✓	✓	✓	✓	✓	?	✓	✓	✓
White et al. [22]	✓	✓	✓	✓	✓	✓	?	✓	X	✓
Clark et al. [34]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ahmad et al. [31]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Blennerhassett and Hilbers [24]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 2 (continued)

Study (N = 17)	Validity of the results						The results			Value of the results locally
	Q1:Was there a clear statement of the aims of the research?	Q2:Is a qualitative methodology appropriate?	Q3: Was the research design appropriate to address the aims of the research?	Q4: Was the recruitment strategy appropriate to the aims of the research?	Q5: Were the data collected in a way that addressed the research issue?	Q6: Has the relationship between researcher and participants been adequately considered?	Q7: Have ethical issues been taken into consideration?	Q8: Was the data analysis sufficiently rigorous?	Q9: Is there a clear statement of findings?	Q10: How valuable is the research?
Shaw et al. [25]	✓	✓	✓	✓	✓	?	✓	✓	✓	✓

Q1-Q6: Are the results of the study valid

Q7-Q9: What are the results?

Q10: Will the results help locally

✓: Yes, X: No, ?: Can't tell

CASP Critical Appraisal Skills Programme

addition, most participants preferred that written information about their medicines was provided in their language [33, 35, 36].

Administration of medicine (medication adherence)

Five studies reported medication non-adherence as a common MRP, which presented as refusal to initiate prescribed medicines and/or the deliberate discontinuation of prescribed medicines [23, 26, 28, 30, 31]. Some Chinese patients tended to not to have their prescribed medicines dispensed or even stopped the medicine as soon as they were free from symptoms [23]. Similarly, Arabic-speaking participants with asthma reported self-initiated dose reduction and/or cessation of prescribed therapy for fear of side-effects or addiction [28, 31]. Some Indian participants also tended to stop any prescribed medicines after having travelled back to their homeland, reverting back to the use of "Ayurvedic medicines" (traditional herbal medicines in the Indian culture) [31]. Additionally, across some ethnic groups, medication adherence was reduced when observing specific socio-cultural events that affected mealtimes (to which medicine-taking is often aligned), such as during religious rituals, e.g., during Ramadan [30, 31].

Transfer of verified information

Participants across all ethnic groups identified discrepancies in their medicines records, which subsequently adversely impacted the continuity of their care. These discrepancies included different information being recorded in medicines lists across health settings, and was compounded by the reported failure of hospitals to provide discharge summaries to their GPs [24]. This failure resulted in stopping important medicines that were hospital-initiated and/or in unnecessarily continuing temporary medicines [24].

Potential contributing factors

Figure 2 summarises the factors perceived by CALD participants as contributing to MRPs.

Biological factors

Some CALD patients felt that they were at higher risk of experiencing chronic illnesses due to their genetic makeup and lifestyle changes in Australia [38]. CALD participants using polypharmacy were observed to be at increased risk of MRPs [36].

Table 3 Characteristics and key findings of the reviewed studies: the identified medicine-related problems and the potential contributing factors to these problems

Author/ Study type	Study design	Patient population	Study sample, setting and sites	Key Findings- Issues identified	Potential contributing factors
Alzubaidi et al. [29] Exploratory	Qualitative study using semi-structured individual interviews and group interviews	Arabic-speaking patients (ASPs) and English-speaking patients (ESPs)	100 participants: (60 ASPs and 40 ESPs) from diabetes outpatient clinics in two tertiary referral hospitals, six primary care practices and ten community centres	Problems related to administration of medicine (medication non-adherence):ASPs actively changed their medicines independently without informing their HCPs Problems related to the provision of medicine information: ASPs had lower knowledge about prescribed medicines than ESPs	***Social factors:*** *Language and communication barriers* *Cultural and religious factors:* Negative social labelling of diabetes Dependence on faith for treatment *Medicine misconceptions:* Lack of belief in the effectiveness and safety of Western medicines Use of herbal remedies as an alternative treatment *Relationship between patients and healthcare providers (HCPs)* ASPs lacked confidence in non-Arabic-speaking HCPs *Peers and family* influenced ASPs' decisions on using diabetes medicines
El Samman and Chaar [36] Exploratory	Qualitative study using semi-structured focus groups	Older Arabic-speaking patients	Participants from three local community organisations that serviced older Arabic-speaking Australians	Problems with decision to treat and prescribe Participants were not able to make informed decisions Problems related to the provision of medicine information: Lack of information about medicines and diseases, especially among females Problems related to administration of medicine (medication non-adherence)	***Biologic factors:*** Polypharmacy ***Social factors:*** Low English and Arabic literacy levels Inadequate access to interpreters and reliance on family members to act as interpreters Limited availability of medicines and disease information in the Arabic language Ineffective relationship with pharmacists and strong dependence and trust in GPs to provide accurate information - Poor memory and recall of medicines information
Bolton et al. [23] Exploratory	Qualitative study using focus groups and semi-structured interviews	Arabic-speaking and Chinese communities	5 focus groups with ASPs and 3 focus groups with Chinese patients from the community settings	Problems related to administration of medicine (medication non-adherence)	***Social factors:*** *Low effective relationship with pharmacists,* considering the pharmacist as a third key group that played a role in the QUM *Higher expectations from HCPs, particularly* GPs *Language barrier* *The use of herbal medicine* as an effective treatment among Chinese patients to a greater extent than ASPs *Sharing medicines* by Chinese patients ***System-related factors:*** -*Financial barriers*, including the cost of medicines and access to doctors, particularly among Chinese patients

Table 3 (continued)

Author/ Study type	Study design	Patient population	Study sample, setting and sites	Key Findings- Issues identified	Potential contributing factors
Alzayer et al. [28]	A qualitative study using semi-structured interviews	Arabic-speaking patients with asthma or caring for those with asthma	25 participants	Problems related to monitoring for response: Poor asthma control Low asthma awareness Problems related to administration of medicine (medication non-adherence), such as dose reduction and cessation of prescribed therapy, for fear of long-term side effects or addiction Problems related to the provision of medicine information Problems related to decision to treat and prescribe Problems with access to healthcare services	***Social factors:*** Lack of knowledge about the available information resources or translating services Lack of engagement with the healthcare system Unrealistic high expectations from doctors/treatment goals and lower expectations from pharmacists *Stigma of asthma* *Language barriers and low health literacy*: participants preferred to consult Arabic-speaking doctors *Medicine misconceptions:* fear of side effects or addiction, steroid phobia, and beliefs about complementary medicines as "natural alternatives" and "safer" than prescribed medicines ***Psychological factors:*** *Coping style issues* such as fatalism, depression, self-blaming and denial ***System-related factors:*** *Complexity of the healthcare system* *- Underutilisation of interpretation services*
Almansour et al. [30] Exploratory	Qualitative study using semi-structured interviews	Muslim diabetic patients are observing Ramadan	Participants from the community setting	Problems related to administration of medicine (medication non-adherence during Ramadan)	***Social factors:*** Sociocultural pressure for diabetic patients to fast Lack of awareness about the role of pharmacists ***System-related factors:*** -Low awareness among HCPs, including pharmacists, about Muslim patients' religious and cultural needs
Quine [21] Exploratory	A qualitative study using focus groups	Multiethnic groups include Italian, Chinese, Arabic, Greek and Australians	12 focus group sessions (4 Anglo, 3 Italian, 2 Chinese, 2 Arabic, 1 Greek) with older (60+) Australians from community settings	*Medicine-related issues common to older people from the Anglo and ethnic groups:* Issues related to the provision of medicine information Inadequate labelling of medicines, understanding and remembering the doctor's verbal instructions and insufficient warning of possible side effects *Medication concerns and practices distinguished the Anglo group from the ethnic groups:* Problems related to decisions to treat and prescribe Anglo patients did not report taking herbal remedies compared to ethnic patients Sharing medicines with family and friends was reported by the ethnic but not the Anglo groups	***Social factors specific to Arabic participants:*** *Expectation to have more detailed information* and instructions about their medicines *Preference for same-gender doctors*, especially for females ***Social factors specific to ethnic groups compared with non-ethnic patients:*** *Language barrier* *Ineffective relationship with pharmacists and doctors.* The four ethnic groups reported minimal contact with the pharmacist *Medicine misconceptions:* Ethnic groups perceived the cheaper generic brands of drugs as less effective than the more expensive ones ***System-related factors specific to ethnic groups compared with non-ethnic patients:*** *-Lack of awareness of health rights and understanding of the healthcare system*

Table 3 (continued)

Author/ Study type	Study design	Patient population	Study sample, setting and sites	Key Findings- Issues identified	Potential contributing factors
Abdelmessih et al. [38] Exploratory	Qualitative study using semi-structured interviews	Arabic-speaking patients with cardiovascular diseases vs. English-speaking patients	29 participants with CVD; 15 Arabic-speaking and 14 English-speaking from the community settings	Problems related to the provision of medicine information about their health conditions, medicines, and treatment plans	***Social factors:*** *Poor communication* with HCPs *Ineffective relationship with pharmacists and lack of awareness about the role of pharmacists in managing their disease* ***System-related factors:*** ASPs reported that HCPs did not explore all their healthcare issues - poor access to information about medicines and treatment
Bellamy et al. [32] Exploratory	A qualitative study	Resettled African refugees from Somalia, Sudan, the Democratic Republic of Congo, and Liberia	10 African refugees from community settings in Brisbane and Townsville, Queensland, Australia	Problems related to decision to treat and prescribe. decision-making regarding seeking health care	***Social factors:*** *Language barriers* *Lack of professional communication* *Cultural beliefs* which affect healthcare-seeking behaviour ***Psychological factors:*** *-Refugees' expectations of health services and the reality of the Australian health system* ***System-related factors:*** *Health system differences between Australia and their home country* *Difficulty in navigating the Australian health system* *Issues with the interpreting services*
Whittaker et al. [35] Exploratory	A qualitative study using semi-structured interviews	A sample of diverse ethnic communities from 17 countries	31 face-to-face semi-structured interviews: in-patients admitted with an acquired antimicrobial infection in a public hospital (n = 7); five hospital interpreters; and ethnic members of the general community (n = 19) in Melbourne, Australia	Problems related to decision to treat and prescribe Overuse of medicines in some ethnic minorities Problems related to the provision of medicine information: Lack of information about antibiotics, especially in their language Most ethnic community members used the internet and social media to source health information	***Social factors:*** *Medicine misconceptions and wrong beliefs about diseases* Asian participants viewed antibiotics as 'strong' medicines that could potentially disrupt the humoral balance and weaken the body *Travelling abroad, which* sometimes involved the use of medical services Some ethnic community members *imported antibiotics from overseas* ***System-related factors:*** Lack of information in their languages
Williams et al. [26] Exploratory	Qualitative study using phone interviews	A group of culturally and linguistically diverse participants (Greek, Italian or Vietnamese) with diabetes, chronic kidney disease, and cardiovascular disease comorbidities	26 participants from nephrology outpatient clinics of two Australian metropolitan hospitals	Problems related to the provision of medicine information: Lack of knowledge about medicines Problems related to administration of medicine (medication non-adherence)	***Social factors:*** *Medicines misconceptions:* distrust of medicines and concerns about side effects *Poor communication* Patients believed that *culturally sensitive interventions could improve patients' knowledge about medicines* ***Psychological factors:*** *Low self-efficacy* ***System-related factors:*** *Limited access to medication resources*

Table 3 (continued)

Author/ Study type	Study design	Patient population	Study sample, setting and sites	Key Findings- Issues identified	Potential contributing factors
Annim Mohammad et al. [33] Exploratory	Qualitative study using semi-structured interviews	Participants from various ethnicities	31 participants from multiple ethnicities in community settings	Problems related to the provision of medicine information: Lack of awareness amongst the participants concerning their current medicines and the relevant health information Insufficient understanding of their medicine-related instructions ***- Medication non-adherence, unintentional***	***Social factors:*** *Medicine misconceptions*: Perceptions and beliefs of medicines, including concerns for side effects and previous experiences with medicines *Cultural factors* *Language barriers* *Low literacy and health literacy:* participants relied on family members and friends for informational support Trust the doctor to make health decisions Patient cognitive, sensory, and physical abilities, including memory and vision impairment Most participants preferred written information about their medicine and condition in their native language, such as the use of multilingual labels, pictograms Participants relied on their HCPs for information sources Participants used memory aids to ensure they took their medicine correctly - Preference for an HCP from a non-English speaking culture
O'Callaghan and Quine [27] Exploratory	Qualitative study using interviews and focus groups	Older Vietnamese-Australian women	24 Interviews in a community setting in Sydney, Australia	***Problems related to decision to treat and prescribe*** Concern that health professionals do not favour combining western with traditional medicines led some participants to manage their medicines without advice from their doctor	***Social factors:*** *Limited health literacy* - *Cultural factors*, including their long experience of using Chinese and Vietnamese medicine, strongly influenced their perception of medicines problems and their strategies to overcome them
White et al. [22] Exploratory	Qualitative study using semi-structured focus groups	Chinese and Vietnamese patients	2 focus groups with 17 HMR-eligible patients who have never received an HMR in a community setting: one with Chinese and one with Vietnamese respondents (6 Chinese and 11 Vietnamese speakers)	***Problems related to decision to treat and prescribe*** Limited access to the healthcare system ***- Problems related to the provision of medicine information*** and confusion about medicines	***Social factors:*** *Lack of knowledge about the availability of HMR services* ***System-related factors:*** *Difficulties locating a pharmacist who spoke their native language* - The *Chinese patients reported ineffective relationships with their GP* concerning their medicine concerns and preferred to have an HMR without the involvement of their GP

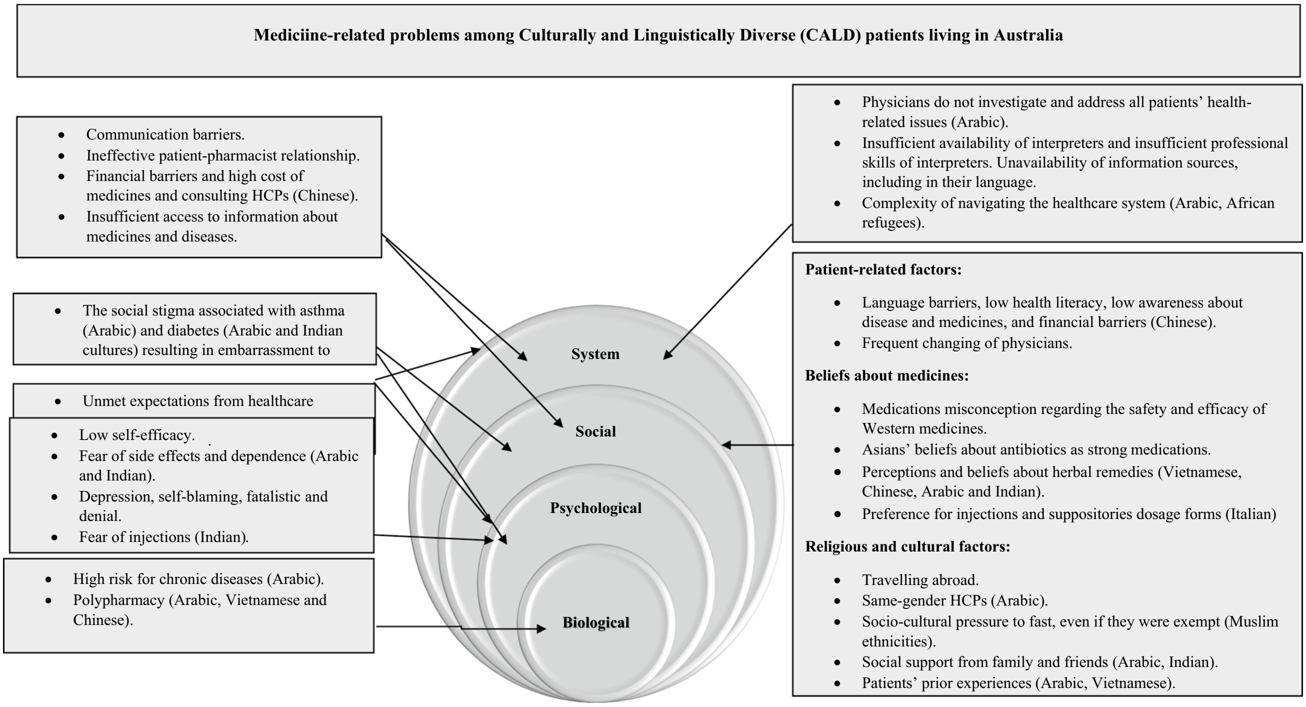
Table 3 (continued)

Author/ Study type	Study design	Patient population	Study sample, setting and sites	Key Findings- Issues identified	Potential contributing factors
Clark et al. [34] Exploratory	qualitative study using focus groups		women refugees from community settings in Australia	***Problems related to decision to treat and prescribe*** Limited access to primary health care and understanding GPs and pharmacists' roles ***Problems related to the provision of medicine information:*** Lack of information on the difference between prescription and non-prescription medicines or how the prescription system works	***Social factors:*** *Language barriers* *Education and literacy barriers* Nepalese participants experienced less difficulty accessing GPs and using interpreters due to years of education in the camp setting *Difficulty understanding illness* ***System-related factors:*** *Inadequate access and use of interpreter services* *- Difficulty understanding the Western healthcare system*
Ahmad et al., [31] Exploratory	A qualitative study by semi-structured interviews		23 Indian migrants from a community setting in Sydney, Australia	***Problems related to decision to treat and prescribe*** Delays in deciding on starting and initiating prescribed antidiabetic medicines, as they chose to start Ayurvedic medicine with or without prescribed medicines Stopping prescribed medicines and starting Ayurvedic medicine based on a recommendation from family members and friends ***Problems related to the provision of medicine information:*** Most participants relied on their GPS as the primary source of information about their medicines Participants who were diagnosed in Australia reported having better knowledge and information about their treatment than those diagnosed in India ***High medication adherence (97.2%)*** Most patients reported high adherence to their medicines Some patients reported unintentional medication non-adherence Some participants reported intentional non-adherence due to a lack of knowledge and motivation to take their medicines	***Social factors:*** *Medicines misconceptions*: Negative beliefs about the safety of medicines *-Patients' prior experiences* The social stigma of diabetes *Role of family members and friends* *Travelling abroad* to home country *Understanding the importance of medications* in controlling blood sugar levels has contributed to initiating medicines *Memory impairment* Patients reported the use of medication administration aids ***Psychological factors:*** *Fear of injections* **-** *Fear of side effects and dependence* due to long-term use of medicines

Table 3 (continued)

Author/ Study type	Study design	Patient population	Study sample, setting and sites	Key Findings- Issues identified	Potential contributing factors
Blennerhassett and Hilbers [24] Exploratory	A qualitative study using focus groups	Patients aged 70 years and over from Greek, Chinese, Russian and English-speaking backgrounds	18 patients from the community and hospital settings	***Problems related to administration of medicine (medication non-adherence)*** Patients were confused with the medication brands they took before hospital admission and after discharge Inappropriate self-medication led to duplication (using multiple medicines from the same drug class) ***Problems related to transfer of verified information (continuity of care)*** Patients reported changing their GP, which led to failure to deliver a discharge summary to their current physician (which led to stopping medicines that were started at the hospital or continuing medicines that was discontinued in the hospital) Medication discrepancies between patients' medical records	***Social factors:*** *-Language and communication barriers* *Social support* from family members Patients *preferred GPs and community pharmacists who spoke their language* The use of dose administration aids facilitated medication adherence ***Psychological factors:*** *Trust in their regular physicians* led to medication non-adherence, as patients continue taking medicines prescribed by their familiar physicians rather than those specified or changed during hospitalisation *Fear of the effect of the medications* ***System-related factors:*** *Inadequate access to interpreters* *Failure to obtain complete medical history leads to missing chronic medicine* *Written information in their preferred language* is included on medicine labels - *Education about the prescribed medicines*, mainly when there were changes
Shaw et al. [25]	Qualitative study using focus groups and semi-structured interviews	Australian migrants with cancer from Arabic, Chinese, or Greek backgrounds and their relatives	73 patients from community-based cancer support groups and three oncology outpatient clinics in Sydney and Melbourne, Australia Patients participated in a focus group (n = 14) or a semi-structured interview (n = 21)	***Problems related to decision to treat and prescribe*** Most participants experienced passive involvement during treatment consultations Some patients showed a preference for active involvement in treatment decision-making ***Problems related to the provision of information:*** Some Participants did not have enough information about their disease and treatment option Some asked for a second expert opinion in Australia and their home country. Others relied on the internet and social media as sources of information	***Social factors:*** *Language and communication barriers* to participation in treatment decisions *Cultural factors* impacted treatment decision-making to a lesser extent than the language barrier Chinese patients preferred the use of Traditional Chinese Medicines Religious and fatality beliefs *Family role and involvement*: Some participants relied on family members as interpreters ASPs preferred to involve the family in treatment decision-making on behalf of patients *Trust physicians to make decisions* about their treatment on their behalf *Participants preferred to receive written information, particularly in their language* ***System-related factors:*** *Limited access to interpreters and lack of professional skills* *Limited access to HCPs who speak their language*

ASPs Arabic-speaking patients, *ESPs* English-speaking patients, *HCP* Healthcare providers, *GPs* General Practitioner, *HMR* Home Medicines Review, an accredited pharmacy service in Australia), *QUM* Quality Use of Medicines



Mediciine-related problems among Culturally and Linguistically Diverse (CALD) patients living in Australia

- Communication barriers.
- Ineffective patient-pharmacist relationship.
- Financial barriers and high cost of medicines and consulting HCPs (Chinese).
- Insufficient access to information about medicines and diseases.

- The social stigma associated with asthma (Arabic) and diabetes (Arabic and Indian cultures) resulting in embarrassment to

- Unmet expectations from healthcare

- Low self-efficacy.
- Fear of side effects and dependence (Arabic and Indian).
- Depression, self-blaming, fatalistic and denial.
- Fear of injections (Indian).

- High risk for chronic diseases (Arabic).
- Polypharmacy (Arabic, Vietnamese and Chinese).

- Physicians do not investigate and address all patients' health-related issues (Arabic).
- Insufficient availability of interpreters and insufficient professional skills of interpreters. Unavailability of information sources, including in their language.
- Complexity of navigating the healthcare system (Arabic, African refugees).

Patient-related factors:

- Language barriers, low health literacy, low awareness about disease and medicines, and financial barriers (Chinese).
- Frequent changing of physicians.

Beliefs about medicines:

- Medications misconception regarding the safety and efficacy of Western medicines.
- Asians' beliefs about antibiotics as strong medications.
- Perceptions and beliefs about herbal remedies (Vietnamese, Chinese, Arabic and Indian).
- Preference for injections and suppositories dosage forms (Italian)

Religious and cultural factors:

- Travelling abroad.
- Same-gender HCPs (Arabic).
- Socio-cultural pressure to fast, even if they were exempt (Muslim ethnicities).
- Social support from family and friends (Arabic, Indian).
- Patients' prior experiences (Arabic, Vietnamese).

Fig. 2 Potential contributing factors to medicine-related problems among Culturally and Linguistically Diverse (CALD) patients based on the bio-psycho-socio-systems model. *Note* the statements are applicable to the specific ethnicities wherever mentioned

Psychological factors

Several psychological factors, such as a lack of confidence in HCPs who did not speak their language [29] and having lower expectations about pharmacists role in their treatment, likely contributed to MRPs among CALD patients [28]. These factors led some CALD participants to frequently change their GPs, resulting in discontinuity of care [24]. Other psychological factors underpinned patients' delay in seeking treatment, including the denial of illness, maintain beliefs in destiny/fate, and feeling overwhelmed by other life problems [28].

Low self-efficacy among participants contributed to medicines mismanagement and non-adherence [26, 33]. Medication non-adherence was compounded by distrust in conventional medicines and concerns about side-effects [26, 31, 33]. Participants from Greek, Russian and Italian communities reportedly only took their antihypertensive medicines if they had a high blood pressure reading, due to fear of side-effects [24].

Social factors

Social factors contributing to MRPs arose from social isolation as a result of being a minority group in Australia, where communication and language barriers resulted in limited exposure to healthcare services [21, 23, 26, 28, 29, 32–34, 38]. Social networks and support were restricted to family and friends, who became their primary information providers and interpreters during physician consultation [25, 36]. Participants often preferred to consult with physicians who spoke their language [25, 28, 33].

Social isolation was compounded by low HL and insufficient knowledge about medicines and the healthcare system among CALD participants [26–28, 33, 34, 36]. Whilst many participants preferred receiving written instructions about their medicines in their native language or pictograms to comprehend medicine instructions [33], they were unaware of the other relevant resources and health services facilities, including freely available health-related information resources and access to interpreting services during HCP consultations [28]. This included a lack of awareness about pharmacy-based services, as highlighted by Vietnamese women who were unaware of the availability of HMR services in Australia [22].

Other socially-embedded factors related to perceptions about the 'patient-HCP' relationship. Overall, these studies identified ineffective relationships between patients and HCPs due to the variations in the perceived HCPs' status across cultures [21, 29, 34, 38]. Arabic-speaking participants passively followed their GPs instructions, strongly depending on GPs as a source of information, and for decision-making about their health [25, 33, 36]. In contrast, Chinese participants preferred to not fully involve their GPs when receiving HMR [22], and instead regarded their herbalists as being vital to promoting QUM [23]. Alongside the low awareness of their role in medicines management [34, 38], pharmacists were reportedly least likely to be consulted by CALD communities [21, 23, 34]..

Other social factors were more specific to their cultures, such as medicine beliefs and misconceptions [21, 23, 26, 28, 29, 31, 33]. Some CALD participants perceived Western medicines as ineffective and unsafe [21, 23, 28, 29]. Asian participants perceived antibiotics as such 'strong' medicines that they could interfere with the body's humoral balance [35], and, therefore, perceived herbal medicines as a more acceptable option [21, 23, 28, 29]. The perceived value of herbal medicines and their contribution to MRPs, varied across the different ethnic groups. Chinese and Vietnamese participants strongly believed in the efficacy of traditional Chinese medicine (TCM) than Western ones due to their prior experiences with TCM [23, 27, 33]. Older Vietnamese women believed that HCPs did not support combining traditional and Western treatments and, therefore, tended to combine these medicines without consulting their physicians—sometimes, abandoning care from their HCP altogether [27]. Arabic-speaking participants believed in herbal medicines to a lesser extent than Chinese participants [23].

Even among CALD participants who accepted using conventional medicines, travelling back to home countries sometimes resulted in using local healthcare services. Some participants recognised this as a potential contributor to antibiotic resistance [35], noting that importing antibiotics from overseas could lead to overuse, duplication, and increased risk of side-effects [35].

Other socio-cultural factors contributed to medication non-adherence and/or the refusal to seek help from HCPs. These included the social stigma associated with certain diseases in some cultures, such as diabetes and asthma in Arabic and Indian Cultures [28, 29, 31]. Religious beliefs such as dependence on faith for treating health problems [29, 30], preferences for treatment by same-sex HCPs [21], and abidance to religious practices, such as fasting during Ramadan, were also identified as contributing to non-adherence. For some Muslim participants, there was low awareness about exemptions for fasting for certain patients, compounded by low awareness about the role of pharmacists in managing medicines during fasting [30].

System-related factors

CALD participants highlighted the apparent limited availability of information about medicines and illnesses in their native languages [25, 36]. Underutilisation of interpreter services was common, mainly due to perceived insufficient availability of such services [25, 28, 32, 34] and/or a lack of trust in interpreters [25, 28].

Other system-related factors were attributed to HCPs' lack of proper communication with CALD patients [38]. Some participants reported that HCPs, including pharmacists, did not seek to understand their medicine-related challenges, such as needing to manage medicines schedules whilst fasting during Ramadan [30]. Some CALD participants also reported difficulties navigating the unfamiliar Australian healthcare system [28, 32]. Specific differences around access to medicines within Australian health-system were also noted by CALD patients: some Chinese participants described the high cost of medicines [21], whereas, Italian participants reported limited availability of European medicines in Australia [23].

Discussion

Main findings

This review has identified a range of problems concerning the QUM among ethnic cohorts in Australia, such as a lack of appropriate medicines information, medication non-adherence and limited access to healthcare facilities [26–28, 33, 34, 36]. These problems were not only due to language and communication barriers, but also due to overall low HL and various cultural factors [21, 23, 26, 28, 29, 32–34, 38].

Strengths and weaknesses

This is the first systematic review to explore and identify CALD patients' experiences with MRPs and their possible contributing factors, aiming to inform future interventions to promote QUM in Australia. This review has several limitations. Some studies comprised mixed ethnocultural participant groups and did not separately report findings for each ethnicity [21, 22, 24, 25]. One study included only patients who could communicate in English [35]. Due to these limitations, our findings may not be transferable to all ethnocultural populations in Australia. Furthermore, the included studies varied in terms of setting, the definition of MRPs, and which aspect of the QUM was targeted. Future research should include a comprehensive investigation of MRPs among each ethnic community.

Interpretation and further research

The most common QUM issues among CALD patients in Australia were insufficient medicine information, medication non-adherence, and limited access to health services [26–28, 33, 34, 36]. This complements the findings of review on CALD patients in the UK, which showed that CALD patients were more likely to experience MRPs compared to the general population [14]. Further, this review has also shown that low

HL was prevalent among CALD communities, as distinct from illiteracy in English, noting that providing culturally-competent care or overcoming language barriers through interpreting services cannot alone address poor HL among CALD patients [39]. Future studies should focus on designing targeted interventions to address low health and medicine literacy among CALD patients [13, 33, 39, 40].

Previous reviews have highlighted that medicines use practices differ among CALD groups [3, 14, 16]. This review reinforces that traditional medicines vary in their importance across different cultures. Some Vietnamese and Chinese patients were reluctant to access health-system and/or used traditional treatments without consulting their physicians for fear of disapproval because they believed that Australian GPs dismissed traditional medicines as effective treatment options [27]. Consistent with the findings from a previous review among Pakistani patients, HCPs should be more aware of CALD patients' cultural beliefs and practices, including traditional medicines use, rather than dismissing or ignoring these beliefs [16]. Self-diagnosis and self-treatment using traditional medicines was the first-line option for most CALD patients in this review. The literature suggests that co-design interventions, that may take into account these contributing factors, might help in any country that intends to promote QUM in these cohorts [41–43]. Although other countries may not have specific definitions and initiatives of QUM, the findings derived from the Australian research could be replicated in other international healthcare systems.

Conclusion

This review offers much-needed evidence into the QUM and MRPs experienced by CALD patients in Australia. The review shed light on the necessity to explore and address medicine-related challenges of each ethnicity separately. The findings of this review have significant implications for clinical practices and future research to involving patients in co-designing culturally appropriate strategies/resources to enhance QUM.

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