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Definitions, key themes and aspects of 'ageing in place': a scoping review

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Abstract

The purpose is to give an overview of the extent, range and nature of existing definitions of the concept 'ageing in place'. Providing such an overview may be helpful, for policy makers, researchers, communities and service providers, to make sense of the versatility and uses of the concept, and allow the improvement and increase the success of efforts to contribute to the quality of life of older people. The overview was created using Arksey and O'Malley's scoping review methodology. Out of 3,692 retrieved articles, 34 met the inclusion criteria. These studies concentrate on the following five key themes concerning 'ageing in place': 'ageing in place' in relation to place, to social networks, to support, to technology and to personal characteristics. Each of these key themes consists of other aspects, like physical place and attachment to place for the keyword place. This study concludes that the concept 'ageing in place' is broad and can be viewed from different (*i.e.* five) key themes. A more thorough understanding of 'ageing in place' provides knowledge about the existing key themes and aspects. These findings might provide practical support for professionals and governments when they develop their policies about 'ageing in place' integrally and to develop fit policies.

Keywords: 'ageing in place'; independent living; home; liveability; scoping review; older people

Introduction

Ageing is emerging as a key policy issue. One reason for this is that both the absolute number as well as the proportion of older people in populations around the world are increasing (World Health Organization, 2015). In Europe, the percentage of people aged 65 and over is increasing at an unprecedented rate and is expected to account for over 30 per cent of the population by 2060 (European Commission, 2015). Within the 28 countries of the European Union, approximately nine out of ten people aged 65 and over in Germany, France, Finland and the United

Kingdom live independently in their own home. In the Netherlands, the percentage is even higher (95%). By contrast, Southern and Eastern European countries such as Cyprus, Spain, Portugal and Estonia show particularly low percentages. In these countries, older people more often live in common households together with their children. In Romania, Poland and the Baltic States more than 10 per cent of older people are in this type of living arrangement, which is only practised by 4.6 per cent of senior citizens Europe-wide. It is particularly rare in the Scandinavian countries and the United Kingdom (Eurostat, 2011). These trends affect national policy in all countries and have major implications for the allocation of national resources and budgets (International Federation of Ageing (IFA), 2011). Ageing is also strongly associated with the unpredictability of retirement costs and the costs of care (Van Nimwegen and Ekamper, 2018). Taken together with the fact that a further increase in life expectancy is inevitable, this massive demographic change calls for a major effort to ensure quality of life of the older population (Giacalone *et al.*, 2014). However, the increase in life expectancy may be viewed as a public health achievement, and older people are heterogeneous and many are continuing to help their families and friends even in their later years (IFA, 2011), which is beneficial for older people 'ageing in place'. Additionally, Western countries have been experiencing similar patterns of change in their population due to cultural changes. Not only has life expectancy increased, but also marriage, fertility and birth rates have changed. Most couples have their first child at a higher age than previously, there are more divorces, common-law unions and out of wedlock births. These developments are also called the 'Second Demographic Transition' (Lesthaeghe, 2010) and have led not only to challenges concerning how older people can be supported, in remaining independent and active, but also how the quality of life in general can be improved.

As mentioned earlier, also Western societies are currently dealing with the rapid ageing of their population. Therefore, it is necessary to develop new concepts, programmes and services to fulfil the expectations of their older population, but also for the service providers and policy makers (Iecovich, 2014). Askham, Cameron and Heywood (1999) have studied the wishes and demands of older people concerning their living environment (Means, 2007). They found that older people's choice to stay in their home for as long as possible is especially influenced by policies, but also by their own individual needs. It appears that most older people are attached to their independence and that they prefer to live in the environment with which they are familiar (Machielse, 2016; Vermij, 2016). The main reason for this is that independent living contributes to maintaining a sense of self-reliance, self-management and self-esteem (Milligan, 2009). Machielse (2016) endorses that older people should be able to live independently, provided that their health situation allows them to do so and that there is adequate housing and social support available in their own living environment.

In many countries, the question of whether or not older people continue living in their own house is strongly related to their financial situation, and how it fits with the costs of residential and nursing home provision (Chen *et al.*, 2015). According to Horner and Boldy (2008: 358), "ageing in place' has the potential to provide more appropriate care at a lower cost than a move to a more specialised and sheltered facility'. 'Ageing in place' is mentioned as one possible solution to

these financial issues. It may save financial expenditures and improve the quality of life of older people (IFA, 2011). The idea behind the policy of 'ageing in place' is that living in a familiar environment has a positive impact on the wellbeing of older people and contributes to positive experiences in later life (Van Dijk, 2015).

Although a field of study about ageing, the needs of older people and the issues brought about by the fact that a large(r) part of society is 65 or over has taken shape over the past the last ten years, the concept 'ageing in place' is used very broadly and has not been defined very clearly so far.

The aim of this study is to identify conventions and patterns in the scholarly treatment of the concept of 'ageing in place'. A more thorough understanding of 'ageing in place' might provide knowledge about the existing key themes and aspects of 'ageing in place' to allow professionals, governments, researchers and communities to attune their policies better. We therefore conducted a scoping review and formulated the following research question:

- How is 'ageing in place' defined in the literature and which key themes and aspects are described?

Methods

The overview was created using Arksey and O'Malley's scoping review. A scoping review is particularly useful for examining a broadly covered topic to map the literature comprehensively and systematically, and identify key concepts, theories, evidence or research gaps (Arksey and O'Malley, 2005). It also allows the inclusion of many different study designs, which suits the aim of giving an overview of the way researchers define 'ageing in place'. Arksey and O'Malley's scoping review methodology outlines an approach consisting of six stages: (1) identifying the research question, (2) identifying relevant studies, (3) selecting studies, (4) charting the data, (5) collating, summarising and reporting the results, and (6) consultation.

Stage 1: Identifying the research question

The starting point of this scoping review is the identification of the research question. Arksey and O'Malley (2005) suggest using an iterative process for developing one or more guiding research questions. An exploratory literature study was conducted to increase the authors' familiarity with the literature, so that a research question could be formulated. 'Ageing in place', 'key themes' and 'aspects' were identified as key words for the research question. 'Ageing in place' was operationalised in synonyms (independent living, healthy ageing, housing for elderly and ageing at home) and search terms by the findings of an initial search to become better acquainted with the literature. Key themes was defined as a collection of somewhat related values and aspects. 'Aspects' means the side from which something is considered.

Stage 2: Identifying relevant studies

The eligibility criteria form the limitations to this research and the base of including or excluding resources. These limitations are strict guidelines and offer a framework

Table 1. Inclusion and exclusion criteria of studies on definitions, key themes and aspects of 'ageing in place'

	Inclusion criteria	Exclusion criteria
Population	Older people: people who are currently in the third and fourth age of life according to the theory of Peter Laslett (1987).	
Concept	Ageing in place. Ageing at home.	Articles which cover topics clearly different from goals such as: • illnesses (*e.g.* diabetics, HIV, alcohol abuse); • long-term care; • design and architecture/ construction.
Context	All geographic locations. Older people living independently at home.	People living in nursing homes, long-term care facilities or other institutional care facilities.
Types of sources	Empirical studies, quantitative and qualitative studies, systematic reviews, meta-analyses, meta-syntheses and scoping reviews. Published in the English, German and Dutch languages.	Books, narrative reviews, rapid reviews, critical reviews, PhD theses, opinion literature, grey literature, abstracts, conferences and integrative reviews.

in order to prevent the research from becoming too broad or even invalid. They also help the researchers (authors KEP-H and IZ) to stay on the same track, while analysing different resources. To set up the inclusion criteria we applied the Population, Concept and Context mnemonic method (Joanna Briggs Institute, 2015). Based on the research objective and research question, we further defined and elaborated the inclusion criteria for the research population, the concept, the context and types of sources. The inclusion criteria used are presented in Table 1.

Five electronic databases (PubMed, PsychInfo, EMBASE, CINAHL and SAGE) were used to find the studies to be analysed for this scoping review. Additionally, three search engines (Google Scholar, and the catalogues of Maastricht University and of Zuyd University of Applied Sciences – both in the Netherlands) were used to optimise the search results of the electronic database searches and to improve the reliability of the search strategy (Bramer *et al.*, 2017). We conducted a search on 3 July 2019, with no restrictions on the date of publication. In addition, reference lists of relevant articles were screened to identify key studies that had been missed.

Research strategy

The research strategy comprises the choice of resources and the way to find those resources. The authors who reviewed the literature (authors KEP-H and IZ) first agreed on search terms. The selected search terms were combined and tested on the five electronic databases and three search engines. Bramer *et al.* (2017) argue

Table 2. Search terms of studies on definitions, key themes and aspects of 'ageing in place'

Search terms	Synonyms	Linked search terms
Ageing in place	• Independent living • Healthy ageing • Housing for the elderly • Ageing at home	• Independent living • Healthy ageing • Housing for the elderly • Staying home • Ageing • Gerontology • Wellbeing
Elderly people	• Aged	• Aged • Later life • Third age • Fourth age

that to reach a maximum recall, searches in systematic reviews ought to include a combination of databases and search terms. Combining the search terms led to a unique search strategy for each of the five electronic databases and each of the three search engines. For example, during our empirical testing, we decided to apply the search term 'ageing at home' to optimise the search results in the search engine Google Scholar. The results of the search terms that we ended up settling on for each database and search engines of the whole search strategy are available on request from the corresponding author. The search terms that the authors settled on and the search strategy are shown in Tables 2 and 3, respectively.

Stage 3: Study selection

Once the searches (using the indicated search criteria) had been conducted, a selection had to be made from the results, so that actual analysis could take place. This study selection process was conducted on the basis of the inclusion criteria (Table 1), and consisted of three stages, each with a focus on a particular part of the studies (title, abstract and full text). During each of these three stages, the authors divided the studies into relevant, irrelevant and doubtful. Relevant studies are defined here as studies that fit the scope and objective of this scoping review. In order to validate the selection procedure, the inclusion and exclusion criteria were checked for consistency by the two reviewers (authors KEP-H and IZ) independently. This assessment was made first by looking at the title of the articles and then by looking at the abstract of each article. After screening the titles and abstracts, articles that were deemed eligible were obtained as full texts, further scanned for eligibility and finally discussed with the members of the Research Centre of Facility Management, Zuyd University of Applied Science for validation. The Research Centre of Facility Management consisted of experts in health care, facility management and research. For all studies that were excluded on the basis of their full-text articles, the reasons for exclusion were recorded in a logbook. The studies that were left after the third stage of selection were considered relevant for this scoping review. All articles that resulted from conducting the searches in the

Table 3. Search strategy of studies on definitions, key themes and aspects of 'ageing in place'

	Search strategy	N
Database:		
PubMed	'Ageing in place'	87
PsychInfo	Concept 'Ageing at home' OR 'Ageing in place'	82
CINAHL	Ageing in place and seniors	79
EMBASE	'Ageing in place'	75
SAGE	'Ageing in place'	56
Search engines:		
Catalogue of Zuyd University of Applied Science	Concept 'Ageing at home' OR 'Ageing in place' 'Communities'	1,424
Catalogue of Maastricht University	Concept 'Ageing at home' OR 'Ageing in place' 'Communities'	321
Google Scholar	Concept 'Ageing at home'	372
Other resources:		
German resources	Konzept 'Zuhause' 'alt werden	988
Dutch resources	Zelfstandig wonen leven ouderen	121
Experts	'Ageing in place'	60
Key journals	'Ageing in place'	27
Total		**3,692**

electronic databases and search engines were exported into Endnote X8, and registered in a logbook, making the part about comparing on the basis of consensus in each stage. If the researchers did not agree on the relevance of a study, a third reviewer (author GJJWB) was asked to decide on the suitability.

Stage 4: Charting the data

To facilitate the data selection, the researchers agreed to use a chart on which they noted all information that was considered useful. More specifically, they kept track of the following points: author(s), year of publication, country of origin, research aim, research question, study population, sample size, research methodology, definition the authors gave of 'ageing in place', key findings and conclusions.

Stage 5: Summarise and report

Focusing on definitions, key themes and aspects of 'ageing in place', we conducted a qualitative content analysis (Levac *et al.*, 2010). An open axial coding method was used. The data from the articles were inductively coded in Excel. With open coding, labels were linked to the fragments from Stage 4 (charting the data). These labels summarised the core of the fragment. The labels were then analysed and the

axial coding method was used to add overarching labels or themes. The analysis resulted in an overview of study characteristics, and an overview of main findings and definitions of 'ageing in place'. Again, two reviewers (authors KEP-H and IZ) independently summarised and reported all results in tables. The content of the tables was then compared and adapted to consensus if necessary.

Stage 6: Consultation

The consultation stage consisted of two meetings with a focus group. In the first meeting, the validity of the research strategy was discussed. During the second meeting, the results of the research were presented and discussed. The focus group consisted of professionals (a housing corporation representative, a general practitioner, a community nurse, policy staff of health-care and welfare organisations, a local government employee), an older person and a member of a neighbourhood association. All of them, except the older person, assist older people while they 'age in place'. The older person who is part of the focus group was asked to join to represent older people in this scoping review. This consultation phase provided opportunities for stakeholder involvement and provided insights beyond those in the literature.

Results

Study characteristics

Five electronic databases and three search engines were searched on 3 July 2019 with no restriction on the date of publication. Based on the first search, 3,692 articles concerning 'ageing in place' were identified. Next, 505 duplicate articles were removed. The titles of the remaining 3,187 articles were then reviewed, on the basis of which 339 articles were deemed suitable for the current study. Independent screenings were then conducted looking at the abstracts of these 339 articles, after which 59 articles were still considered relevant. A final assessment of these articles, this time taking the full text of each of them into account, left a final number of 34 relevant studies for the scoping review. An overview of the data selection process is shown in Figure 1.

The reviewed articles focus on different geographical locations. Most of the studies concern European countries (N = 17), with the Netherlands (N = 8) and Spain (N = 3) being addressed most often, while seven studies each focus on Oceania (N = 7) and North America (*i.e.* the United States of America (N = 6) and Canada (N = 1)). Several different methodologies are used in the 34 selected studies, with the most common being qualitative research methodologies (N = 21), quantitative research methodologies (N = 8) and mixed methods (N = 5). The characteristics and research aims of the articles included in the current scoping review about 'ageing in place' are provided in Table 4.

Definitions of 'ageing in place'

Turning to the actual content of the selected studies, only two studies developed an explicit definition of 'ageing in place' as a result of empirical research. Most studies cited definitions from other sources, mostly in the introduction of their work.
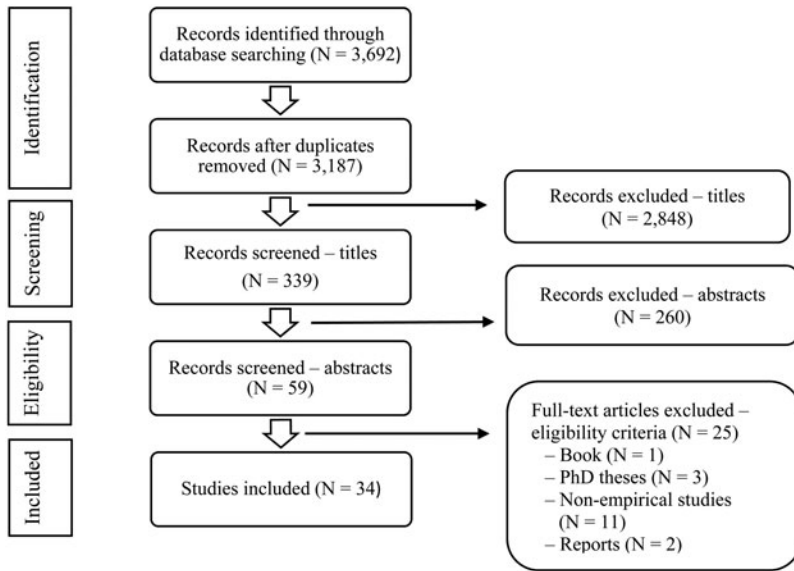
Figure 1. Flowchart of the data selection process of the scoping review on 'ageing in place'.

Although all these 34 included studies examined aspects related to 'ageing in place', none of them were directly focused on the development of a definition of this concept. Only two studies mentioned their own definition of 'ageing in place'. Grimmer *et al.* (2015) stated that 'ageing in place' is mostly about the opportunity for older people to remain in their own home for as long as possible, without having to move to a long-term care facility. Horner and Boldy (2008: 356) defined 'ageing in place' as a 'positive approach to meeting the needs of the older person, supporting them to live independently, or with some assistance, for as long as possible'.

Key themes and aspects of 'ageing in place'

By structuring the data, the following key themes of 'ageing in place' were identified: place (N = 23), social networks (N = 2), support (N = 3), technology (N = 5) and personal characteristics of older people (N = 1). *See* Table 5 for the main findings of the included research papers.

Place

Twenty-three out of the 34 studies focused on the key theme place. During the analysis of these 23 studies, a distinction between physical place and attachment to place was recognised. Some studies mentioned physical place, while others mentioned attachment to place.

Three levels of physical place are described, namely home, home environment and the neighbourhood. Studies that were focused on the physical home concern the choice between moving and making building modifications to make it easier for older people to continue living in their home (Boldy *et al.*, 2011). Costa-Font

Table 4. Descriptions of included research papers of scoping review on 'ageing in place'

Authors (year), country	Study population	Perspective	Research method	Research aim/question
Bradby et al. (2010), USA	N = 10 (age 90–96)	Older people	Mixed method (in-depth interviews and participant observation)	To explore how older women take responsibility for their own health and care through adapting everyday technologies – from slow cookers to gardening tools to televisions – to fit their needs and to age comfortably.
Magnusson et al. (2004), Sweden	N = 1,527 (articles)	Research	Qualitative research (systematic literature review)	To provide an overview of the current 'state of the art' with regard to information and communication technology as a support for frail older people living at home and their family carers.
Peek et al. (2017), The Netherlands	N = 33 (seniors)	Older people	Qualitative research (explorative longitudinal qualitative field study with semi-structured interviews)	To understand better the origins and consequences of technology acquirement by independent-living seniors.
Peek et al. (2014), The Netherlands	N = 16 out of 2,841 (articles)	Research	Qualitative research (systematic literature review)	To provide an overview of factors influencing the acceptance of electronic technologies that support 'ageing in place' by community-dwelling older adults.
Van Hoof et al. (2011), The Netherlands	N = 18 (older adults)	Older people	Qualitative research (comprised of interviews and observations of technology and environmental interventions in the home environment)	To investigate the needs and motives, related to 'ageing in place', of the respondents receiving ambient intelligence technologies, and to investigate whether, and how, these technologies contributed to aspects of 'ageing in place'.

(*Continued*)

Table 4. (*Continued.*)

Authors (year), country	Study population	Perspective	Research method	Research aim/question
Ahn *et al.* (2020), USA	N = 650 (age ⩾60)	Older people	Quantitative research (by an online survey)	To frame the 'ageing in place' concept within an extended theory of planned behaviour model incorporating environmental domains.
Boldy *et al.* (2011), Australia	N = 6,859, survey N = 39, interviews (age 55–75)	Older people	Mixed method (survey followed by structured interviews with a sub-sample of respondents)	To investigate 'ageing in place' in terms of house, locality and support, related to the Western Australia members of National Seniors Australia.
Butcher and Breheny (2016), New Zealand	N = 8 (older Māori)	Older peoplePolicy makers	Qualitative research (qualitative interviews)	To examine the ways that place influences experiences of ageing for older Māori in New Zealand.
Costa-Font *et al.* (2009), Spain	N = 729 (age ⩾55)		Quantitative research (survey)	To examine, in vigorous, moderately vigorous and less vigorous elderly people *ex-ante* and current preferences for housing (in older age) and its suitability, given current or future needs and characteristics.
Fernández-Carro (2016), Spain	N = 2,535 (age ⩾65)	Older people	Quantitative research (data)	To shed light on the preferred residential and care arrangements in later life of the older Spanish population exploring the willingness for each one of the alternatives considered: one's own home, the relative's home and institutions.
Cramm *et al.* (2018), The Netherlands	N = 945, questionnaire N = 32, interviews (age 70–93)	Older people	Mixed methods (questionnaire and interviews)	To characterise the relationship between frailty and ageing in place, and to identify differences in neighbourhood characteristics supporting 'ageing in place' missed by frail and non-frail older people.

Han and Kim (2017), Australia	N = 12,252 (age ⩾55)	Older people Policy makers	Quantitative research (data)	To investigate the preferences of older people for staying or moving from their current home and neighbourhood. It also elucidates the factors associated with the decision to age in home and the decision to age in neighbourhood.
Hillcoat-Nallétamby and Ogg (2014), UK	N = 4,079 (age ⩾50)	Older people	Quantitative research (data)	To examine the likelihood that a desire to move will be shaped by dislikes about home and neighbourhood environments, amongst older Welsh people.
Horner and Boldy (2008), Australia	N = not reported	Older people	Qualitative research (action research study)	To investigate the complexities and challenges of change in an aged care community in Western Australia.
John and Gunter (2016), USA	N = 387, survey N = 237, participatory processes (elderly people)	Older people	Mixed-method study (survey and participatory processes)	To gain a better understanding of the urban and rural contexts for place-based ageing to inform programmes and policy.
Kerbler et al. (2017), Slovenia	N = 930 (age ⩾50)	Older people	Quantitative research (survey)	Analysing how attached the elderly in Slovenia are to their homes and wider living environment and how satisfied they are with living there.
Martens (2017), Norway	N = 27 (articles) N = 89 (municipalities)	Government	Mixed-method study (structured literature review and qualitative/quantitative document study)	Which housing alternatives are compatible with the 'ageing in place' concept? Who are responsible for providing housing in old age?
Mesthrige and Cheung (2019), Hong Kong	N = 224 (seniors)	Older people	Quantitative research (questionnaire survey)	To investigate whether the introduced design elements and facilities satisfy the numerous special needs of the seniors in line with the concept of 'ageing in place'.

(*Continued*)

Table 4. (*Continued.*)

Authors (year), country	Study population	Perspective	Research method	Research aim/question
Norazizan *et al.* (2006), Malaysia	N = 386 (age ⩾60)	Older people	Qualitative research (interviews)	To describe the difficulties faced by older Malaysians in their present home environment.
Peace *et al.* (2011), UK	N = 54 (age 61–93)	Older people	Qualitative research (focus groups)	To reflect the diversity of people and places in three areas. Metropolitan/ urban (London Borough of Haringey); small town/urban/suburban (the town of Bedford) and small town/village/ semi-rural (the county of Northamptonshire).
Renaut *et al.* (2015), France	N = 11 (age 79–89) N = 17 (carers)	Older people Carers	Qualitative research (interviews)	To understand how individuals construct the space both within their own home and their immediate surroundings and how this construction is linked to their own perception of ageing and growing old.
Roy *et al.* (2018), Canada	N = 86 out of 660 articles	Research	Qualitative research (systematic literature review)	To identify the sets of factors influencing the housing decision-making of older adults.
Sixsmith and Sixsmith (2008), UK	N = 40 (age 80–89)	Older people	Qualitative research (interviews)	To illustrate the problems and challenges that exists in relation to 'ageing in place' in the UK.
Van Dijk (2015), The Netherlands	N = 32 (Ireland)	Older people	Qualitative research (discussion groups)	To examine frail and non-frail older peoples' perceptions of the relative importance of ideal neighbourhood characteristics for 'ageing in place'.
Van Hees *et al.* (2017), The Netherlands	N = 18 (age 70–85) N = 14 professionals (social workers, housing	Professionals	Qualitative research (photo voicing)	To advance the investigation of 'ageing in place' by not only focusing on which constraints and regulators older adults recognise in their environment, but by

	consultants, neighbourhood managers and community workers)			also exploring how their constructions of ageing in place connect or interact with those of local professionals (social workers, housing consultants, neighbourhood managers and community workers) who translate 'ageing in place' policies into daily practices.
Van Hees *et al.* (2018), The Netherlands	N = 28 older people N = 48 (policy makers, directors, partners of older people)	Older people Policy makers	Qualitative research (interviews and focus groups)	To explore what the development of lifecycle robust neighbourhoods means in relation to notions of 'ageing in place' and age-friendly communities.
Vasunilashorn *et al.* (2012), USA	Articles published from 1980 to 2010	Research	Qualitative research (systematic review)	To examine how the literature on 'ageing in place' has changed over time in highly visible gerontology journals, with a focus on analysing trends related to the amount, location and variety of research topics.
Wiles *et al.* (2011), New Zealand	N = 121 (age 56–92)	Older people	Qualitative research (focus groups and interviews)	To illuminate the concept of 'ageing in place' in terms of functional, symbolic, and emotional attachments and meanings of homes, neighbourhoods and communities.
Dobner *et al.* (2016), The Netherlands, USA	N = 40 (older adults)	Older people	Qualitative research (in-depth interviews and multiple (within-case) observations)	What are the experiences of formal and informal social support and neighbourhood ties of older adults 'ageing in place' in Amsterdam and Portland? And how can differences between Amsterdam and Portland be understood in relation to differences in welfare state arrangements?

(*Continued*)

Table 4. (*Continued.*)

Authors (year), country	Study population	Perspective	Research method	Research aim/question
Wilkinson-Meyers *et al.* (2014), New Zealand	N = 3,753 (age ⩾75, New Zealanders) (age ⩾65, Māori)	Older people	Quantitative research (questionnaire)	To describe the met and unmet need for personal assistance reported by New Zealanders living in the community.
Grimmer *et al.* (2015), Australia	N = 42 (age ⩾65)	Older people	Qualitative research (interviews and focus groups)	To explore and synthesise the experience and perspectives of older people planning for and experiencing 'ageing in place'.
Doblas (2018), Spain	N = 68 (age 63–92)	Older people	Qualitative research (discussion groups and theoretical framework)	To examine why living arrangements among the elderly are changing in Spain.
Roberts *et al.* (2017), USA	N = 23 (age ⩾65) N = 20 (age 8–25)	Older people	Qualitative research (interviews)	To highlight Active Aging for L.I.F.E., an intergenerational pilot health initiative developed and implemented in the state of Oklahoma.
Versey (2018), USA	N = 98 (age ⩾55)	Older people	Qualitative research (interviews and focus groups)	To explore how neighbourhood changes are viewed by lower-income, long-term residents 'ageing in place' in a neighbourhood that has undergone, and is still undergoing, waves of gentrification.

Notes: UK: United Kingdom. USA: United States of America.

Table 5. Main findings of included studies of scoping review on 'ageing in place'

Authors, country	Key themes	Aspects	Key findings
Bradby et al. (2010), USA	Technology	Mobility Communications Technologies Biotechnologies	The spectrum of technologies enables the mobility for elderly. These tools help them stay connected and in control, to foster intellectual growth and, by association, the health benefits that scientists now associate with brain stimulation. Technologies are key instruments for self-care, tools that can elicit creativity, connection, expression, health and even exciting new challenges.
Magnusson et al. (2004), Sweden	Technology	Information and communication technology	The use of a variety of search terms for information and communication technology, family carers, older people and home care in the main brought up the health telematics literature and, to a lesser extent, the nursing and gerontology literature. The key theme was telehealth and telecare models in home care for older people and their family carers.
Peek et al. (2017), The Netherlands	Technology	Acquirements	A new conceptual model which provides an integrative perspective on why and how technologies are acquired, and why these may or may not prove to be appropriate and effective, considering an independent-living senior's needs. Externally driven and purely desire-driven acquirements led to a higher risk of sub-optimal use and low levels of need satisfaction.
Peek et al. (2014), The Netherlands	Technology	Support 'ageing in place' Acceptance	Most articles investigated acceptance of technology that enhances safety or provides social interaction. Acceptance in the pre-implementation is influenced by 27 factors, divided into six themes: concerns regarding technology (e.g. high cost, privacy implications and usability factors), expected benefits of technology (e.g. increased safety and perceived usefulness), need for

(Continued)

Table 5. (*Continued.*)

Authors, country	Key themes	Aspects	Key findings
			technology (*e.g.* perceived need and subjective health status), alternatives to technology (*e.g.* help by family or spouse), social influence (*e.g.* influence of family, friends and professional care-givers) and characteristics of older adults (*e.g.* desire to age in place).
Van Hoof *et al.* (2011), The Netherlands	Technology	Ambient intelligence technology (safety and security)	The most prominent reason was to improve the sense of safety and security, in particular, in case of fall incidents, when people were afraid not to be able to use their existing emergency response systems. The ambient intelligence technologies were initially seen as a welcome addition to strategies already adopted by the respondents, including a variety of home modifications and assistive devices. The systems tested increased the sense of safety and security and helped to postpone institutionalisation.
Ahn *et al.* (2020), USA	Place	Environmental domains	The results confirmed the significant mediating role of the TPB (Theory of Planned Behaviour) components between the path from personal, built and interpersonal environments to 'ageing in place' intention. Except for one built environmental construct (housing satisfaction), personal and interpersonal environmental constructs were found to indirectly affect 'ageing in place' intention. One of the interpersonal environmental constructs, social connectedness, was revealed as the strongest factor in this relationship.
Boldy *et al.* (2011), Australia	Place	Holistic view of place Housing Locality Support	Overall, 44% of respondents had carried out building modifications to make it easier for them to continue living in their home; this proportion steadily increased with age. Remaining 'independent' is a key aim as people age. The study has shown the importance,

			both for older people and policy makers, of each of three key themes related to place: 'housing', 'locality' and 'support'. These three key themes, and associated push–pull factors, have different influences on people's moving or staying decisions at different lifestages.
Butcher and Breheny (2016), New Zealand	Place	Physical and social environment Place attachment Cultural identity	Through their connection to place, the participants drew on a comforting and comfortable dependence on land and family to enable autonomy in later life. Rather than seeking to maintain independence in terms of avoiding reliance on others, older Māori conceptualised older age through autonomy and freedom to live in accordance with Māori values.
Costa-Font et al. (2009), Spain	Place	Suitability of housing Mobility Accessibility	Adequate housing conditions (mobility/accessibility) are essential for individual quality of life and certain aspects of individual wellbeing. 'Ageing in place' seems to be preferred by the vast majority of the population, although the suitability of housing for old age is not guaranteed by encouraging the elderly to stay in their dwellings. 'Ageing in place' may still be the preferred option because the psycho-social benefits of remaining in the same, less uncertain, environment could outweigh the disadvantages.
Fernández-Carro (2016), Spain	Place	Ideal living environment Own home Children Family-oriented values	About 90% of the respondents declared that they would prefer to live in their own home as long as they retain good physical and cognitive functioning, even if during this time they live alone. They prefer ageing in their own home if such a situation would imply a sufficient level of autonomy. On the other hand, when Spanish older people were asked about their preferences should they suffer from some physical or cognitive limitation, more than half – 56% – identified co-residence with a relative, principally the adult children's home, as the ideal living environment.

Table 5. (*Continued.*)

Authors, country	Key themes	Aspects	Key findings
Cramm *et al.* (2018), The Netherlands	Place	Neighbourhood characteristics Supporting 'ageing in place' Age-friendly environment	Results showed that gender, age and especially frailty were related to missed neighbourhood characteristics. People displayed awareness of their increasing frailty and often acknowledged that it increased the need for neighbourhood characteristics enabling them to age in place. Conclusion is that dependence on neighbourhood varies with frailty status. This relationship is dynamic; with frailty, older people become more dependent on their neighbourhood.
Han and Kim (2017), Australia	Place	Home Neighbourhood Community Social ties	People aged 55 and over prefer to stay in their current neighbourhood. They were more likely to intend to move from their current house but not to change their current local community. Older people with a higher income are more likely to intend to move house but want to stay in the same community to maintain their strong social ties. Also is found that retirement entails the adjustment of housing consumption; the number of bedrooms in one's current dwelling is an important predictor of downsizing.
Hillcoat-Nallétamby and Ogg (2014), UK	Place	Home environment Attachment to place Design Location Maintenance	Wishing to move is more pronounced for dislikes about the home than the neighbourhood, and along with our descriptive analysis of the actual nature of dislikes, indicates that older people's concerns about the structural design features, location and maintenance aspects of their home environment can lead to serious consideration of residential mobility. This suggests that the design constraints of the home environment can potentially impede a sense of personal competence about being able to age in place, to the extent that feelings of attachment to place are progressively overridden, giving way to thoughts about the desirability of moving.

Horner and Boldy (2008), Australia	Place	Wellbeing Empowerment Social connection	Older people prefer to live in their own home, rather than in an institution or care centre. The literature reveals the importance of wellbeing, expressed as quality of life, empowerment, 'ageing-in-place' and social connection.
John and Gunter (2016), USA	Place	Community Environment	For the 'engAGE in Community Age-Friendly Model', the World Health Organization's 'age-friendly' topic areas were categorised into three separate (but not isolated) environmental categories: physical (*i.e.* outdoor spaces and buildings, transportation, housing), social (*i.e.* social participation, respect and social inclusion, civic participation, employment) and service (*i.e.* communications and information, community support, health services).
Kerbler *et al.* (2017), Slovenia	Place	Attachment to home Wider living environment	The respondents reported that they were very satisfied with their immediate and wider living environment and that they were very attached to it.
Martens (2017), Norway	Place	Home adaptions Long-term family home Familiar surroundings Housing alternatives Living in the community	There is no agreement on place in 'ageing in place'. 'Ageing in place' policies entail joint individual and public responsibility for housing. Different policy expressions of 'ageing in place' at national and local government levels are demonstrated.
Mesthrige and Cheung (2019), Hong Kong	Place	Micro-, meso- and macro-scales	Senior tenants were generally satisfied with the present living environments in the estates. At the micro-scale, seniors were satisfied with the level of privacy and sense of autonomy derived from the present design features in their homes. For the meso-scale, the study revealed that the seniors were particularly satisfied with the design elements such as convenient transportation and accessibility, including convenient walkways. At the macro-scale, the community care service is deemed important for seniors' wellbeing.

(Continued)

Table 5. (*Continued.*)

Authors, country	Key themes	Aspects	Key findings
Norazizan *et al.* (2006), Malaysia	Place	Difficulties Present home environment Ergonomic Safety	This paper identified environmental problems and associated factors among older Malaysians. It was found that most environmental difficulties reflected both the permanent and variable environmental conditions. However, research findings also show that the majority of the respondents are satisfied with their living area, as although observations showed there are obvious obstacles and hazards present in all these areas.
Peace *et al.* (2011), UK	Place	Micro-environment Macro-environment Person environment system related to the quality of later life	The concept of 'option recognition' sets out to capture the extent of environmental impact that can affect decision-making in later life, and points up the importance of continuity and change in both macro- and micro-environments. It recognises that individual experience of place is layered and that knowledge of personal biography and experience in time and space leads to greater clarification of the complexity of person–environment interaction. In reconsidering theoretical developments to date in environmental gerontology, the authors have demonstrated the importance of ethnographic research across settings and locations that enable comparability within and between place for older people living in both ordinary and supportive environments.
Renaut *et al.* (2015), France	Place	Home Home surroundings Home environment	Individual lifecourse histories combined with socio-economic and socio-psychological factors to shape each individual's perception of the home environment and the adaptions that were made to it in the context of growing old. Four behavioural types are identified that categorise the participants according to how they modify and adapt their home environment: (a) act when the time is right, (b) anticipation and prevention, (c) situational compromise or resignation,

			and (d) recourse to the domestic economy and co-habitation.
Roy *et al.* (2018), Canada	Place	Housing decision factors	Overall, a total of 88 factors were identified, of which 71 seem to have an influence on the housing decision-making of older adults, although the influence of 19 of them remains uncertain due to discrepancies between research methodologies.
Sixsmith and Sixsmith (2008), UK	Place	Home Negative aspects	Negative aspects of remaining at home are: barriers in the home, the symbolic home, hiding increasing frailty, fearfulness, barriers outside the home, loneliness, challenges to services.
Van Dijk (2015), The Netherlands	Place	Neighbourhood characteristics	Although both frail and non-frail older people strongly desired a neighbourhood enabling them to age in place, they have divergent views on such a neighbourhood. Frail older people's viewpoint: secure neighbourhood with facilities nearby, a neighbourhood with adequate housing and a supportive network, an accessible neighbourhood. Non-frail older people's viewpoint: a well-kept neighbourhood with people to whom you can relate, a calm neighbourhood with good facilities, lively and engaged neighbourhood.
Van Hees *et al.* (2017), The Netherlands	Place	Attachment to place Amenities Mobility Meeting places	Professionals primarily consider objective characteristics of neighbourhoods such as access to amenities, mobility and meeting places as important enablers for older adults to remain living independently. Analysis of older adults' photographs and stories show that they associate 'ageing in place' with specific lived experiences and attachments to specific, intangible and memory-laden public places.
Van Hees *et al.* (2018), The Netherlands	Place	Attachment to place Lifecycle robust neighbourhoods	'Ageing in place' has a different meaning in policy discourses in practice. While developers mainly considered place as something construable, older

(*Continued*)

Table 5. (*Continued.*)

Authors, country	Key themes	Aspects	Key findings
			people emotionally attached to place through lived experiences.
Vasunilashorn *et al.* (2012), USA	Place	Services Environment Not one-size-fits-all Technology	The more specific papers on 'ageing in place' focus on services (*e.g.* nursing homes and assisted living facilities, health monitoring, housing and social support, and palliative care). Second, with respect to the environment, 'ageing in place' has two prongs: 'ageing in place' in the home and in other structured settings in the community. Third, 'ageing in place' is not a one-size-fits-all concept. There are multiple issues surrounding differences in 'ageing in place' among diverse populations. Fourth, technology has become an increasingly important component to the literature on 'ageing in place'.
Wiles *et al.* (2011), New Zealand	Place	Functional, symbolic, and emotional attachments and meanings of homes, neighbourhoods and communities	'Ageing in place' is linked to a sense of attachment and social connection, security and familiarity and to a sense of identity, linked to independence and autonomy. The overarching message around 'ageing in place' was that older people wanted to have choices about their living arrangements and access to services and amenities.
Dobner *et al.* (2016), The Netherlands, USA	Support	Community support Available infrastructure, amenities or services	Some factors, including the decreasing role of the welfare state, a growing redirection of care into the private sector, alongside the personal desire to stay in one's own home, are becoming increasingly relevant for an unprecedented number of older adults in urban settings. Community support and informal networks among neighbours may become even more vital for older adults living far away from family members. The experiences of older adults of 'ageing in place' in Portland and Amsterdam were found to be surprisingly similar, in spite of the different national,

			institutional and local settings. Fewer available amenities (grocery stores, pharmacies) and few public transport options present crucial hurdles to 'ageing in place', especially in the disadvantaged neighbourhood in Portland. Strengthened and fostered community support and social cohesion in both Portland neighbourhoods may mitigate infrastructural lacks. However, this places increasing demands on older adults with limited local support networks and/or declining health. In contrast, older adults in both neighbourhoods in Amsterdam raised fewer demands regarding changing or enhancing the available infrastructure, amenities or services.
Wilkinson-Meyers et al. (2014), New Zealand	Support	Personal assistance Instrumental support Formal support Informal support	Eighty-one per cent of participants required support with at least one instrumental activity of daily living. Sixty-six per cent were meeting their needs with the support they were currently receiving. Unmet need was most frequently reported for heavy housework (65%) and light housework (53%). While spouses, family members and friends were the main providers of support for light housework, meal preparation, shopping, finances and transportation, paid staff most frequently provided personal care and heavy housework assistance.
Grimmer et al. (2015), Australia	Personal characteristics of successful ageing	Health, information, practical assistance, finance, activity (physical and mental), company (family, friends, neighbours, pets), transport and safety	Identifying personal characteristics (resilience, adaptability and independence) and key elements of successful ageing in place, summarised in the acronym HIPFACTS: health, information, practical assistance, finance, activity (physical and mental), company (family, friends, neighbours, pets), transport and safety.
Doblas (2018), Spain	Social networks	Living arrangements Residential independence	Residential independence does not lead to disconnection, but instead, offers a new framework for intergenerational family relations. Although adapting

Table 5. (*Continued.*)

Authors, country	Key themes	Aspects	Key findings
		Intergenerational households Live alone	to living alone is difficult, many elderly assume the challenge of doing so because they feel that no other way of life will guarantee them as much freedom, privacy and autonomy.
Roberts *et al.* (2017), USA	Social networks	Active ageing Community engagement Participation	Demographic indicators reveal that the overall world population of adults older than 65 years will continue to grow moving forward, underlining the need to communicate to people of all ages that the lifestyle choices made at every point across the lifecourse influence health and wellness. Advances in technology and medicine, as well as improved community and housing options, also highlight the need for programmes to increase awareness of these complex and interconnected issues in an ageing society. The Active Aging for L.I.F.E. programme may be promoted through county extension offices, community centres and in public schools to provide education for improved health and wellness outcomes across the generations.
Versey (2018), USA	Social networks	Community Neighbourhood	Given separation from family, rent increases, and paying more for goods and services, the question of whether these changes affected desires to live in Harlem was posed to residents. Overwhelmingly, participants emphasised not wanting to leave their homes or the neighbourhood. Participants preferred to live independently in an urban setting rather than move south with family, relying primarily on neighbours and friends to support everyday activities, such as going to doctors' appointments or grocery shopping.

Notes: UK: United Kingdom. USA: United States of America.

et al. (2009) argue that adequate housing conditions such as mobility and accessibility are essential for an individual's quality of life and certain aspects of individual wellbeing. Hillcoat-Nallétamby and Ogg (2014) argue that wishing to move is caused more by dislikes about the home than by the neighbourhood. The built environment has to be changed completely or adapted and improved for people to be physically able to age there (Martens, 2017). The built environment is an important aspect among physical abilities. According to Sixsmith and Sixsmith (2008: 227), increasing frailty and 'barriers in and outside the home' are examples of 'physical health state' and 'the current state of the built environment' having a huge impact on people's independence and thereby on their ability to age in place.

'Ageing in place' is also discussed in the sense of an attachment to place, as a place brings with it certain social connections, security, familiarity and a sense of identity (Wiles *et al.*, 2011). Three levels of attachment to place are described, namely home, home environment and the neighbourhood. As stated before, people normally wish to stay at home for as long as possible, they are quite attached to their home environment. Several theoretical approaches were analysed by Butcher and Breheny (2016) in order to find out what 'attachment to place' really means to older people. According to these authors, attachment to place combines social, environmental, functional, emotional and psychological meanings of place, and this attachment tends to increase over time (Butcher and Breheny, 2016). Therefore, 'ageing in place' includes not only staying in one's own home, but also includes remaining in a stable and known environment where people feel that they belong. Responding to a description of attachment to place by Butcher and Breheny (2016), Van Hees *et al.* (2017) recently used an approach where place is divided into socially related aspects and physical aspects. The social aspects refer to the place where people live with respect to emotions, memories, experiences and people, whereas the physical aspects are more related to the function and physical or hard elements of the place (Van Hees *et al.* 2017). Even though 'ageing in place' is mostly related to people ageing in their home, the place and environment they have been living in for a long time, there are several recent theories that redefine the term home in this context. In such theories, home does not only relate to places that people know but also to places that people are attached to emotionally and that allow them to live an individual and self-determined life outside an institutionalised environment (Bartlett and Carroll, 2011). This indicates that 'ageing in place' should not only be understood as people ageing in their own, known houses, but also as having the ability to move within their living environment (Han and Kim, 2017). This can either refer to the social environment, such as when people wish to live geographically closer to their social network, or to the built environment, such as when people move to a place where they can live a more self-determined and independent life. Butcher and Breheny (2016) argue that social environment and family are important. Older people with a higher income are more likely to intend to move from their house but want to stay in their current community to maintain their strong social ties (Han and Kim, 2017). Boldy *et al.* (2011) argue that the place is a holistic concept consisting of three key themes: housing, locality and support. 'Ageing in place' is not a one-size-fits-all concept. There are multiple issues surrounding differences in 'ageing in place' among diverse populations (Vasunilashorn *et al.*, 2012).

Summarising these findings, two interpretations of place can be derived from the literature. While the key theme place is used to refer to physical and functional aspects in some cases, it is used to describe much less tangible, rather emotional and experience-based aspects in other cases.

Social networks

Another way in which 'ageing in place' is viewed in the literature relates more to social networks. Only three out of the 34 studies focused especially on social networks. Doblas (2018) focused on social networks in relation to living arrangements, residential independence and intergenerational households. More specifically, residential independence does not lead to disconnection with the social network, but instead, offers a new framework for intergenerational family relations. Although adapting to living alone is difficult, many older people assume the challenge of doing so because they feel that no other way of life will guarantee them as much freedom, privacy and autonomy. However, whatever the circumstances, the social actors (such as having strong emotional ties to their homes and environment) coincide in stating that they have regular family contact, practically daily with the children and/or other family members to whom they are closest. The relationship is face-to-face when relatives live nearby and, if they do not, the relationship takes place by telephone and in the form of occasional visits (Doblas, 2018). In her study concerning 'ageing in place' in Harlem, New York, Versey (2018) argues that there are also aspects to be careful about, when thinking of the consequences of 'ageing in place'. Adjusting neighbourhoods and bringing diversity to communities may lead to separation from families, rent increases, and paying more for goods and services for the existing current residents of the neighbourhood. The participants of the Versey study stated that they were not willing to leave their current homes, even if it meant being separated from their families. They preferred living in their known urban setting and neighbourhood, being a member of the community and taking part in daily activities, relying on their neighbours and friends. The current residents and their wishes, also concerning their community, can be seen as an important aspect (Versey, 2018). A study by Roberts *et al.* (2017) concerns the importance of active ageing, community engagement and participation. They confirm that active ageing, community engagement, participation and social cohesion are important elements to engage older people to stay in contact with their social network. The next studies focused on social networks in combination with place or other key themes. As mentioned before, older people prefer to live in an environment (and surrounded by people) to whom they feel attached based on memories and experiences. The environment should be familiar, older people feel attached based on memories and experiences, as a familiar environment gives them a feeling of safety and security (Dobner *et al.*, 2016). This familiar environment can also be related to the social environment and to the people in the social network or community of older people. Older people mostly wish to be engaged and needed within their social network (John and Gunter, 2016). They want to be a part of the community and live a self-determined life. Joining the everyday life of the community leads to a maximisation of their self-fulfilment and enables older people to enjoy their lifestyle (Boldy *et al.*, 2011). Joining the everyday life of the community also includes using the people's own individual talents to support the community.

Engagement in the community is also important for people's mental health. Being a part of a community may help to prevent loneliness (Sixsmith and Sixsmith, 2008). Overall then, although the theme 'social networks' is mentioned far less than the theme 'place' within the literature in the field, social networks are without doubt acknowledged as playing a part when it comes to 'ageing in place'.

Support

Two studies focused on support as a key success factor for 'ageing in place'. We found that two different kinds of support were brought up in the literature: formal support and informal support. Formal support is provided by professionals and service providers, while informal support is provided by informal networks consisting of anyone from family members, neighbours and friends, to the community in general. Formal support mainly consists of the infrastructure, facilities and services that are available to the older people in question, such as public transportation, grocery stores, pharmacies, meal services and personal care (Dobner *et al.*, 2016). Paid staff most frequently provide personal care and (heavy) housework assistance (Wilkinson-Meyers *et al.*, 2014). Fewer available amenities (grocery stores, pharmacies) and few public transport options present crucial hurdles to 'ageing in place', especially in disadvantaged neighbourhoods. Strengthened and fostered community support and social cohesion may mitigate infrastructural lacks. According to a study by Wilkinson-Meyers *et al.* (2014), 81 per cent of the participants required support with at least one instrumental activity of daily living. Sixty-six per cent were meeting their needs with the support they were currently receiving. Unmet need was most frequently reported for heavy housework (65%) and light housework. The providers of informal support are family members, neighbours, friends and the community in general. They are the main providers of informal support, such as light housework, meal preparation, shopping, finances and transportation (Wilkinson-Meyers *et al.*, 2014). According to Dobner *et al.* (2016), who focused on informal community support and informal networks among neighbours in their study, informal networks (friends, neighbours, community) may become even more vital for older adults who live far away from family members. Dobner *et al.* (2016) focused on informal community support and informal networks among neighbours.

Summarising these findings, support concerns personal assistance, the living environment, the daily needs and facilities, and is divided into formal support and informal support. Formal support is provided by professionals and service providers, while informal support is provided by informal networks made up of family members, neighbours, the community and friends.

Technology

Five out of the 34 studies defined 'ageing in place' in terms of technology. These five studies define technology as one or more of the following: support of mobility, information and communication technology (ICT), biotechnology and ambient intelligence. This spectrum of technology may enable older people to be more mobile. Bradby *et al.* (2010) stated that the spectrum of mobility technology is much broader than walking sticks, walkers, wheelchairs and stair lifts, and can include everything from automobiles to public transport, security systems, special

shoes, clothing, medication and heaters. Older people incorporate a range of ICTs, including telephones, computers, televisions and radios, into self-care routines and meaningful activities. These tools not only help them stay connected and in control, but also help to foster intellectual growth and, as such, the health benefits that scientists now associate with brain stimulation (Bradby *et al.*, 2010). Biotechnology, such as pharmaceuticals and over-the-counter medications, are generally associated with health and wellbeing. However, paying attention to the meaning older people attach to medical use and non-use can illuminate how these biotechnologies are positioned as an array of techniques older people use to practise self-care (Bradby *et al.*, 2010). The ambient intelligence technologies were seen as a welcome addition to strategies already adopted by older people, including a variety of home modifications and assistive devices (Van Hoof *et al.*, 2011). Older people have various motives to use ambient intelligence technologies to support 'ageing in place'. The most prominent reason was that using these technologies improved the sense of safety and security that they experience, in particular when it comes to fall incidents. The fear of not being able to use existing emergency response systems in case of such incidents was mitigated by several of such ambient technologies and helped postpone institutionalisation (Van Hoof *et al.*, 2011). Peek *et al.* (2017) investigated the extent to which older people accept technology and which factors influence this acceptance rate. They found 27 factors which they divided into six themes: concerns regarding technology, expected benefits of technology, need for technology (*e.g.* perceived need and subjective health status), alternatives to technology, social influence (*e.g.* influence of family, friends and professional caregivers) and characteristics of older adults (*e.g.* desire to age in place). Peek *et al.* (2017) also conducted a study about why and how technologies are acquired by older people and found that externally driven and purely desire-driven acquirements led to a higher risk of sub-optimal use and to low levels of need satisfaction.

In summary, it can be said that technology is a theme of significance when it comes to 'ageing in place', and that it covers a wide range of attributes and tools. Using technology may enable older people to live independently at home and may give them a feeling of safety and security.

Personal characteristics

Only one study focused on 'ageing in place' in relation to personal characteristics of older people. This study presented older people's views about how they and their peers perceive, characterise and address changes in their capacity to live independently and safely in the community. The authors identified personal characteristics (resilience, adaptability and independence) and key elements of successful 'ageing in place', summarised in the acronym HIPFACTS: health, information, practical assistance, finance, activity (physical and mental), company (family, friends, neighbours, pets), transport and safety. Supporting older people's choices to live safely and independently in the community ('ageing in place') can maximise their quality of life. Little is known of the views of older people about the 'ageing in place' process, and how they deal with the fact that they require support to live in the community accommodation of their choice, as well as how they deal with prioritising their choice (Grimmer *et al.*, 2015). This provided a range of insights about, and strategies for, 'ageing in place'. Participants identified relatively simple, low-cost and

effective supports to enable them to adapt to change, while retaining independence and resilience. The findings highlighted that successful 'ageing in place' requires integrated, responsive and accessible services. Key personal characteristics of successful 'ageing in place' are being resilient, having adaptability, and being independent, physically and mentally active, and healthy (Grimmer *et al.*, 2015).

Consultation

After consulting the focus group (Stage 6 in the Methods), the experts agreed with the overview of how 'ageing in place' is framed in existing literature. During the focus group meeting, the study characteristics, definitions, key themes and aspects were presented to the members of the focus group, after which a discussion took place about the results. The members of the focus group recognised and indicated the results found. Additionally, they indicated that one important aspect was not brought forward by the current study, namely the idea that 'ageing in place' should be primarily a long-term solution. According to the members of the focus group, definitions of the concept 'ageing in place' should make mention of long-lasting, durable solutions that allow and support older people to continue living at home, instead of temporary *ad hoc* solutions. The inclusion of durable solutions should be taken into account in the development of sustainable policies by both government(s), as well as health-care and service providers, where the quality of life and the wellbeing of older people are paramount.

Discussion

The aim of this scoping review was to identify conventions and patterns in the scholarly treatment of 'ageing in place'. The findings of this study, resulting from an analysis of a total of 34 studies, highlight some key themes (place, social networks, support, technology and personal characteristics) that are largely congruent with the concepts and meanings of 'ageing in place' found in prior research. The majority of the studies that were analysed in the current review focused on aspects related to the key theme *place*. Two interpretations of place can be distinguished within these 23 studies: while some studies concentrate purely on the physical, functional aspects of place, others describe place in a more psychological way. The latter also has implications for the concept of 'ageing in place', because it does not bind people to one specific geographical place anymore but is more flexible and related to social ties. Another key theme of 'ageing in place' is *social networks*. Although the theme 'social networks' is mentioned far less than the theme 'place' within the literature in the field, social networks are without doubt acknowledged as playing a part when it comes to 'ageing in place'.

The third key theme is *support*. Two different aspects of this theme were noticed, namely receiving *support* and offering *support*. Two studies relate to the *support* and assistance that older people *receive* from policy makers, service providers and the social network. Without this support many people would not be able to 'age in place'. The fourth key theme is related to *technology*. The five studies that address this theme define the term technology as encompassing one or more of the following: support of mobility, ICT, biotechnology and ambient intelligence.

Technology is a broad concept. Using technology may enable older people to live independently at home. Only one article (out of the 34) looked into *personal characteristics* of 'ageing in place'. This article brought forward five key personal characteristics of 'ageing in place', namely resilience, adaptability, independence, physical and mental activity, and health.

To gain an insight into the interrelations among the key themes and aspects, we may look at geographical differences, the development of the concept 'ageing in place' over time, and the relation between different socio-economic, cultural backgrounds and different abilities of older people. We noticed some differences between studies from different continents in terms of the key themes that were mentioned. European studies pay most attention to the two key themes *technology* and *place*. Research into the key theme *place* is also being done in Oceania. The other key themes (*social networks*, *support* and *personal characteristics*) are highlighted across European countries, North America and Oceania. Not all regions cover all the five key themes. This brings a potential risk of lacking attention to one or more themes in those regions which might imply a threat for successful 'ageing in place'. Our recommendation is to make sure that research on 'ageing in place' is conducted in such a way that the focus of conducted studies is distributed in a more balanced way, with each of the five key themes (and the coherence between them) being studied in all geographical regions. The evaluation of an experiment in Rotterdam in the Netherlands shows that this recommendation for an integrated approach of all key themes is valid. The experiment, 'Even Buurten', was part of the National Programme for Elderly Care in the Netherlands (2008–2016) and aimed to support the formal and informal networks around older people so that they can continue to live independently at home for as long as possible (Van Dijk, 2015). The focus of this experiment was on social networks, support, self-reliance (personal characteristics) and the physical environment (place). Technology, supporting 'ageing in place' and attachment to place were not included in this integrated approach, although they are found to be related with 'ageing in place'.

In addition to geographical differences in how research themes are addressed, we also noted differences over time. Vasunilashorn *et al.* (2012) reported that topics related to the environment and services were the most commonly examined between 2000 and 2010, while the number of studies pertaining to technology and health/functioning was on the rise. According to Vasunilashorn *et al.* (2012), this underscores the increase in diversity of topics that surround the literature on 'ageing in place' in gerontological research. Our study also shows a development over time with regard to the key themes. The studies related to *technology* were conducted between 2004 and 2017, those on *place* between 2006 and 2019, those on *support* between 2014 and 2016, those on *personal characteristics* in 2015, and those on *social networks* in 2017 and 2018. The key theme *place* is dominant in the evolution of the concept and has appeared more frequently as of late. In other words, a shift is noticeable: from 'hard' aspects of 'ageing in place' (place and technology) to 'soft' aspects (social networks and support).

The context of 'ageing in place' is diverse for older people, depending on their different socio-economic and cultural backgrounds and different abilities. Differences in socio-economic status have been operationalised by Grimmer

et al. (2015) in a so-called HIPFACTS score (health, information, practical assistance, finance, activity (physical and mental), company (family, friends, neighbours, pets), transport and safety; Grimmer *et al.*, 2015). Lower HIPFACTS scores indicate a modest self-reliance. Modest self-reliance is not found to be beneficial for successful 'ageing in place'.

Due to the scope of our study, we cannot do without a discussion about definitions of 'ageing in place' that the literature provides. Only two definitions of 'ageing in place' were found in the studies we analysed. We compared these definitions to the definition of the Centers for Disease Control and Prevention (CDC) and came to the conclusion that all three definitions have been drawn up from another perspective. The CDC (2019) defined 'ageing in place' as 'the ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level'. This definition is particularly based on the ability older persons have or not. Horner and Boldy (2008) defined 'ageing in place' more positively as the extent to which the needs of older persons are met, supporting them to live independently, or with some assistance, for as long as possible. The core of this definition is that support has to meet the needs of older people. Grimmer *et al.* (2015) stated that 'ageing in place' is mostly about the opportunity for older people to remain in their own home for as long as possible, without having to move to a long-term care facility. This somewhat more narrow definition describes the situation as such. The three perspectives emphasise different components that may be complementary to each other.

Strengths and limitations

Our review has several strengths. First, we used a comprehensive search strategy across multiple databases and search engines with no date restrictions, minimising the risk of having missed scientific studies about 'ageing in place'. Second, to enhance trustworthiness, the process of selecting studies and extracting charting data was done independently, by two reviewers (Levac *et al.*, 2010). However, the search that was conducted for this study may have also been subject to certain limitations. First, in our search we used a combination of keywords, but 'ageing in place' is a broad concept encompassing a varied terminology. It is possible that we have missed studies that used other terms with similar meanings. In an attempt to limit the effect of this issue, we checked reference lists and asked experts for literature. Second, we limited our search to databases of peer-reviewed, scientific articles. Books, grey literature and discussion papers, for instance, are not included. As a result, we may have missed some definitions of 'ageing in place'. However, we were especially interested in the way 'ageing in place' is defined in the scientific literature, and we did not expect to find this within books and grey literature. Another problem we faced was that scientific publications frequently focus on just one key theme of 'ageing in place', such as place, social networks, support, technology or personal characteristics. It is therefore possible that our overview of key themes and aspects is incomplete and also that more authors than we found used their definition of 'ageing in place'. We attempted to minimise this risk by checking the references for other sources providing more detailed descriptions. In future studies, it might be worthwhile to actively approach the authors of the included studies for

additional information. A final remark is that we did not assess the quality of the selected studies. However, according to Levac *et al.* (2010), the strength of the scoping review methodology is that it focuses on the state of research activity rather than evaluating the quality of existing literature.

Conclusion and implications

The research question of this study was: 'How is "ageing in place" defined in the literature and which key themes and aspects are described?' 'Ageing in place' as a result based on empirical research is defined just in a very few studies. Grimmer *et al.* (2015) stated that 'ageing in place' is mostly about the opportunity for older people to remain in their own home for as long as possible, without having to move to a long-term care facility. Horner and Boldy (2008: 358) defined 'ageing in place' as a 'positive approach to meeting the needs of the older person, supporting them to live independently, or with some assistance, for as long as possible'. From our scoping review, we noticed that the concept 'ageing in place' is broad. We were able to identify five key themes: place, social networks, support, technology and personal characteristics. Professionals and governments should consider including all of these key themes in the development of policies concerning 'ageing in place'. Only then can they handle 'ageing in place' in an integrated way and develop policies that suit older people. Only five out of the 34 included studies focused on social networks (three) and support for older people (two). However, it is assumed that particularly social networks and support have a large impact on 'ageing in place'. Further research into the relationship between 'ageing in place' and communities providing informal support is recommended. Future research on 'ageing in place' will face some serious challenges, such as longitudinal effects, changing populations and shifting health-care policies. There is only one way to deal with these challenges: keep focusing on the quality of life as it is perceived by older people who are ageing in place, because that aim will probably survive some generations.

References

Ahn M, Kang J and Kwon HJ (2020) The Concept of Aging in Place as Intention. *The Gerontologist* **60**, 50–59.

Arksey H and O'Malley L (2005) Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology* **8**, 19–32.

Askham J, Nelson H, Tinker A and Hancock B (1999) To Have and to Hold: The Bond Between Older People and the Homes They Own. *York Publishing Services.*

Bartlett H and Carroll M (2011) Ageing in place, down under. *GLOBAL AGEING Issues & Action* **7**, 25–34.

Boldy D, Grenade L, Lewin G, Karol E and Burton E (2011) Older people's decisions regarding 'ageing in place': a Western Australian case study. *Australasian Journal on Ageing* **30**, 136–142.

Bradby H, Joyce K and Loe M (2010) Doing it My Way: Old Women, Technology and Wellbeing. *Technogenarians: Studying Health & Illness Through an Ageing, Science & Technology Lens* **32**, 319–334.

Bramer WM, Rethlefsen ML, Kleijnen J and Franco OH (2017) Optimal database combinations for literature searches in systematic reviews: a prospective exploratory study. *Systematic Reviews* **6**, 245.

Butcher E and Breheny M (2016) Dependence on place: a source of autonomy in later life for older Maori. *Journal of Aging Studies* **37**, 48–58.

Centers for Disease Control and Prevention (CDC) (2019) *Healthy Places Terminology*. Available at https://www.cdc.gov/healthyplaces/terminology.htm.

Chen C-K, Shie A-J, Wang K-M and Yu C-H (2015) An ageing-in-place service innovation model by using TRIZ methodology. *Human Factors and Ergonomics in Manufacturing & Service Industries* **25**, 166–182.

Costa-Font J, Elvira D and Mascarilla-Miró O (2009) 'Ageing in place'? Exploring elderly people's housing preferences in Spain. *Urban Studies* **46**, 295–316.

Cramm JM, Van Dijk HM and Nieboer AP (2018) The creation of age-friendly environments is especially important to frail older people. *Ageing & Society* **38**, 700–720.

Doblas JL (2018) Living Arrangements among the Elderly. *Revista Española de Investigaciones Sociológicas* **161**, 23–40.

Dobner S, Musterd S and Droogleever Fortuijn J (2016) 'Ageing in place': experiences of older adults in Amsterdam and Portland. *GeoJournal: Spatially Integrated Social Sciences and Humanities* **81**, 197–209.

European Commission (2015) *The 2015 Ageing Report*. Brussels: European Commission.

EUROSTAT (2011) *Active ageing and solidarity between generations: A statistical portrait of the European Union 2012*. Publications Office of the European Union.

Fernández-Carro C (2016) Ageing at home, co-residence or institutionalisation? Preferred care and residential arrangements of older adults in Spain. *Ageing & Society* **36**, 586–612.

Giacalone D, Wendin K, Kremer S, Frøst MB, Bredie WL, Olsson V, Otto MH, Skjoldborg S, Lindberg U and Risvik E (2016) Health and quality of life in an aging population–Food and beyond. *Food quality and preference* **47**, 166–170.

Grimmer K, Kay D, Foot J and Pastakia K (2015) Consumer views about aging-in-place. *Clinical Interventions in Aging* **10**, 1803.

Han JH and Kim J-H (2017) Variations in ageing in home and ageing in neighbourhood. *Australian Geographer* **48**, 255–272.

Hillcoat-Nallétamby S and Ogg J (2014) Moving beyond 'ageing in place': older people's dislikes about their home and neighbourhood environments as a motive for wishing to move. *Ageing & Society* **34**, 1771–1796.

Horner B and Boldy DP (2008) The benefit and burden of 'ageing-in-place' in an aged care community. *Australian Health Review: A Publication of the Australian Hospital Association* **32**, 356–365.

Iecovich E (2014) Aging in place: from theory to practice. *Anthropological Notebooks* **20**, 21–33.

International Federation of Ageing (IFA) (2011) *Global Ageing*. Toronto: IFA.

Joanna Briggs Institute (2015) *Joanna Briggs Institute Reviewers: Manual 2015: Methodology for JBI Scoping Reviews*. Adelaide, Australia: University of Adelaide.

John DH and Gunter K (2016) engAGE in community. *Journal of Applied Gerontology* **35**, 1095.

Kerbler B, Sendi R and Filipovic Hrast M (2017) The relationship of the elderly toward their home and living environment. *Urbani Izziv* **28**, 96–109.

Laslett P (1987) The Emergence of the Third Age. *Ageing & Society* **7**, 133–160.

Lesthaeghe R (2010) The Unfolding Story of the Second Demographic Transition. In *Institute of social research*. University of Michigan, Michigan, p. 46.

Levac D, Colquhoun H and O'Brien K (2010) Scoping studies: advancing the methodology. *Implementation Science* **5**, 1–9.

Machielse A (2016) *Afgezonderd of ingesloten? Over sociale kwetsbaarheid van ouderen*. Inaugural speech. Rotterdam, The Netherlands: Universiteit voor Humanistiek.

Magnusson L, Hanson E and Borg M (2004) A literature review study of Information and Communication Technology as a support for frail older people living at home and their family carers. *Technology & Disability* **16**, 223–235.

Martens CT (2017) Aging in Which Place? Connecting Aging in Place with Individual Responsibility, Housing Markets, and the Welfare State. *Journal of Housing For the Elderly* **32**, 1–11.

Means R (2007) Safe as houses? Ageing in place and vulnerable older people in the UK. *Social Policy & Administration* **41**, 65–85.

Mesthrige JW and Cheung SL (2019) Critical evaluation of 'ageing in place' in redeveloped public rental housing estates in Hong Kong. *Ageing & Society*, 1–34. Available online doi:10.1017/S0144686X19000448.

Milligan C (2009) *There's No Place Like Home. Place and Care in an Ageing Society*. Farnham, UK: Ashgate.

Norazizan SARS, Rosnah MY, Aizan HT, Una GSC and Rizal HM (2006) Ageing-in-place: towards an ergonomically designed home environment for older Malaysians. *Gerontechnology* **5**, 92–98.

Peace S, Holland C and Kellaher L (2011) 'Option recognition' in later life: variations in ageing in place. *Ageing & Society* **31**, 734–757.

Peek STM, Luijkx KG, Vrijhoef HJM, Nieboer ME, Aarts S, van der Voort CS, Rijnaard MD and Wouters EJM (2017) Origins and consequences of technology acquirement by independent-living seniors: towards an integrative model. *BMC Geriatrics* **17**, 1.

Peek STM, Wouters EJM, van Hoof J, Luijkx KG, Boeije HR and Vrijhoef HJM (2014) Review: Factors influencing acceptance of technology for aging in place: a systematic review. *International Journal of Medical Informatics* **83**, 235–248.

Renaut S, Ogg J, Petite S and Chamahian A (2015) Home environments and adaptations in the context of ageing. *Ageing & Society* **35**, 1278–1303.

Roberts E, Bishop A, Ruppert-Stroescu M, Clare G, Hermann J, Singh C, Balasubramanan M, Struckmeyer KM, Mihyun K and Slevitch L (2017) Active Aging for L.I.F.E.: an intergenerational public health initiative addressing perceptions and behaviors around longevity, independence, fitness, and engagement. *Topics in Geriatric Rehabilitation* **33**, 211.

Roy N, Dubé R, Després C, Freitas A and Légaré F (2018) Choosing between staying at home or moving: A systematic review of factors influencing housing decisions among frail older adults. *PLoS ONE* **13**, 1–32.

Sixsmith A and Sixsmith J (2008) Ageing in place in the United Kingdom. *Ageing International* **32**, 219–235.

Van Dijk HM, Cramm JM, Van Exel JOB and Nieboer AP (2015) The ideal neighbourhood for ageing in place as perceived by frail and non-frail community-dwelling older people. *Ageing & Society* **35**, 1771.

Van Hees S, Horstman K, Jansen M and Ruwaard D (2017) Photovoicing the neighbourhood: understanding the situated meaning of intangible places for ageing-in-place. *Health and Place* **48**, 11–19.

Van Hees S, Horstman K, Jansen M and Ruwaard D (2018) Meanings of 'lifecycle robust neighbourhoods': constructing *versus* attaching to places. *Ageing & Society* **38**, 1148–1173.

Van Hoof J, Kort HS, Rutten PG and Duijnstee MS (2011) Ageing-in-place with the use of ambient intelligence technology: perspectives of older users. *International Journal of Medical Informatics* **80**, 310–331.

Van Nimwegen N and Ekamper P (2018) Vergrijzing. *Demos: bulletin over bevolking en samenleving* **34**, 5–7.

Vasunilashorn S, Steinman BA, Liebig PS and Pynoos J (2012) Aging in Place: Evolution of a Research Topic Whose Time Has Come. *Journal of Aging Research* 1–6.

Vermij L (2016) *Kleine gebaren*. The Hague, The Netherlands: Sociaal Cultureel Plan Bureau.

Versey HS (2018) A tale of two Harlems: gentrification, social capital, and implications for aging in place. *Social Science & Medicine* **214**, 1–11.

Wiles JL, Leibing A, Guberman N, Reeve J and Allen RE (2011) The Meaning of "Ageing in Place" to Older People. *The Gerontologist* **52**, 357–366.

Wilkinson-Meyers L, Brown P, McLean C and Kerse N (2014) Met and unmet need for personal assistance among community dwelling New Zealanders 75 years and over. *Health & Social Care in the Community* **22**, 317–327.

World Health Organization (2015) *World Report on Ageing and Health*. Geneva: World Health Organization.