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REVIEW ARTICLE

Barriers and facilitators to health-care access by older Chinese migrants in high-income countries: a mixed-methods systematic review

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Abstract

International migrants face barriers when accessing health-care in their destination countries. For older migrants, there are additional difficulties due to their age and associated health conditions. Chinese migrants are an understudied group with culture-specific barriers in addition to those shared with other migrant groups. This review aims to understand the barriers and facilitators to health-care access faced by older Chinese migrants in high-income countries. Literature from MEDLINE, Web of Science, EMBASE, Scopus, CINAHL Plus and ProQuest (1 January 2000 to 6 October 2021) were retrieved. Quantitative, qualitative and mixed-methods studies focusing on older Chinese migrants' access to, utilisation of and satisfaction with health-care services in high-income countries were included. Studies were appraised using checklists from the Joanna Briggs Institute and the Critical Appraisal Skills Programme. Qualitative and quantitative data were extracted and analysed narratively to identify barriers and facilitators to accessing health-care, then applied to Levesque's five-step health-care access journey framework. We included 33 studies in the analysis. Qualitative evidence identified barriers and facilitators to health-care access in four categories: health-care system, social factors, personal factors and health-care interactions. Quantitative studies found that health status and having insurance were positively associated with using non-preventive care, while time of residence and physician's recommendations were positively associated with using preventive care. Factors that influence older Chinese migrants' access to health care include practical barriers (communication, time and cost), social support (family and community), perceptions of health and care needs (beliefs and knowledge) and interactions with health-care professionals (patient-physician trust and support from physicians). Efforts to overcome universal barriers, acknowledgement of cultural contexts, improvements in translation services, and involvement of Chinese families and communities in health-care outreach will benefit this population.

Keywords: access to care; older adults; migration health; Chinese; systematic review

Introduction

With the development of modern transportation and globalisation, international migration has risen. By 2019, the number of international migrants (long-term foreign-born residents) reached 270 million worldwide (International Organization for Migration, 2019). International migrants are subject to multi-dimensional barriers in accessing health-care in their destination countries which can adversely impact their health (Legido-Quigley *et al.*, 2019), including barriers shared across migrant and local communities (such as low health literacy and socio-economic disadvantage), and more migrant-specific factors such as entitlement to care, language barriers, discrimination, social segregation and lack of information (Jayaweera, 2010; Ahmed *et al.*, 2016; Kristiansen *et al.*, 2016). Health-care barriers lead to delayed care, underuse of primary care services and preventive medicine, and overuse of emergency services (Lebano *et al.*, 2020). It is important to understand what influences migrants' access to health-care in high-income countries which are favoured by migration influx (International Organization for Migration, 2019).

Compared to other age groups, timely access to health-care is particularly important for older migrants because they are at a greater risk of suffering from comorbidities, geriatric conditions and chronic conditions (World Health Organization, 2022). Additionally, these conditions may further hinder access to health-care by limiting physical and cognitive function. An analysis of literature surrounding older migrants' experiences found that the conflict between traditional beliefs and the environment, such as the conceptualisations of health-care, health literacy and language barriers, intertwine to affect their access to health-care services (Arora *et al.*, 2018). In addition, more practical and universal barriers such as lack of financial and information resources, declining mobility, transportation and limited service capacity also affect older migrants (Wang *et al.*, 2019).

China is the third largest country of origin for international migrants (International Organization for Migration, 2019). The 2021 census in the United Kingdom (UK) recorded 445,000 foreign-born Chinese residents in England and Wales (Office for National Statistics, 2022); in the United States of America (USA), it is estimated that there were 3 million foreign-born Chinese Americans in 2019 (Budiman, 2021). Chinese migrants show a unique pattern of migration closely linked to the economic and political landscape in east and south-east Asia, *e.g.* many migrated from Hong Kong to the UK in 1960s and 1970s due to Hong Kong being a British colony and its rapid urbanisation (Baker, 1995), while the economic reform in mainland China after the 1980s opened up the possibility of migration that did not exist before for mainlanders (Lau-Clayton, 2014). Chinese people also share cultural beliefs and values distinct from other ethnic groups, such as collectivism and filial piety, which may impact the conceptualisation of health and responsibilities.

Although a migrant population with unique features, it is hard to specifically compare the health status or health-related behaviours of older Chinese migrants with the general population, as this group is often aggregated with other age groups, ethnicities and non-migrants in population-level surveys. The Public Health Outcomes Framework in England, from 2012 to 2017, reported lower than average

health-related quality of life score for people aged 65 and older among Chinese people (UK Government, 2023). Compared to overall population results, a lower proportion of Chinese people aged over 55 reported having their needs fully met at their last general practitioner (GP) appointment in England's GP Patient Survey in 2023. In terms of overall satisfaction with primary care, older Chinese people reported less 'very good', 'fairly poor' or 'very poor' experiences; and more 'fairly good' or 'neither good nor poor' compared to the overall scores. The results are similar to those reported by other Asian ethnic groups (Indian, Pakistani, Bangladeshi and other Asian), but less satisfactory than answers from African and Caribbean backgrounds (Ipsos MORI, 2023). These data show that older Chinese migrants may be experiencing different levels of access and satisfaction to health-care services compared to average levels and to other ethnic groups; it is important to explore the situation and the reasons specifically to ensure equitable care for this population. While there have been reviews on health-care access barriers across ethno-cultural migrant populations (Berchet and Jusot, 2012; Ahmed *et al.*, 2016; Sarría-Santamera *et al.*, 2016; Liem *et al.*, 2021), none have specifically focused on the older Chinese population.

Health-care access has been conceptualised and defined in different ways. Levesque *et al.* (2013: 8) proposed that a person-centred definition for health-care access is 'the opportunity to identify healthcare needs, to seek healthcare services, to reach, to obtain or use healthcare services and to actually have the need for services fulfilled'. This pathway is influenced by both service and user characteristics. The service needs to have approachability, acceptability, availability, affordability and appropriateness; and the user needs the five abilities to perceive, seek, reach, pay for and engage with health services (Figure 1) (Levesque *et al.*, 2013). Effective health-care access is a result of interaction between providers' and users' characteristics.

The aim of this review is to analyse qualitative and quantitative literature to understand the barriers and facilitators to health-care access experienced by older Chinese migrants in high-income countries, using Levesque's health-care access framework. By focusing on a specific group, this review provides context and ethnicity-specific findings and recommendations for improving health-care access by Chinese migrants in high-income countries.

Method

A systematic review of quantitative and qualitative studies was carried out; the protocol was registered online (PROSPERO ID: CRD42021283501) (Guo *et al.*, 2021). Ethical approval was not required for this review; to ensure an ethical study, the authors reported on the methods and results accurately.

Search strategy

Literature was obtained from MEDLINE (Ovid version), Web of Science (all databases), EMBASE, Scopus, CINAHL Plus and ProQuest (ProQuest Central, Social Science Premium Collection and ProQuest Dissertations & Theses Global) with a structured search strategy. Searches were done on 6 October 2021; since trends in international migration have changed rapidly in the past two decades, only

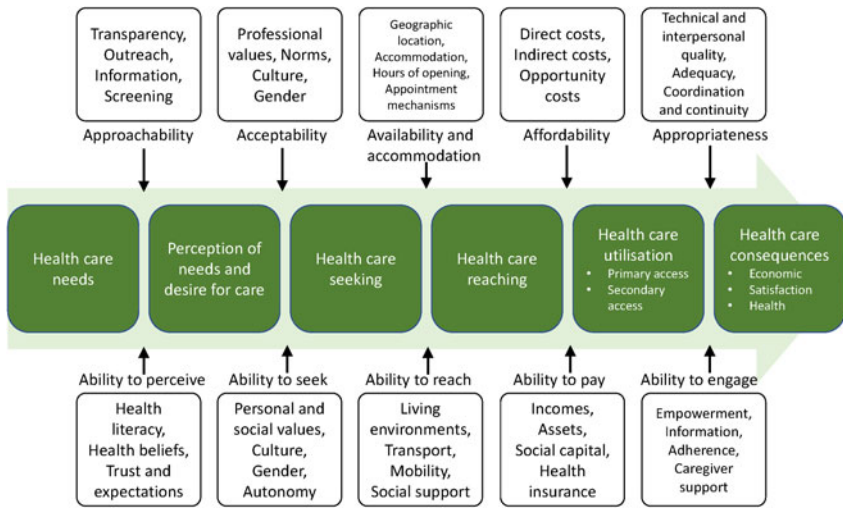


Figure 1. Levesque's framework of health-care access journey (Levesque *et al.*, 2013).

results after 1 January 2000 were extracted to retrieve the most relevant studies. Articles published in English from any high-income country were included.

The search strategy combined search terms in six fields: migrant population, Chinese, older people, access, health-care and health-care outcomes to form search strings; details are presented in Table S1 in the online supplementary material. Searches were carried out in the title, abstract and keyword fields, or title and abstract fields if keywords were not available. Controlled vocabulary terms were used to search MEDLINE, EMBASE and CINAHL Plus; these terms are listed in Table S2 in the online supplementary material. This search strategy was built with the help of a librarian. Citation tracking of included studies was performed on Web of Science after the second round of screening to retrieve additional references.

Screening

Titles, abstracts and full texts were screened using Rayyan (Ouzzani *et al.*, 2016), based on comprehensive screening criteria listed in Table 1 to identify studies which reported on factors associated with health-care access and utilisation by older Chinese migrants in high-income countries. A second reviewer carried out 10 per cent of screening independently. The two reviewers agreed on 90.5 per cent of results for title and abstract screening and 85.2 per cent for full-text screening; the Cohen's kappa was 0.51 and 0.53, respectively, indicating moderate agreement. Results were discussed for each round and all disagreements were resolved between the two reviewers.

Quality appraisal and data extraction

Studies that passed full-text screening were assessed with the appropriate Joanna Briggs Institute quantitative checklists (depending on study type) or the Critical

Table 1. Screening criteria

Inclusion criteria:
Phenomenon of interest:
<ul style="list-style-type: none"> • Studies about health-care services provided by trained professionals
Types of studies and outcomes:
<ul style="list-style-type: none"> • Qualitative studies on the experiences, views, perceptions and attitudes towards accessing health-care services • Quantitative observational studies in which health-care utilisation and satisfaction, as outcomes, were compared with possible determinants of access • Mixed-method studies, the qualitative and quantitative parts were screened separately as detailed above
Context:
<ul style="list-style-type: none"> • Study participants include international migrants of Chinese ethnicity as health-care users, who are identified by the author as ‘older’ or ‘elderly’ • Studies conducted in high-income countries classified by the World Bank for 2022 fiscal year (World Bank Group, 2021) • Published in year 2000 or after • Full text reported in English
Exclusion criteria:
<ul style="list-style-type: none"> • Full text unavailable; authors were contacted to retrieve a manuscript when possible • Reviews, commentaries and conference abstracts were excluded • Insufficient information to determine inclusion or exclusion; authors were contacted to retrieve more information when possible • Academic misconduct

Appraisal Skills Programme critical appraisal checklist for qualitative studies (Moola *et al.*, 2020; Critical Appraisal Skills Programme, 2022). The qualitative and quantitative parts of mixed-methods studies were appraised separately. Where there was insufficient information for quality assessment, the author was contacted for more information. Studies that showed significant methodological shortcoming or incomprehensible results which made interpretation and analysis impossible were excluded (Kuo and Torres-Gil, 2001; Todd *et al.*, 2011; Simon *et al.*, 2014).

Data were extracted using structured templates developed for this review (see Table S3 in the online supplementary material). The secondary reviewer verified 10 per cent of quality appraisal results and 10 per cent of data extraction results.

Data synthesis

Qualitative and quantitative data were synthesised separately. Qualitative data synthesis took a meta-aggregation approach to avoid out-of-context interpretation of qualitative results from different settings (Joanna Briggs Institute, 2020). Themes from each study were collected and reviewed, alongside the quotes and explanations to support them. Similar themes were combined and categorised. Each category

Andersen's model (phase 4)

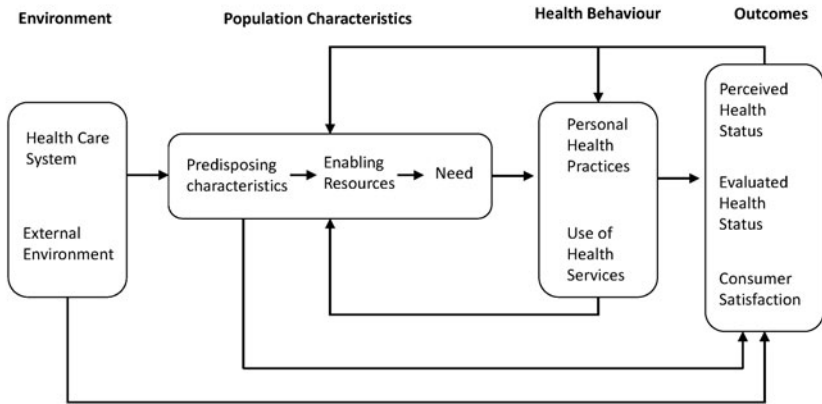


Figure 2. Andersen's behavioural model of health services use (phase 4) (Andersen, 1995).

contains themes with related meanings; categories and themes are presented in the Results section.

Quantitative data were reviewed to collate factors associated with health-care utilisation. Given the various measures used in different studies, the quantitative data were not combinable, and thus were analysed narratively and categorised according to Andersen's behavioural model (Andersen, 1968, 1995), which was adopted by more than half of the selected quantitative studies. This model (Figure 2) depicts the interaction between environment, population characteristics, health behaviours and health-care outcomes. Population characteristics consist of predisposing, enabling and need factors; these factors influence health-care utilisation. Selected studies examined these three groups of factors under the population characteristics category and the health-care system under the environment category.

Qualitative and quantitative results were reviewed after separate synthesis to generate descriptive themes for conclusion; these themes are supported by both qualitative and quantitative evidence. Qualitative and quantitative results relevant to each topic were compared; Table 5 shows the supporting evidence for each descriptive theme and how their concordance or discordance confirm or expand the theme.

Results

The search retrieved a total of 2,012 non-duplicate results; after two rounds of screening and citation tracking, 36 studies were included, 33 after quality assessment (Figure 3). Of the 33 studies, 15 were qualitative studies, 17 were quantitative studies and one was a mixed-method study. All quantitative studies and the quantitative part of the mixed-method study were cross-sectional.

The majority (32) of studies used data from one of four countries: USA (N = 23), Canada (N = 4), UK (N = 4) and Australia (N = 1); one further study used data from both Canada and Australia. Sample size ranged between one and 78 for

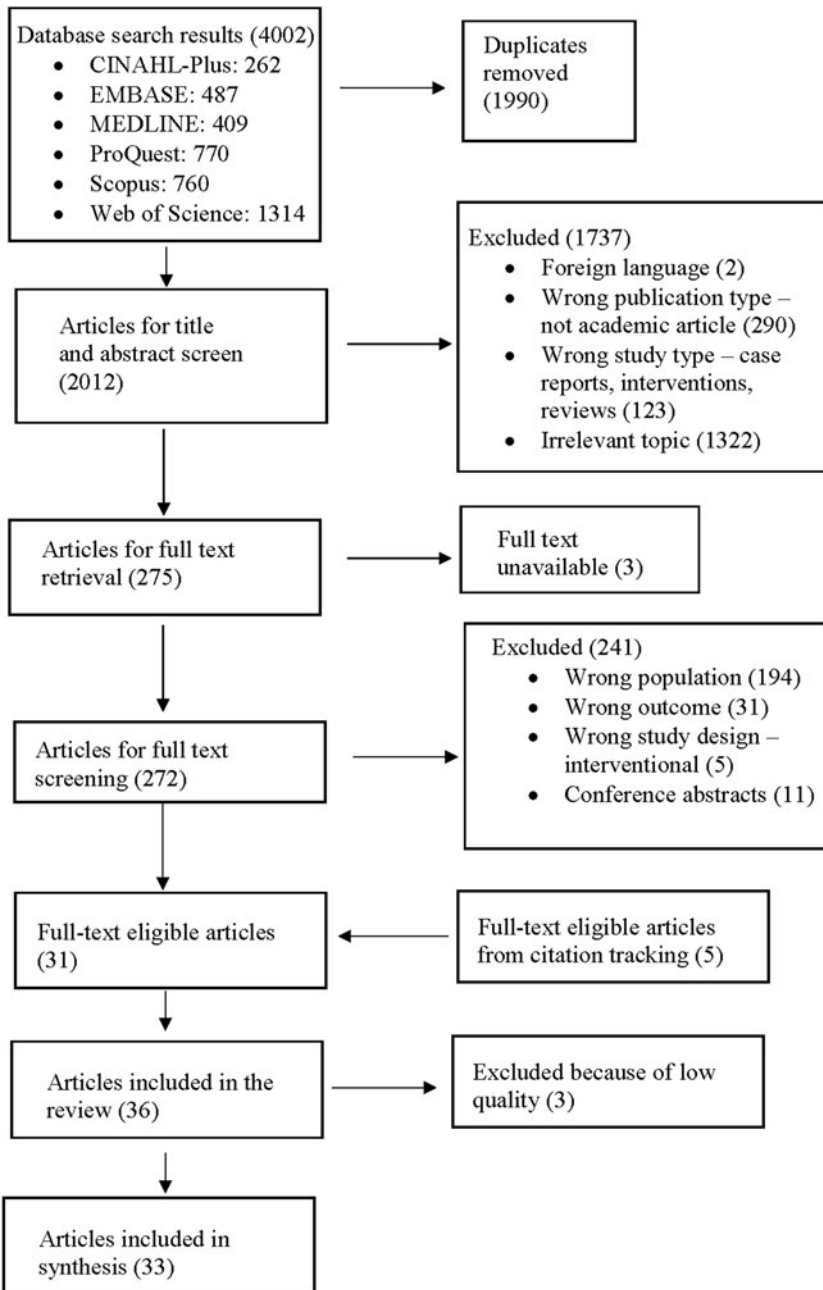


Figure 3. Flowchart of screening process and results.

qualitative studies, and between 100 and 3,159 for quantitative studies. Most studies identified people aged 60 or over as 'older', except for several studies on screening tests which included participants aged 50 or over (Liang *et al.*, 2004; Wang *et al.*,

2006; Todd *et al.*, 2011; Tanaka *et al.*, 2014). Only one study recruited participants aged 45 and over; however, most participants were over 65 in this study, so it remained relevant to the topic (Simon *et al.*, 2017). Two qualitative studies also collected family members' and non-family carers' views alongside those of older Chinese migrants; these data were also extracted to support the themes (Aroian *et al.*, 2005; Koehn *et al.*, 2012).

Services and health conditions covered by selected studies include non-specified care (hospitalisation, physician visits and emergency department visits for any reason), cancer screening, mental health care, hepatitis B screening, dental care, immunisation, home medicines review, dementia, falling and cardiovascular diseases. Characteristics of included studies are presented in Table 2.

Quality of selected studies

Details of quality appraisal are presented in Tables S4 and S5 in the online supplementary material. The qualitative studies were generally of good quality, with no study excluded on the basis of quality, but most lacked discussion of reflexivity.

The quantitative studies were also generally of good quality. Three studies were excluded due to serious concerns (Kuo and Torres-Gil, 2001; Todd *et al.*, 2011; Simon *et al.*, 2014). One was excluded because it lacked detail on the data collection tool and the author avoided discussing counter-intuitive results (such as having insurance being associated with a 10-fold decrease in the likelihood of recent physician visits), suggesting there may have been a flaw in the analysis (Kuo and Torres-Gil, 2001). One study was excluded because the numerical results showed impossible values (Todd *et al.*, 2011). The final excluded study did not consider confounding; only conducting bivariate analysis (Simon *et al.*, 2014). All quantitative studies were subject to recall bias due to measuring utilisation outcomes through participant self-report. The risk was higher for less-significant events like physician visits and lower for more-salient events like hospitalisation. Similarly, other self-reported variables such as family relations and adherence to screening guidelines could be biased by social desirability.

Qualitative findings

The qualitative findings identified factors related to health-care access in four categories: health-care systems, social factors, individual factors and health-care interactions. Themes under each category and the references supporting them are presented in Table 3.

In brief, older Chinese migrants are keen to compare the health-care system to that in China and are often frustrated by the referral process, long wait times and high costs that they encounter post-migration. Some older Chinese migrants also use traditional Chinese medicine (TCM) alongside modern medicine, which can lead to misconceptions about the safety and effectiveness of modern medicine.

Social network can play both positive and negative roles in health-care access. Members of older Chinese migrants' social circles, such as family, friends, neighbours and community workers, assist them in getting health-care, while needing

Table 2. Characteristics of selected studies

Study reference	Setting and recruitment source	Sample size ¹	% Female	Mean age	Topics discussed/outcomes measured
Qualitative:					
Chen (2010)	US Pacific West. Community – flyers, posters, snowballing	10	60	78	Healthcare-seeking experiences in the USA
Dong <i>et al.</i> (2011)	USA, Chicago. Service agency in Chinatown	78	53	74.8	Cultural views of healthy ageing; knowledge and barriers to health services; perception of health sciences research
Simon <i>et al.</i> (2017)	USA, Chicago. Community organisations in Chinatown and word-of-mouth	47	100	Not given, 68% >65 years, 32% 46–65	The attitudes towards, barriers and facilitators of breast cancer screening
Liu <i>et al.</i> (2015)	UK, north-west England. Chinese organisations	33	69.7	71	Experiences of interactions with health professionals, usually in primary care; attitudes towards the provision of services in primary care; uptake of the treatment
MacEntee <i>et al.</i> (2012)	Canada and Australia (Vancouver and Melbourne). Posters and community facilitators	50	57	Not given, 67% 65–74 years, 33% 75+ years	Acculturation’s influences on oral health and subsequent service use
Speed <i>et al.</i> (2021)	UK, north-west England. Participants recruited from a Chinatown	28	64.3	70.1	Understanding of cardiovascular disease (CVD) or CVD risk factors; health-related help-seeking behaviours and the facilitators and barriers to help seeking in primary care
Aroian <i>et al.</i> (2005)	USA, Greater Boston Area. Social service agencies in suburb and Chinatown	27	63	78 (median)	Patterns and reasons for health and social service use

(Continued)

Table 2. (Continued.)

Study reference	Setting and recruitment source	Sample size ¹	% Female	Mean age	Topics discussed/outcomes measured
Kong (2018), mixed-methods	USA, California. Social workers at an urban home care agency specialising in the care of older Asian immigrants	24 Chinese and Korean participants	83.3	83.4	Culturally informed perceptions of dementia; barriers/facilitators in accessing dementia-related services
Pang <i>et al.</i> (2003)	USA, Los Angeles. Participants were invited by a contact person at the Chinatown Service Centre in Los Angeles	25	56	72.1	Influences of family cultural values and immigrant experience on health-seeking behaviours; family and friend networks' facilitation or obstruction of the use of professional health care when signs of illness occur
Liang <i>et al.</i> (2004)	USA, Washington DC. Chinese churches and senior centres	54	100	65	Views of health and illness; the potential influences of culture and language on breast cancer screening behaviour
White and Klinner (2012)	Australia, Sydney. Bi-lingual community pharmacists in two suburban areas of Sydney	6	Unknown	Age range: 55–83	Older people's management of medicines without home medicines review; awareness of free home medicines review services; likelihood of accepting and utilising the service in the future
Wood (2016)	UK, north-west England. Ethnographic study conducted in a local community centre	Not specified	Not specified	Not specified	Migration histories; understandings of long-term conditions and the choices about treatment and management; the involvement of family and others in long-term illness management
Chiu (2010)	Canada, Greater Toronto Area. Ethnographic study at the Adult Day Program run by Carefirst Seniors and Community Services Association	18	88.9	81	Emotions and experience during and after a fall; the roles of cultural and immigrant status factors in affecting how older Chinese immigrants respond to falling

Suen (2016)	Canada, Greater Toronto Area. Community leaders, poster and word-of-mouth. One co-participant	1	0	Not specified, participant in their 60s	Experience of depression and using mental health support
Liu <i>et al.</i> (2017)	UK, north-east England. Chinese community organisations, churches, luncheon clubs, sheltered housing organisations, key support providers	44	59	73	The strategies and experiences of older Chinese immigrants accessing formal care services
Koehn <i>et al.</i> (2012)	Canada, Greater Vancouver. Chinese Resource Centre of the Alzheimer's Society of British Columbia	10	20	Age range: 72–86	The pathway to a diagnosis of dementia; the emotions in dealing with a diagnosis of dementia
Quantitative (all quantitative studies are cross-sectional):					
Hong (2015)	USA, California. Secondary analysis of California Health Interview Survey (data from 2009, 2011–2012, 2013)	885	58	70.82 (median)	<i>Mental health care use</i> : whether used general practice or specialised care for mental problems in the past 12 months <i>Mental health care use frequency</i> : number of visits in the past 12 months
Hei <i>et al.</i> (2019)	USA, Greater Chicago Area. Secondary analysis of PINE. Participants were recruited from community organisations	3,159	58	72.8	<i>Mammogram utilisation</i> : whether ever had mammogram <i>Pap test utilisation</i> : whether ever had Papanicolaou (pap) test <i>Blood stool test utilisation</i> : whether ever had blood stool test <i>PSA test utilisation</i> : whether ever had prostate-specific antigen (PSA) test
Wang <i>et al.</i> (2022)	USA, Greater Chicago Area. Secondary analysis of PINE	3,149	58	72.7	<i>Pneumonia vaccination</i> : whether had pneumonia vaccine in the past 5 years <i>Flu vaccination</i> : whether had flu vaccine in the past 12 months <i>Overall immunisation</i> : whether had any of flu, pneumonia or hepatitis B vaccine

(Continued)

Table 2. (Continued.)

Study reference	Setting and recruitment source	Sample size ¹	% Female	Mean age	Topics discussed/outcomes measured
Tang et al. (2001)	US east coast. Senior centre events	100	100	72	<i>Faecal occult blood test utilisation:</i> whether ever had faecal occult blood test <i>Sigmoidoscopy utilisation:</i> whether ever had sigmoidoscopy
Wu et al. (2005)	US east coast. Social service agencies, elder housing, and social and religious institutions	177	62.2	71.8	<i>Dentist visits:</i> whether visited a dentist in the past 12 months
Tang et al. (2000)	US east coast. Senior centres	100	100	71	<i>Mammogram utilisation:</i> whether ever had mammogram <i>Mammogram adherence:</i> whether had mammogram in past 12 months <i>Clinical breast examination (CBE) utilisation:</i> whether ever had CBE <i>CBE adherence:</i> whether had CBE in past 12 months <i>Breast self-examination (BSE) utilisation:</i> whether ever had BSE <i>BSE adherence:</i> whether had at least four BSE in past 6 months
Kang et al. (2016)	USA, Arizona. Participants were recruited through snowballing	116	58.62	75.56	<i>Physician visits:</i> number of physician visits in the past 12 months
Shelley et al. (2011)	USA, New York City. Participants were recruited from senior centres	226	61.9	74.7	<i>Dental care utilisation:</i> whether visited a dentist in the past 12 months

Miltiades and Wu (2008)	USA, Greater Boston Area. Senior centres and senior housing. A second group was recruited in China; data included in the review is drawn from the Boston sample only	177	62.1	71.81	<i>Physician visits</i> : number of physician visits in the past 12 months
Tan (2009)	USA. Secondary analysis of National Health Interview Survey (data from 1998–2006)	618	54.53	73.67	<i>Physician visits</i> : whether visited a physician (including in the emergency room) in the past two weeks <i>Hospitalisation</i> : whether stayed in hospital overnight in the past 12 months
Wang <i>et al.</i> (2018)	USA, Greater Chicago Area. Secondary analysis of PINE	3,157	58	72.8	<i>Hospitalisation</i> : whether had been hospitalised in the past two years <i>Emergency department visits</i> : whether visited the emergency department in the past two years
Kong (2018), mixed-methods	USA, California. Secondary analysis of California Health Interview Survey (data from 2011–2013)	290	57.9	53% 65–74 years, others 75+ years	<i>Hospitalisation</i> : whether stayed in hospital overnight in the past 12 months <i>Physician visits</i> : number of physician visits in the past 12 months <i>Emergency department visits</i> : whether visited the emergency department in the past two years
Tanaka <i>et al.</i> (2014)	USA, Great Washington DC Area. Chinese-speaking primary care physicians' offices	252	53	58.5	<i>Hepatitis B screening</i> : whether ever tested for hepatitis B infection
Wang <i>et al.</i> (2006)	USA, Washington DC. Community centres, senior centres, cultural associations, churches, Chinese websites, newspapers	433	100	64	<i>Colon cancer screening adherence</i> : whether adhering to guidelines for faecal blood tests or sigmoidoscopy or colonoscopy

(Continued)

Table 2. (Continued.)

Study reference	Setting and recruitment source	Sample size ¹	% Female	Mean age	Topics discussed/outcomes measured
Guo et al. (2019)	USA, Greater Chicago Area. Secondary analysis of PINE	3,053	57.95	72.81	<i>Physician visits</i> : number of physician visits in the past two years <i>Hospitalisation</i> : whether had been hospitalised in the past two years
Tieu and Konnert (2014)	Canada. Chinese community organisations, churches, assisted living facilities, community events	149	70	73.92	<i>Mental health care utilisation</i> : whether discussed an emotional or mental health issue with a primary care physician, mental health professional or non-professional in the past year
Kong et al. (2019)	USA, Greater Chicago Area. Secondary analysis of PINE	3,159	58	73	<i>Physician visits</i> : whether visited a physician in the past two years <i>Emergency department visits</i> : whether visited the emergency department in the past two years <i>Hospitalisation</i> : whether had been hospitalised in the past two years
Dong and Liu (2017)	USA, Greater Chicago Area. Secondary analysis of PINE	3,157	58.9	72.8	<i>Mammogram utilisation</i> : whether ever had mammogram <i>Pap test utilisation</i> : whether ever had pap test <i>Blood stool test utilisation</i> : whether ever had blood stool test <i>Colonoscopy utilisation</i> : whether ever had colonoscopy <i>PSA test utilisation</i> : whether ever had PSA test

Notes: 1. Older Chinese group only if the study has multiple groups. USA: United States of America. UK: United Kingdom. PINE: Population Study of Chinese Elderly.

Table 3. Barriers and facilitators to health-care access identified from qualitative studies

Category	Theme	Example quotes	All supporting references
Health-care system-related factors	<i>Different systems:</i> when compared to the health-care system in China, where specialists can be accessed directly and various services are usually provided at the same facility, the referral system often causes confusion and frustration. Some return home to obtain medical care as an alternative	‘In my country, you go to the hospital, schedule all the visits according to your problems, and you can finish all visits on the same day. Here [in the USA] is different. You need to see a family doctor before going to a specialist. Then, it takes at least another two weeks to see the specialist ... I don’t understand why medical care is so inconvenient here’ (Liang <i>et al.</i> , 2004)	Liang <i>et al.</i> (2004); Chen (2010); Dong <i>et al.</i> (2011); MacEntee <i>et al.</i> (2012); White and Klinner (2012); Liu <i>et al.</i> (2015); Speed <i>et al.</i> (2021)
		‘In Shanghai, if I do not feel good, I can go to see the doctor right away. Over here, this appointment thing, you would need two weeks to see your family physician. He has his vacations and you need to wait two weeks. But hey, I am sick...’ (Dong <i>et al.</i> , 2011)	
	<i>Wait time:</i> long wait time is frustrating for older Chinese migrants	‘They will not let you see the doctor right away; it would take a week. Then you need to go to the emergency room’ (Dong <i>et al.</i> , 2011) ‘We waited from 8 a.m. to 8 p.m. [in the emergency room]’ (Pang <i>et al.</i> , 2003)	Pang <i>et al.</i> (2003); Dong <i>et al.</i> (2011)
	<i>Medical pluralism:</i> the use of both traditional Chinese medicine and modern medicine can lead to misconceptions about modern medicine. Some older Chinese migrants choose to alter their prescription without notifying the physician	‘Doctors of modern medicine prescribed a lot of hormonal medicine ... But, TCM asked me not to take hormone. I knew that the symptom could not be controlled without hormone, so I took those still. However, I reduced the dose. Doctor asked me to take three pills a day, but in fact I only took one pill a day’ (Liu <i>et al.</i> , 2015)	Pang <i>et al.</i> (2003); Liang <i>et al.</i> (2004); Aroian <i>et al.</i> (2005); Liu <i>et al.</i> (2015); Wood (2016); Speed <i>et al.</i> (2021)
		‘Some people got better after drinking it (Wu long Tea). I tried myself and it is good. Sometimes I don’t take the diabetic tablet that doctor prescribed for me, I just take Wu	

(Continued)

Table 3. (Continued.)

Category	Theme	Example quotes	All supporting references
		long Tea, and I am all right' (Speed et al., 2021)	
	<i>Financial cost</i> : cost is a barrier to health-care access, especially for those who do not have insurance and for services not covered by insurance	'The elderly lose all their teeth; they do not have money to get a denture; [so] they just give up and don't take care of their mouths' (MacEntee et al., 2012)	Liang et al. (2004); Aroian et al. (2005); Dong et al. (2011); MacEntee et al. (2012); Simon et al. (2017)
		'I don't have an insurance card, so I cannot do screening' (Simon et al., 2017)	
Social factors	<i>Positive role of social relations</i> : good social relationships help older Chinese migrants to overcome barriers such as transportation. It is especially common to seek help from adult children	'I don't know English ... if there is anything, it's always referred to [my son] ... my son would sign documents for me, I don't know English and I don't know how to write' (Liu et al., 2017)	Pang et al. (2003); Liang et al. (2004); Aroian et al. (2005); Chen (2010); Dong et al. (2011); Koehn et al. (2012); MacEntee et al. (2012); Liu et al. (2017); Simon et al. (2017); Kong (2018)
		'My health wasn't great and my son can take care of me ... he is family so it's easier on me. Having my son taking care of me is easier' (Kong, 2018)	
	<i>Negative role of social relations</i> : family members' availability can hinder access to health care. Many older Chinese do not want to burden their children	'We don't need them to help for minor problems, only when it is serious. My son is too busy with his work; I only need his help when things become serious' (Pang et al., 2003)	Pang et al. (2003); Dong et al. (2011); Simon et al. (2017)
		'My son in-law takes me to the hospital. He was born here. My daughter does this too. But sometimes they don't have time, so it's very troublesome' (Simon et al., 2017)	
Individual factors	<i>Health knowledge</i> : lack of health knowledge leads to non-utilisation of preventive care or delayed help seeking	'Although the doctor urged me to go [for a mammogram], I procrastinated year by year and never had one. I am confident that I will not get cancer, so I never need to get any cancer screening examinations' (Liang et al., 2004)	Liang et al. (2004); Aroian et al. (2005); Chiu (2010); Kong (2018)

	<p>'I wouldn't know I broke it (my wrist) ... I didn't know what to do. I thought I was fine. So I rubbed it (the swollen area) with some Tieh-ta Jow' (Chiu, 2010)</p>	
<p><i>Awareness of services:</i> lack of awareness of the health-care system and the services available is a barrier to health-care access</p>	<p>'This is the first time [that we hear about this program (home medicine review)] and ... we do want to be involved and learn something' (White and Klinner, 2012)</p>	<p>Pang <i>et al.</i> (2003); Dong <i>et al.</i> (2011); Koehn <i>et al.</i> (2012); White and Klinner (2012); Simon <i>et al.</i> (2017)</p>
	<p>'I did not know [about support services] because although I was here for nearly three years, I was at home [caring for my child and mother] ... It was after referral that the social worker contacted us themselves and told me that they have these services and visits that could help me... before I am totally blank with these concepts' (Koehn <i>et al.</i>, 2012)</p>	
<p><i>Stigma and embarrassment:</i> disease or procedure-associated stigma hinders access and can be exaggerated by cultural beliefs</p>	<p>'(Why some people don't like screening?) Some people feel it's embarrassing. Some people think they are old. Sometimes the doctor is male and it's very embarrassing' (Simon <i>et al.</i>, 2017)</p>	<p>Liu <i>et al.</i> (2017); Simon <i>et al.</i> (2017)</p>
	<p>'Ugly things [mental health problems] should not go outside the family' (Liu <i>et al.</i>, 2017)</p>	
<p><i>Avoid seeking help from outsiders:</i> cultural preference to rely on self and not seek help from unfamiliar individuals can lead to avoidance or delay of health care</p>	<p>'I used to live in the west end and I saw Dr. XXX – you must know him – for 17 years ... He's my family doctor. The night I fell, it was on a weekend. Dr. XXX was at a banquet. I had to wait until Monday to book an appointment' (Chiu, 2010)</p> <p>'Only when it [illness] gets so bad that it disables or threatens your life; otherwise, we will try to avoid seeing a doctor' (Pang <i>et al.</i>, 2003)</p>	<p>Pang <i>et al.</i> (2003); Aroian <i>et al.</i> (2005); Chiu (2010)</p>

(Continued)

Table 3. (Continued.)

Category	Theme	Example quotes	All supporting references
Health-care interactions	<i>Communication barriers:</i> cultural and linguistic barriers in communication are very common and hinder health-care access	‘The biggest problem is the language barrier. We feel helpless since we do not speak English, and we cannot resolve matters without English. Even if you understand English you would not comprehend their technical terms’ (Simon et al., 2017)	Pang et al. (2003); Liang et al. (2004); Aroian et al. (2005); Chen (2010); Chiu (2010); Dong et al. (2011); Koehn et al. (2012); MacEntee et al. (2012); White and Klinner (2012); Liu et al. (2015); Wood (2016); Liu et al. (2017); Simon et al. (2017); Kong (2018); Speed et al. (2021)
		‘(interviewer asked was the Chinese doctor better?) It’s much more easier to communicate, you know, her illness to the Chinese doctor, and also he’s more concerned, you know, about her. Yeah’ (Wood, 2016)	
		‘When elders ask for public housing, they say: “We have to be in Chinatown.” We tell them: “You can get it quick in suburban areas. They have plenty of space.” But they say: “No, we cannot communicate and have a social life there”’ (Aroian et al., 2005)	
	<i>Patient–physician trust:</i> a trusting relationship with health-care professionals is a facilitator to health-care access. Communication barriers and differences in the systems can lead to misunderstanding and mistrust	‘I told him the tablet made me very dizzy, I could not take it. He deliberately prescribed that one to me. He is a western doctor; I don’t think he understand us (Chinese)’ (Speed et al., 2021)	Liu et al. (2015); Suen (2016); Wood (2016); Speed et al. (2021)
		‘I missed the time to have that injection ... miss the time, so I lost the chance to take that injection ... I thought they should help me to ask whether there is some other clinic to offer the injection and let me to take it this year. But they did nothing and did not help me ... The doctors’ attitudes towards patients need to change. They should focus and be concerned about patients’ (Liu et al., 2015)	

Physician-enabled pathways: when needing services from specialised care, support from primary care physicians is very important

‘Yes, I did it [mammography] once, which was last year. I didn’t want to do it until my doctor asked me to get one’ (Liang *et al.*, 2004)

Liang *et al.* (2004); Suen (2016)
Simon *et al.* (2017)

‘The psychologist was able to conduct psychological testing on me to confirm that I was experiencing severe depression at the time. My family physician’s letter of support was extremely helpful because it allowed me to stay at home and focus on recovering from depression’ (Suen, 2016)

Notes: USA: United States of America. TCM: traditional Chinese medicine.

help from family members could also be a constraint due to availability or feelings of burdening their family.

On an individual level, health knowledge, awareness of services, stigma and the cultural belief to avoid outsiders can impact on care-seeking attitudes and behaviours.

When interacting with physicians, some older Chinese migrants encounter obstacles during communication because of cultural and linguistic differences. A trusting relationship with the physician and the physician's recommendations and support are important for facilitating health-care access.

Quantitative findings

Quantitative studies assessed the utilisation of health care by Chinese migrants and the associated factors. No study measured satisfaction or access and utilisation of any form of digital or remote health-care.

Two types of health care were analysed in quantitative studies: non-preventive care (N = 11, physician visits, hospitalisation, emergency department visits) and preventive care (N = 7, cancer screening, infectious disease screening, immunisation). The factors associated with these two types of utilisations differed and are discussed separately. Summaries of quantitative findings are presented in [Table 4](#).

All quantitative studies except one (Tieu and Konnert, 2014) came from the USA, limiting generalisability. The one quantitative study from Canada examined help-seeking attitudes and mental health-care utilisation; it did not find a significant association (Tieu and Konnert, 2014). Six studies analysed the same dataset, the Population Study of Chinese Elderly in Chicago (PINE study) (Dong and Liu, 2017; Wang *et al.*, 2018; Guo *et al.*, 2019; Hei *et al.*, 2019; Kong *et al.*, 2019; Wang *et al.* 2022) and so had similar findings.

Non-preventive care

Need factors (general health status, activity limitations and mental health) were the most significant predictors of non-preventive care utilisation. Having insurance was also associated with more health-care utilisation, except emergency department visits.

Among predisposing factors, the evidence of any association with physician visits was inconclusive for gender, age and education (Wu *et al.*, 2005; Tan, 2009; Hong, 2015; Kang *et al.*, 2016; Kong, 2018; Guo *et al.*, 2019; Kong *et al.*, 2019), but older age was associated with more emergency department visits (Kong, 2018; Wang *et al.*, 2018; Kong *et al.*, 2019).

Current evidence did not suggest a strong association between time since migration or acculturation with non-preventive care. Four out of ten studies found that longer residence in the USA was associated with more physician visits and hospitalisation events (Wu *et al.*, 2005; Kang *et al.*, 2016; Kong, 2018; Guo *et al.*, 2019), whilst two out of four studies found that a higher level of acculturation was associated with more physician and emergency department visits (Kang *et al.*, 2016; Kong *et al.*, 2019).

Among enabling factors, having health insurance was significantly associated with more health-care utilisation among older Chinese migrants (Miltiades and

Table 4. Significant and non-significant associations from quantitative studies measuring health-care utilisation

Variable	Association with utilisation of services ¹					
	Non-preventive care			Preventive care		
	Physician visits (N = 9)	Hospitalisation (N = 5)	Emergency department visits (N = 3)	Cancer screening (N = 5)	Infectious disease screening (N = 1)	Immunisation (N = 1)
Predisposing factors:						
Gender – female	+ (Kong <i>et al.</i> , 2019) – (Kang <i>et al.</i> , 2016) O (Wu <i>et al.</i> , 2005; Miltiades and Wu, 2008; Tan, 2009; Shelley <i>et al.</i> , 2011; Hong, 2015; Kong, 2018; Guo <i>et al.</i> , 2019)	– (Kong, 2018; Wang <i>et al.</i> , 2018; Kong <i>et al.</i> , 2019) O (Tan, 2009; Guo <i>et al.</i> , 2019)	– (Wang <i>et al.</i> , 2018; Kong <i>et al.</i> , 2019) O (Kong, 2018)	O (Dong and Liu, 2017; Hei <i>et al.</i> , 2019)	O (Tanaka <i>et al.</i> , 2014)	+ (Wang <i>et al.</i> , 2022)
Older age	+ (Guo <i>et al.</i> , 2019; Kong <i>et al.</i> , 2019) – (Hong, 2015; Kong, 2018) O (Wu <i>et al.</i> , 2005; Miltiades and Wu, 2008; Tan, 2009; Shelley <i>et al.</i> , 2011; Kang <i>et al.</i> , 2016)	+ (Guo <i>et al.</i> , 2019; Kong <i>et al.</i> , 2019) O (Kong, 2018; Wang <i>et al.</i> , 2018) * (Tan, 2009): indirectly associated	+ (Kong, 2018; Wang <i>et al.</i> , 2018; Kong <i>et al.</i> , 2019)	– (Dong and Liu, 2017) O (Tang <i>et al.</i> , 2000, 2001; Wang <i>et al.</i> , 2006) * (Hei <i>et al.</i> , 2019): numerical results showed significant association, but the author did not give details of coding or interpretation	O (Tanaka <i>et al.</i> , 2014)	+ (Wang <i>et al.</i> , 2022)

(Continued)

Table 4. (Continued.)

Variable	Association with utilisation of services ¹					
	Non-preventive care			Preventive care		
	Physician visits (N = 9)	Hospitalisation (N = 5)	Emergency department visits (N = 3)	Cancer screening (N = 5)	Infectious disease screening (N = 1)	Immunisation (N = 1)
Higher education	+ (Wu <i>et al.</i> , 2005) O (Miltiades and Wu, 2008; Tan, 2009; Shelley <i>et al.</i> , 2011; Hong, 2015; Kong, 2018; Guo <i>et al.</i> , 2019; Kong <i>et al.</i> , 2019)	+ (Guo <i>et al.</i> , 2019) O (Kong, 2018; Wang <i>et al.</i> , 2018; Kong <i>et al.</i> , 2019) * (Tan, 2009): indirectly associated	+ (Wang <i>et al.</i> , 2018; Kong <i>et al.</i> , 2019) O (Kong, 2018)	+ (Dong and Liu, 2017) O (Tang <i>et al.</i> , 2000, 2001; Wang <i>et al.</i> , 2006) * (Hei <i>et al.</i> , 2019): no detail	O (Tanaka <i>et al.</i> , 2014)	+ (Wang <i>et al.</i> , 2022)
Higher level of acculturation	+ (Kang <i>et al.</i> , 2016) (Kong <i>et al.</i> , 2019) O (Hong, 2015; Guo <i>et al.</i> , 2019)	O (Guo <i>et al.</i> , 2019; Kong <i>et al.</i> , 2019)	+ (Kong <i>et al.</i> , 2019)	+ (Tang <i>et al.</i> , 2000, 2001; Wang <i>et al.</i> , 2006) * (Tang <i>et al.</i> , 2000): certain beliefs are negatively associated with utilisation	* (Tanaka <i>et al.</i> , 2014): self-care beliefs negatively associated with utilisation	Not measured

Longer stay in host country	+ (Wu <i>et al.</i> , 2005; Kang <i>et al.</i> , 2016; Guo <i>et al.</i> , 2019) O (Miltiades and Wu, 2008; Tan, 2009; Shelley <i>et al.</i> , 2011; Hong, 2015; Kong, 2018)	+ (Kong, 2018) O (Tan, 2009; Wang <i>et al.</i> , 2018; Guo <i>et al.</i> , 2019)	O (Kong, 2018; Wang <i>et al.</i> , 2018)	+ (Dong and Liu, 2017) * (Hei <i>et al.</i> , 2019): no detail	– (Tanaka <i>et al.</i> , 2014)	+ (Wang <i>et al.</i> , 2022)
Having citizenship of host country	O (Hong, 2015) * (Tan, 2009): indirectly associated	O (Tan, 2009)	Not measured	Not measured	Not measured	Not measured
Enabling factors:						
Having insurance	+ (Miltiades and Wu, 2008; Tan, 2009; Guo <i>et al.</i> , 2019; Kong <i>et al.</i> , 2019) O (Wu <i>et al.</i> , 2005; Shelley <i>et al.</i> , 2011; Hong, 2015; Kang <i>et al.</i> , 2016; Kong, 2018)	+ (Tan, 2009; Wang <i>et al.</i> , 2018; Guo <i>et al.</i> , 2019; Kong <i>et al.</i> , 2019) O (Kong, 2018)	O (Kong, 2018; Wang <i>et al.</i> , 2018; Kong <i>et al.</i> , 2019)	O (Tang <i>et al.</i> , 2001; Wang <i>et al.</i> , 2006) * (Tang <i>et al.</i> , 2000): perceived insurance coverage positively associated with utilisation	O (Tanaka <i>et al.</i> , 2014)	Not measured

(Continued)

Table 4. (Continued.)

Variable	Association with utilisation of services ¹					
	Non-preventive care			Preventive care		
	Physician visits (N = 9)	Hospitalisation (N = 5)	Emergency department visits (N = 3)	Cancer screening (N = 5)	Infectious disease screening (N = 1)	Immunisation (N = 1)
Higher income	– (Guo <i>et al.</i> , 2019) O (Wu <i>et al.</i> , 2005; Miltiades and Wu, 2008; Tan, 2009; Shelley <i>et al.</i> , 2011; Hong, 2015; Kong <i>et al.</i> , 2019) * (Kong, 2018): employment is negatively associated with physician visits	– (Guo <i>et al.</i> , 2019; Kong <i>et al.</i> , 2019) O (Tan, 2009; Wang <i>et al.</i> , 2018) * (Kong, 2018): employment negatively associated with utilisation	– (Kong <i>et al.</i> , 2019) O (Wang <i>et al.</i> , 2018) * (Kong, 2018): employment negatively associated with utilisation	+ (Dong and Liu, 2017) O (Tang <i>et al.</i> , 2000, 2001; Wang <i>et al.</i> , 2006; Hei <i>et al.</i> , 2019)	O (Tanaka <i>et al.</i> , 2014)	+ (Wang <i>et al.</i> , 2022)
Higher English proficiency	+ (Shelley <i>et al.</i> , 2011; Kang <i>et al.</i> , 2016) O (Wu <i>et al.</i> , 2005; Hong, 2015; Kong, 2018)	O (Kong, 2018)	– (Kong, 2018)	* (Hei <i>et al.</i> , 2019): no detail * (Dong and Liu, 2017): language preference was coded Mandarin or English <i>versus</i> Cantonese or Taishanese	O (Tanaka <i>et al.</i> , 2014)	Not measured
More health knowledge	Not measured	Not measured	Not measured	Not measured	+ (Tanaka <i>et al.</i> , 2014)	Not measured

<p>Positive family relations</p>	<p>– (Guo <i>et al.</i>, 2019) O (Kang <i>et al.</i>, 2016) * (Miltiades and Wu, 2008): family and friend relations are combined and positively associated with utilisation * (Tan, 2009): family size indirectly associated with utilisation * (Kong <i>et al.</i>, 2019): household size negatively associated with utilisation</p>	<p>* (Tan, 2009): marital status negatively associated with utilisation * (Wang <i>et al.</i>, 2018; Kong <i>et al.</i>, 2019): household size negatively associated with utilisation * (Guo <i>et al.</i>, 2019): ‘talking to spouse about medical concerns’ negatively associated with utilisation</p>	<p>* (Wang <i>et al.</i>, 2018; Kong <i>et al.</i>, 2019): household size negatively associated with utilisation</p>	<p>* (Dong and Liu, 2017): mixed results; family support positively associated with mammogram utilisation and negative associated with colonoscopy utilisation; spouse support positively associated with blood stool test</p>	<p>Not measured</p>	<p>Not measured</p>
<p>Positive non-family relations</p>	<p>+ (Wu <i>et al.</i>, 2005) O (Shelley <i>et al.</i>, 2011; Hong, 2015) * (Miltiades and Wu, 2008): family and friend relations are combined and positively associated to physician visits</p>	<p>Not measured</p>	<p>Not measured</p>	<p>+ (Hei <i>et al.</i>, 2019) * (Dong and Liu, 2017): mixed results; friend support positively associated with mammogram utilisation and cervical cancer screening utilisation but negatively associated with colonoscopy utilisation</p>	<p>Not measured</p>	<p>Not measured</p>

(Continued)

Table 4. (Continued.)

Variable	Association with utilisation of services ¹					
	Non-preventive care			Preventive care		
	Physician visits (N = 9)	Hospitalisation (N = 5)	Emergency department visits (N = 3)	Cancer screening (N = 5)	Infectious disease screening (N = 1)	Immunisation (N = 1)
Need factors:						
Better self-reported physical health	– (Miltiades and Wu, 2008; Tan, 2009; Kang <i>et al.</i> , 2016; Kong, 2018; Kong <i>et al.</i> , 2019) O (Wu <i>et al.</i> , 2005; Shelley <i>et al.</i> , 2011)	– (Tan, 2009; Kong, 2018; Wang <i>et al.</i> , 2018; Kong <i>et al.</i> , 2019)	– (Wang <i>et al.</i> , 2018; Kong <i>et al.</i> , 2019) O (Kong, 2018)	– (Dong and Liu, 2017) * (Hei <i>et al.</i> , 2019): no detail * (Wang <i>et al.</i> , 2006): having symptoms was positively associated with colon cancer screening utilisation	Not measured	Not measured
Better self-reported mental health	– (Hong, 2015; Kang <i>et al.</i> , 2016) O (Wu <i>et al.</i> , 2005; Miltiades and Wu, 2008; Shelley <i>et al.</i> , 2011; Kong, 2018; Kong <i>et al.</i> , 2019)	– (Wang <i>et al.</i> , 2018; Kong <i>et al.</i> , 2019) O (Kong, 2018)	– (Kong, 2018; Wang <i>et al.</i> , 2019; Kong <i>et al.</i> , 2019)	Not measured	Not measured	Not measured
Having activity limitations	+ (Tan, 2009; Guo <i>et al.</i> , 2019) O (Wu <i>et al.</i> , 2005; Shelley <i>et al.</i> , 2011; Kong, 2018)	+ (Tan, 2009; Wang <i>et al.</i> , 2018; Guo <i>et al.</i> , 2019) O (Kong, 2018)	+ (Wang <i>et al.</i> , 2018) O (Kong, 2018)	Not measured	Not measured	Not measured

Environmental factors:						
Having physician's recommendation	Not measured	Not measured	Not measured	+ (Tang <i>et al.</i> , 2000, 2001; Wang <i>et al.</i> , 2006) * (Tang <i>et al.</i> , 2000): recency of physical examination positively associated to utilisation * (Tang <i>et al.</i> , 2000): reliance on medical professionals negatively associated with self-examination	+ (Tanaka <i>et al.</i> , 2014)	* (Wang <i>et al.</i> , 2022): trust in physician positively associated with utilisation

Notes: 1. + for positive, – for negative, O for non-significant, * for other (references in parentheses). Wang *et al.* (2018), Guo *et al.* (2019) and Kong *et al.* (2019) used the same data source; Hong (2015) and Kong (2018) used the same data source; Dong and Liu (2017), Hei *et al.* (2019) and Wang *et al.* (2022) used the same data source. Dental care: Wu *et al.* (2005) and Shelley *et al.* (2011); mental health care: Tieu and Konnert (2014) and Hong (2015).

Wu, 2008; Tan, 2009; Wang *et al.*, 2018; Guo *et al.*, 2019; Kong *et al.*, 2019). Kong *et al.* (2019) found insured individuals had eight times the odds of having seen a physician and 1.5 times the odds of being hospitalised in the past two years than uninsured individuals. This association did not apply to dental care or emergency department visits (Wu *et al.*, 2005; Shelley *et al.*, 2011; Wang *et al.*, 2018; Kong *et al.*, 2019).

Language proficiency was only analysed individually in five studies (Wu *et al.*, 2005; Shelley *et al.*, 2011; Hong, 2015; Kang *et al.*, 2016; Kong, 2018). Two studies suggested a positive correlation between higher language proficiency and more physician and dentist visits (Shelley *et al.*, 2011; Kang *et al.*, 2016). Another suggested that lower language proficiency was correlated with more emergency department visits (Kong, 2018).

Family and social relations were measured in only a few studies. Two studies using the PINE data found a negative association between the number of people in a household and more emergency department visits or hospitalisations (Wang *et al.*, 2018; Kong *et al.*, 2019). As for physician visits, one study suggested that a smaller family size was associated with higher likelihood of having health insurance and US citizenship, which were then related to higher health-care utilisation (Tan, 2009). Another study found an association between having negative family relations (reported feeling too much demand from family members and being criticised by family members) and more physician visits (Guo *et al.*, 2019). The evidence suggested older Chinese migrants with less family support tend to use more health-care.

One study, however, found that a higher frequency of seeing friends was associated with more dentist visits (Wu *et al.*, 2005). Another study measured family and non-family relations as one variable, and found it positively correlated with physician visits (Miltiades and Wu, 2008). Two other studies that also measured non-family social relations found no correlation with mental health care and dental care utilisation (Shelley *et al.*, 2011; Hong, 2015). Given the different characteristics of dental care, mental health care and general physical health care, there was not enough data to reach a conclusion about how non-family social support associated with health-care utilisation.

Among need factors, worse self-reported health and the number of chronic conditions were positively associated with all forms of non-preventive health care (Miltiades and Wu, 2008; Tan, 2009; Kang *et al.*, 2016; Kong, 2018; Wang *et al.*, 2018; Kong *et al.*, 2019), except dentist visits (Wu *et al.*, 2005; Shelley *et al.*, 2011). Having activity limitations (often measured by 'do you have difficulty carrying out everyday activities' or similar questions) was also positively related to all forms of health-care utilisation except dental care (Wu *et al.*, 2005; Tan, 2009; Shelley *et al.*, 2011; Wang *et al.*, 2018; Guo *et al.*, 2019). Worse mental health was also associated with higher use of emergency care and hospitalisation (Hong, 2015; Kang *et al.*, 2016; Kong, 2018; Wang *et al.*, 2018; Kong *et al.*, 2019).

Preventive care

Evidence supported that the longer a Chinese migrant had resided in the current country and the more acculturated they had become, the more likely they would

use preventive care. Physician's recommendation was also positively associated with utilisation.

Among predisposing factors, evidence was inconclusive for the association between health-care utilisation and demographics (age and gender) (Wang *et al.*, 2022) or education (Dong and Liu, 2017; Hei *et al.*, 2019; Wang *et al.*, 2022).

All studies examining preventive care explored the relationship between utilisation and time since migration or acculturation (Tang *et al.*, 2000, 2001; Wang *et al.*, 2006; Tanaka *et al.*, 2014; Dong and Liu, 2017; Hei *et al.*, 2019; Wang *et al.*, 2022). A longer time since migration predicted higher utilisation of cancer screening tests and immunisations (Wang *et al.*, 2006; Dong and Liu, 2017; Hei *et al.*, 2019; Wang *et al.*, 2022). More acculturated individuals were also more likely to engage with cancer screening (Tang *et al.*, 2000, 2001; Wang *et al.*, 2006), but there was a significant negative association for hepatitis B screening (Tanaka *et al.*, 2014).

A few studies measured individual factors and their relationship with preventive care utilisation. Tang *et al.* (2000) reported that feelings of embarrassment during examinations or low perceived need for preventive care were negatively associated with breast cancer screening utilisation. Stronger self-care preferences were also associated with never having a hepatitis B test (Tanaka *et al.*, 2014). Wang *et al.* (2006) found that thoughts about getting cancer was a predictor for receiving colon cancer screening; while stronger Eastern cultural views (TCM beliefs and practices, fatalistic views of cancer, negative feelings towards Western medicine) were associated with lower cancer screening utilisation. These results supported that utilisation of preventive care was related to emotions and beliefs about illnesses and health-care.

Unlike non-preventive care, current evidence does not suggest that enabling factors such as insurance play a significant role in preventive care utilisation. Only one (Tang *et al.*, 2000) out of four studies (Tang *et al.*, 2000, 2001; Wang *et al.*, 2006; Tanaka *et al.*, 2014) found a significant association between insurance coverage and the use of preventive care, in this case mammograms. In the only study examining infectious disease (hepatitis B) screening, utilisation was positively correlated with knowledge of the hepatitis B virus (Tanaka *et al.*, 2014).

Having good social relations was positively correlated with getting cancer screening tests, but only for women (Dong and Liu, 2017; Hei *et al.*, 2019). Conversely, for colonoscopy utilisation, there was a negative association with receiving friends' support (Dong and Liu, 2017).

Among all the studies, only one examined need factors as defined in Andersen's model. This study found that those with more comorbidities were more likely to utilise cancer screening tests (Dong and Liu, 2017). Wang *et al.* (2006) also found that being symptomatic was positively associated with receiving colon cancer screening; although at this point, the test was more diagnostic than preventive. There was insufficient evidence to conclude whether preventive care utilisation was associated with need factors.

Physician's recommendation of a test was significantly associated with utilisation, in all studies measuring this (Tang *et al.*, 2000, 2001; Wang *et al.*, 2006; Tanaka *et al.*, 2014). Recency of physician examination and reliance on medical professionals were also predictors of receiving clinical breast cancer screening tests (Tang *et al.*, 2000).

Trust in one's physician (measured by physician's dependability, confidence in physician's knowledge and skills, and confidentiality of information received) was positively associated with immunisation rate for flu and pneumonia (Wang *et al.*, 2022).

Discussion

Synthesis

Synthesising the qualitative and quantitative results demonstrates that the barriers and facilitators that play an important role in health-care access for older Chinese migrants are practical barriers, personal networks, perception of health needs and physicians' support (see Table 5).

The main practical facilitator for non-preventive health-care access in the USA is having insurance. The influence of health-care costs on health-care access and utilisation are likely to be different in countries with health-care free at the point of use such as the UK, and merits further exploration in different contexts. Other practical barriers such as transportation, time constraints and communication were not extensively explored in quantitative studies, but their importance was evident in qualitative studies of participants' experiences.

Personal networks and community make it easier for older Chinese migrants to access information and services, especially preventive care, as shown in both qualitative and quantitative evidence, although the relationship seems to vary with gender and the nature of medical conditions.

Perception of one's own health status determines the ability to perceive needs and seek help; it is influenced by beliefs, knowledge and health status. In qualitative studies, some themes touched on cultured beliefs and values such as preference for self-care (Pang *et al.*, 2003; Aroian *et al.*, 2005; Chiu, 2010) and disease-associated stigma (Liu *et al.*, 2017; Simon *et al.*, 2017). A quantitative study that measured cultured beliefs of medicine and health also found traditional beliefs of medicine were associated with less cancer screening utilisation (Wang *et al.*, 2006). Understandings of the health-care system and awareness of services also determine whether formal health-care is deemed acceptable, appropriate and reachable for older Chinese migrants.

Physician's support is especially important for specialised care and screening since a primary care physician's referral is usually required for these services. Establishing trust between physician and patients is also important for encouraging the use of health-care services and increasing uptake of vaccines.

The qualitative and quantitative evidence diverge on one topic. Qualitative studies highlighted that family members play a significant role in accessing health-care for older Chinese migrants, although needing family's help can be a constraint. On the other hand, quantitative evidence suggests a negative relationship between good family relations or larger family size with health-care utilisation. These differences could reflect the conflict between wanting external care and wanting demonstration of filial piety mentioned in one of the studies (Aroian *et al.*, 2005). It is also possible that older Chinese migrants like to seek help from their personal network before going to professionals (Pang *et al.*, 2003; Aroian *et al.*, 2005; Chiu, 2010); informal options would therefore exhaust quicker when family relations are worse. More

Table 5. Qualitative and quantitative results supporting each integrated descriptive theme

Descriptive Theme	Qualitative findings	Quantitative findings	Inferences
Practical barriers	<ul style="list-style-type: none"> • Cost and insurance coverage directly influence the choice of health-care seeking • Some older Chinese migrants rely on their personal network to solve practical problems such as transportation and language barrier 	<ul style="list-style-type: none"> • Having medical insurance was associated with more non-preventive care utilisation • Higher English proficiency was associated with more physician and dentist visits, while lower proficiency was associated with more emergency department visits 	<i>Confirmed:</i> cost, communication, transportation, time constraints
Personal networks	<ul style="list-style-type: none"> • Friends, family and community play important roles in service access, although needing help from family can become a constraint 	<ul style="list-style-type: none"> • Negative family relations and smaller household sizes were associated with more non-preventive care utilisation 	<i>Discordant:</i> personal networks and community make it easier for older Chinese migrants to access information and services, but the role of family can be complicated and warrants further exploration
Perception of health needs	<ul style="list-style-type: none"> • How one perceives health needs is influenced by medical pluralism, health knowledge, awareness of health-care services, stigma and cultural preferences 	<ul style="list-style-type: none"> • Poorer self-rated health was associated with more non-preventive care utilisation • Emotions and beliefs about diseases were associated with screening frequencies. More disease-related knowledge was associated with higher rates of immunisation • Higher levels of acculturation were associated with more preventive care utilisation. However, as a combined score measuring several different factors, it is hard to conclude which ones are significantly correlated with 	<i>Expanded:</i> the ability to perceive needs and seek help is influenced by beliefs and knowledge about health, and self-perceived health status. Some factors, such as acculturation, should be explored further

(Continued)

Table 5. (Continued.)

Descriptive Theme	Qualitative findings	Quantitative findings	Inferences
Physician's support	<ul style="list-style-type: none"> • Primary care physician's support is important for access to specialised care • A trusting relationship between patient and physician also improves access 	<p>health-care utilisation without further analysis</p> <ul style="list-style-type: none"> • Having physician's recommendation was associated with more screening utilisation • Trust in physician was positively associated with immunisation rates 	<p><i>Confirmed:</i> establishing trust and gaining support from one's physician encourages health-care utilisation</p>

Note: The frustration about different Chinese and Western health-care systems were discussed in some qualitative studies, but it is not clear how it influences health-care utilisation and is not explored by quantitative studies, hence it is not included in the descriptive themes.

studies are needed to explore how family relations shape health-care behaviours for older Chinese migrants.

Acculturation measured by the Suinn-Lew Asian Self-Identity Acculturation Scale, which includes language preferences, identity, friendship choices, behaviours, generational/geographic background and attitude (Suinn *et al.*, 1992), was analysed in some quantitative studies; increasing levels of acculturation was associated with more preventive care utilisation (Tang *et al.*, 2000, 2001). However, since these items were not analysed separately, further exploration is warranted to identify which aspects of acculturation are most significantly related to preventive care utilisation.

Figure 4 summarises these factors within Levesque's framework of health-care access.

Universal and unique factors influencing health-care access by Chinese migrants

Many of the barriers and facilitators for health-care access discussed here, such as language, social networks and cultural differences, have been reported in other migrant groups and are likely to be universal to all migrants (Alzubaidi *et al.*, 2015; Ahmed *et al.*, 2016; Arora *et al.*, 2018). However, the nuances are different for each migrant group and some facilitators and barriers are specific to Chinese migrants and their cultural beliefs.

For example, older migrants from different ethnic groups all express the importance of their children in accessing health care; while providing practical support, receiving care from children was also culturally desirable to symbolise the reciprocity of care between parents and children (Arora *et al.*, 2018). For Chinese migrants, this also relates to the concept of filial piety; that caring for one's parents is a moral obligation that the children owe to their parents. As the results suggested, though family played an important role in access, its interaction with service utilisation was not straightforward. Some Chinese migrants expressed conflicts with accepting help from outside the family (Aroian *et al.*, 2005), and different expectations that can cause issues between first-generation migrants and their children or grandchildren (Baker, 1995; Lane *et al.*, 2010). Different underlying cultural beliefs could lead to different levels of preference for family involvement; understanding the value of filial piety is an important step towards understanding the complex role of family in health-care for Chinese migrants.

Another example is medical pluralism, supported by quantitative and qualitative evidence in this review. Although the use of complementary and alternative medicine, including a wide variety of herbs, supplements and health practices, is observed in other ethnic groups (Ernst, 2000; Wade *et al.*, 2008), TCM has unique impacts on Chinese people as it is still practised in China as an integral part of the health-care system (Park *et al.*, 2012). Many Chinese people hence adopt the belief that TCM and Western medicine are complementary in a specific way; the body and health are also sometimes conceptualised through terms of traditional medicine (Liu *et al.*, 2015; Wood, 2016). However, as TCM is not part of the health-care system in Western countries, some older Chinese migrants have turned to self-medication or private TCM practitioners for additional treatments while receiving treatments of Western medicine (Pang *et al.*, 2003; Wu *et al.*, 2007; Wood, 2016; Speed *et al.*, 2021).

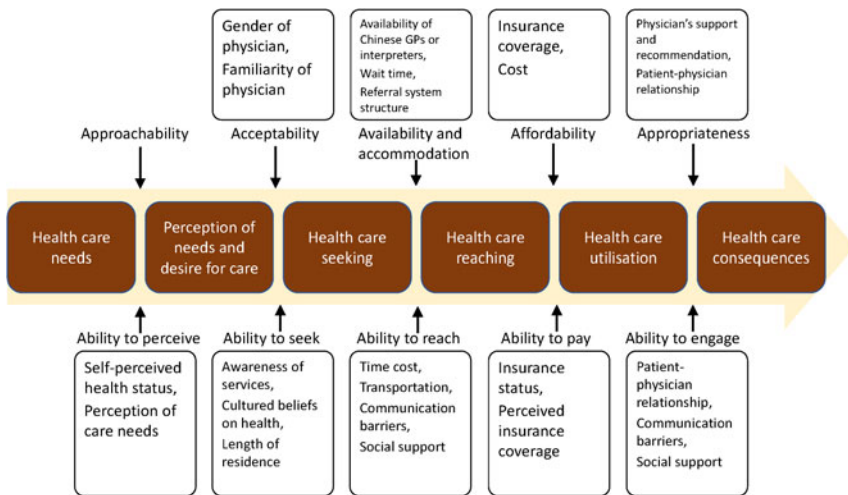


Figure 4. Factors influencing access to health care for older Chinese migrants at the interface of user and provider. Framework by Levesque (Levesque *et al.*, 2013).

Gaps and limitations in evidence

There is a lack of evidence from outside the USA (23 of the 33 studies were from the USA), especially for quantitative data (16 of the 17 studies were from the USA). No study from non-English-speaking countries was found, further limiting application beyond the context of the US health-care system and generalisability.

Although the search strategy set out to find literature on telemedicine, no relevant study was found. There was little research on older migrants and their interaction with digital health generally, regardless of ethnicity. Given the rapid digitisation of health care and many other services used in daily life, this is an emerging topic for exploration; in the era of internet and remote health-care, older people are easily excluded and overlooked (Davidson, 2018). Understanding what role technology plays in health-care access for older Chinese migrants is a direction for future research.

Another overlooked aspect of health-care access is patient satisfaction. Understanding satisfaction and patient experience gives a more comprehensive view of how and why which services are used. Some qualitative studies showed that satisfaction with past experiences of health-care influenced older Chinese migrants' future health-care decisions, however, there is no quantitative data to complement or contradict this.

There were very few studies focusing on immunisation and screening. Hepatitis B is very relevant to Chinese migrants because the prevalence of hepatitis B was high in China before the roll out of vaccines in the 1990s (Liang *et al.*, 2009). This review found only two studies exploring hepatitis B screening and immunisation targeting the older Chinese population (Tanaka *et al.*, 2014; Wang *et al.*, 2022), a generation born before the vaccination campaign. Additionally, understanding the use of services for other infectious diseases, such as COVID-19 immunisation, are also important. In general, current evidence focuses on non-specific care and

non-communicable disease prevention, especially cancer screening, with little focus on other health conditions.

Emergency department visits are utilised as a pathway to health-care by some older Chinese migrants who are unfamiliar with or frustrated by usual referral pathways. Given the limited number of studies that measured emergency department visits as an outcome, further investigation is needed on this topic to explore how it impacts health-care users and providers. These findings would be beneficial for reducing unnecessary emergency visits, in line with policy goals in the UK (National Health Service, 2019).

Most of the quantitative studies reviewed compared data within the Chinese ethnic group, with a few that compared different Asian groups (Tan, 2009; White and Klinner, 2012; Hong, 2015; Kang *et al.*, 2016; Kong, 2018); these studies suggested different Asian populations had different characteristics, such as socio-economic status and levels of acculturation, which could relate to different barriers in accessing services. The only two studies which compared Chinese to non-Asian ethnic groups examined only dental care utilisation (Wu *et al.*, 2005; Shelley *et al.*, 2011). Although focusing on one ethnicity is useful for drawing ethnic-specific results, there are few comparisons with other migrant or non-migrant groups in the same study. Such comparisons will be helpful for understanding which barriers and facilitators are shared across groups and which are specific to certain populations.

Given these gaps in current evidence, more research is needed to focus on ethno-culturally specific topics, emerging topics, comparison between sub-populations and in various settings, especially outside the USA, to provide a more comprehensive understanding of older Chinese migrants' interaction with health-care services.

Strengths and limitations of this review

This review is the first to focus on older Chinese migrants and their access to health-care in high-income countries covering literature published after 2000. Both qualitative and quantitative evidence was reviewed to give a comprehensive understanding of research findings in the field. Our results provide insights into the specific challenges older Chinese migrants face in their social and cultural context.

Due to limited resources, this review did not include literature published in languages other than English. Not all search results were double screened, however, agreement between reviewers was good.

This review focused only on patients' perspectives. Further evidence from other perspectives, such as health-care professionals' views, family members' views or a review of health-care policies would supplement the conclusions and provide a better understanding of what shapes health-care access for older Chinese migrants.

Implications for practice

With acknowledgement of the cultural context, efforts to provide more inclusive and culturally sensitive services will improve health-care access and benefit older Chinese migrants greatly.

Overcoming practical barriers would benefit not only older Chinese migrants but also migrant groups more generally. Language barriers could be overcome by providing information in different languages, clear signposting to interpretation services, improving the quality of interpretation and extending interpretation beyond clinical consultation (*e.g.* in pharmacies). More health-care resources and better management could reduce universal barriers such as wait time and travel time. Preventive care should be clearly recommended by physicians in a timely manner to improve uptake.

Health-care providers should acknowledge the commonly encountered barriers for this population, their preferences and beliefs, while acknowledging individual differences; this is especially important for those practising in areas with Chinese residents. Physicians should be proactive in discussing the use of traditional medicine and encourage communication by showing a non-judgemental attitude. Older Chinese migrants have particular issues in understanding and accepting the referral system. A clear explanation of the system would relieve concerns and help them access appropriate care pathways.

Given the role of social network for older Chinese migrants, attempts to involve family members and the local Chinese community in outreach and health education might help to raise awareness and remove obstacles to care. At the same time, efforts to remove practical barriers will enable older Chinese migrants to access health-care even when they cannot get help from family and friends.

More attention should be given to older migrants whose voices are often hidden or masked. Data on migration status or countries of origin are often not recorded in large-scale routine surveys. Given the history and complexity of international migration, ethnicity data, which are often captured, are not appropriate indicators for one's migration status. Distinguishing between migrants and non-migrants could provide a more accurate and nuanced understanding of health-care access and utilisation, especially for older people, who might face layered difficulties with service access.

Conclusion

This review has identified barriers and facilitators throughout the health-care pathway for older Chinese migrants, with a focus on patient perspectives. Perceptions of health, illness and health-care influence the realisation of health-care needs and the desire to seek care; they can either facilitate or hinder access. Transportation, wait time, financial cost and communication are practical barriers to reaching health care; social support is a facilitator during this process, while the involvement of family members can become a barrier. Lastly, the outcome of health-care is also influenced by the health-care environment, namely trust and support in a patient–physician relationship, and the structure of the wider health-care system.

Many ethno-cultural groups have different health-care beliefs that may impact on their interactions with health care, however, specific Chinese cultural contexts shape the nuances of barriers and facilitators for Chinese people. Health-care providers need to be communicative and respectful in creating a culturally competent environment to improve access for this population.

Health-care access for older Chinese migrants remains an understudied area. More research, especially those from outside the USA, on emerging topics, and

focused on comparison between groups and sub-groups, will be important for providing evidence and improving equity in health care.

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