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Extra care housing in the UK: a scoping review

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Abstract

Background

Extra care housing is a model of housing for older people where residents live in self-contained accommodation with flexible care and support available 24/7. Ageing populations, seen globally and in the UK, mean increasing demand for this type of housing. Whilst extra care housing may help people live independently for longer, its provision poses challenges (e.g. resourcing flexible care). By identifying existing evidence, this scoping review will inform future research into extra care housing, to support the development of schemes that meet the needs of older people.

Objectives

To identify the volume, focus/questions, study design, quality and main findings of empirical research and evaluations relating to extra care housing in the UK.

Methods

We conducted a scoping review of evidence syntheses and primary research. ASSIA, CINHAL, Medline, HMIC, PQDT Global, SPP and Web of Science, along with relevant websites, were searched for studies (June 2024). We also completed citation-chasing on included studies. We included systematic reviews and empirical evaluations published since 2010, conducted in the UK, focused on extra care housing for older people, and investigating any outcome. Data were tabulated and summarised narratively. Critical appraisal was conducted using the MMAT checklist (primary studies) or AMSTAR 2 (systematic reviews). Consultation with stakeholders and ECH residents informed the review.

Results

Ninety-eight publications were included. Thirty-seven were qualitative, 28 were quantitative, 19 took a mixed methods approach and two were modelling studies using secondary data. Older people were participants in 57 studies. Many studies provided limited information on the characteristics of participants and the included extra care housing schemes.

Included studies had three overlapping areas of focus: (i) the supply of extra care housing and older people's decision-making regarding relocation; (ii) living in extra care housing (e.g. impact on quality of life, residents' experiences of community, physical infrastructure); and (iii) leaving extra care housing (there was little research in this area). Whilst much of the available research supports the provision of extra care housing as a model of housing with care for older people, studies were variable in their methodological quality and reporting. Consultation with extra care housing residents raised topics that corresponded with the findings of included studies (e.g. the importance of care provision in supporting independence).

Limitations

Extra care housing is known by different names (e.g. assisted living). This created challenges in finding studies and understanding whether the housing model being studied met our definition of extra care housing. As we took an inclusive approach, some included studies may have focused on other types of housing with care.

Conclusions

There is a growing body of evidence regarding the provision of extra care housing as a model of housing for older people. However, given the changing health and social care landscape and increasing care needs of the population, further research is needed to support the future development of extra care housing.

Future work

High-quality research on effectiveness and cost-effectiveness is needed, as well as on specific topics (e.g. whether extra care housing can be a home for life).

Study registration

The protocol was published on Zenodo (doi.org/10.5281/zenodo.12698241).

Funding

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Abbreviations

ACE-R Addenbrooke's Cognitive Examination-Revised

ADASS Association of Directors of Adult Social Services

ADL activities of daily living

ALT assisted living technology

AMSTAR A MeaSurement Tool to Assess systematic Reviews

AMT autobiographical memory test

ARCO Associated Retirement Community Operators

ASCOT Adult Social Care Outcomes Toolkit

ASSIA Applied Social Sciences Index and Abstracts

CASP-19 Control, Autonomy, Self-Realization and Pleasure

CINHAL Cumulated Index in Nursing and Allied Health Literature

DGV Denham Garden Village

ECH extra care housing

EOP Enriched Opportunities Programme

EVOLVE Evaluation of Older People's Living Environments

FLP functional limitations profile

GDS Geriatric Depression Scale

Housing LIN Housing Learning and Improvement Network

HMIC Health Management Information Consortium

HSDR Health Service Delivery Research

HWC housing with care

IADL instrumental activities of daily living

IQR interquartile range

IRC integrated retirement community

QOLAD Quality of Life in Alzheimer's Disease

MCI mild cognitive impairment

MDS Minimum Data Set Cognitive Performance Scale

MMAT Mixed Methods Appraisal Tool

MMSE Mini-Mental State Examination

NIHR National Institute for Health and Care Research

PQDT ProQuest Dissertations & Theses

SD standard deviation

SEIQoL Schedule for the Evaluation of Individual Quality of Life

SF-36 36-Item Short Form Survey

SPP social policy and practice

sWEMWBS Short Warwick-Edinburgh mental well-being scale

SWLS Satisfaction with Life Scale

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Plain language summary

What is this review about?

Extra care housing is a type of housing for older people, where residents have:

- their own accommodation (e.g. a flat or bungalow).
- shared facilities (e.g. a lounge).
- flexible care and support available 24/7.

Some research shows that it could help people live on their own for longer. However, globally, and in the UK, the population is ageing and there is not enough extra care housing for everyone who wants it.

More research is needed to make sure that any new extra care housing meets the needs of older people. This review asked:

- What research is there currently on extra care housing for older people in the UK?

What studies are included?

There are 98 publications included in the review, some are research papers, others are reports from organisations (e.g. providers of extra care housing, charities that support older people).

What are the main findings?

We found three groups of studies (which overlapped):

- Some studies looked at the supply of extra care housing and people's decisions to move into it.
- Many studies looked at living in extra care housing, from the design of buildings to the impact on people's health and wellbeing.
- Few studies looked at people moving out of extra care housing.

What do the findings mean?

Whilst there is lots of research into extra care housing, there are some gaps where more research may be needed (e.g. on whether extra care housing can be a 'home for life').

Stakeholder and public and patient involvement

Experts (e.g. who provide care to older people, providers of extra care housing) and public collaborators who live in extra care housing provided feedback on the review.

How up-to-date is this review?

The authors searched for research published from 2010 to June 2024.

Scientific summary

Background

Extra care housing (ECH) is a model of housing for older people, generally considered as combining independent housing with the provision of flexible care and support. Its key features include:

- Self-contained accommodation (e.g. a flat or bungalow in a larger complex).
- Communal activities (e.g. social events) and facilities (e.g. café/restaurant, hairdresser, lounge).
- Flexible and individualised 24-hour care provided onsite (including emergency assistance).
- Accommodation and care contracted and paid for separately.

Some research shows that it could help people live independently for longer, provide social support, improve quality of life, and reduce healthcare costs. However, research has also identified challenges, particularly relating to resourcing flexible care, caring for residents with high support needs (e.g. dementia), and enabling ECH to be a 'home for life'.

Understanding ECH is important given longstanding policy objectives in the UK and internationally, around enabling 'ageing in place' - allowing people to live independently for as long as possible without having to move home or to a different area. ECH has the potential to enable healthy ageing; this has been recognised by the UK Government, which has supported its development through initiatives such as the Department of Health Extra Care Housing Fund. However, the provision of ECH is far lower in the UK than similar countries, with market research from 2015 finding that at least 5% of over-65s live in housing with care settings in Australia and the US, compared to 0.6% of over-65s in the UK.

Demand for ECH is also increasing given the ageing population. The number of people aged 80 and over is predicted to more than double in the next 40 years, from three to six million in the UK, with similar patterns seen globally, and corresponding increases in the need for health and social care. To support the development of ECH schemes, ensuring that they meet the needs of older people, it is important to know what existing research in and about ECH already shows.

Objectives

To identify the volume, focus/questions, study design, quality and main findings of empirical research and evaluations relating to extra care housing in the UK.

Methods

We conducted a scoping review of evidence from the UK. In June 2024, we searched ASSIA and PQDT Global (via ProQuest), CINAHL (via EBSCOhost), HMIC, Medline and SPP (via Ovid), and Web of Science (WoS): Core collection for studies. We also searched relevant websites for publications and completed backwards and forwards citation chasing on included studies. Two reviewers independently screened all identified records at title/abstract level and the full texts of the records selected in the first round.

Systematic reviews and empirical studies were included in the review. We included studies looking at any outcome (e.g. effectiveness, cost-effectiveness, experiences) of ECH for older people, as defined above. Study participants could include older people, their families, and professionals associated with ECH (e.g. scheme managers, housing associations, local authorities). Only evidence published since 2010 was included, based on changes to the funding, demographic, housing design and policy landscape for ECH over time.

We extracted data on categories including:

- Study characteristics (study design, aims, focus, number and type of participants).
- Characteristics of participating ECH schemes (number of schemes, rurality, type of housing provider, tenure, capacity).
- Characteristics of participants or residents of participating ECH (age, sex, LGBTQ+ status, ethnicity, health and disability, marital status).

Data were extracted from each included publication by one reviewer and checked by a second reviewer. These data were tabulated, with categories for ‘focus’ determined by grouping studies thematically according to their aims, and summarised narratively. We then mapped the main findings so that they followed the journey of an older person from (i) considering moving into ECH, to (ii) living in ECH, and potentially (iii) moving

on from ECH. We also analysed whether and how the included studies defined ECH by assessing how many criteria they met from our definition of ECH (as given in the Introduction).

Critical appraisal of individual studies was conducted using the MMAT checklist (primary studies) and AMSTAR 2 (systematic reviews).

Stakeholders were consulted throughout the production of the review. We also visited an ECH scheme in Exeter to discuss our preliminary findings with residents, informal carers, and staff.

Results

Searches of databases resulted in 7976 hits; after duplicates were removed, 5132 records were screened at title and abstract level. Of those, 224 were selected for full text screening and 86 were included in the review. A further three publications were found via websites with search functionality, and nine publications from citation chasing, meaning a total of 98 publications were included in the review. Over one third were qualitative studies (37), 28 were quantitative, 19 took a mixed methods approach and two were modelling studies using secondary data. Of the quantitative and qualitative studies, 45 were cross-sectional (i.e. collected data a single time point; 21 quantitative and 24 qualitative), and 19 longitudinal (i.e. collected data at multiple time points; six quantitative and 13 qualitative); one randomised controlled trial (where participants are randomly assigned to either an experimental or control group) was also included. In terms of quality, qualitative studies scored well on the MMAT checklist, but critical appraisal of other study designs indicated their quality was variable, particularly for the mixed methods studies, many of which scored poorly.

Older people - most of whom were residents of ECH, although some studies focused on older people living in the community who might consider living in ECH - were participants in the majority of studies (n=57), with 32 studies only including older people. The number of older people included as participants in the studies varied, ranging from 7 to 7071, with a median of 65 (interquartile range [IQR] 26 – 152). Other participants included professionals, either staff working in a scheme (n=24 studies), or external stakeholders (n=21 studies) such as housing providers, local authorities, or

architects. Family members or informal carers were also participants in some studies (n=10).

What was considered to be ECH was not clearly defined in many studies, with 22 studies providing no explicit definition. Of those that did, most indicated that, in ECH, residents should have self-contained accommodation (n=46 studies). Thirty-six studies specified that ECH should have communal facilities and services, 35 studies mentioned the provision of individualised and flexible care, and 30 that care and support staff should be present on the premises 24/7. Fifteen studies indicated that accommodation should be rented or owned by the resident, only five studies specified that housing and care should be contracted separately. None specified all of the criteria included in our definition of ECH when describing ECH.

Thirty studies did not report details on the location of participating scheme(s). Of those that did, twenty included both urban and rural ECH schemes, nine only urban schemes, six included either urban and suburban schemes or only suburban schemes, and there were two studies focusing solely on rural schemes. In studies that reported details of the ECH provider (n=40), the majority (n=26) focused on schemes run by non-profit organisations (e.g. housing associations, charities), one study included only a private provider, and 13 studies included both non-profit and private providers. Other characteristics of the included ECH schemes, such as the number of residential units and their communal facilities, were not reported consistently.

Characteristics of participants were also reported inconsistently. Age and gender were most often reported, with 39 studies reporting age and 42 studies reporting gender, and a significant proportion of studies also reporting marital or cohabiting status (n=28). LGBTQ+ status was least often reported (n=7). Whilst ethnicity was reported by 23 studies, in most studies of these studies the majority of participants were white (n=15), and there were five studies that did not include any participants from ethnic minority backgrounds.

In terms of focus, most publications (n=45) focused on the experiences of older people living in ECH; 18 investigated the effectiveness of ECH, and 12 costs, whilst the focus of 43 publications was classified as ‘other’. Twenty-seven studies had more than one focus (e.g. 7 of the 18 effectiveness studies also evaluated the costs of ECH). We

further explored the focus of the included studies by considering them within three categories, representing a resident's journey through ECH:

(i) Moving into ECH – this category included two types of study, those that looked at the supply of, and demand for, ECH, and those that investigated older people's decision-making regarding relocation.

(ii) Living in ECH - the majority of studies were in this category. Some investigated the effectiveness of ECH (n=18) for a range of outcomes, such as quality of life or ability to perform daily activities; others considered cost (n=11). However, most studies explored experiences of living in ECH; some of these were directly focused on residents, exploring independence and community within ECH, changing care needs and relationships with staff, and inclusivity and diversity. There was also a group of studies focusing specifically on the experiences of residents living with dementia. Other studies looked at the 'implementation' of ECH, through investigations of the building design, the use of technology, and management and workforce.

(iii) Moving on from ECH – there were few studies in this category, with only one focusing specifically on whether and how older people came to leave ECH.

Whilst much of the available research supports the provision of ECH as a model of housing with care for older people, studies were variable in their methodological quality and reporting. More high-quality evidence on effectiveness and cost-effectiveness is needed, as well as research to address specific gaps, such as whether ECH can offer a home for life. Knowledge on whether and how residents may need to move on from ECH is important both to ensure the provision of support for any transition, and in the context of increasing numbers of residents with high care needs entering ECH. This topic was discussed by ECH residents at Edwards Court during PPIE consultation, with the high turnover of residents within their scheme having an impact on their social and psychological wellbeing and support needs. Conversations with ECH residents and staff further placed the findings of the review in context, with residents' motivations for moving in and the importance of the provision of care and support to their feelings of independence corresponding with findings of included studies.

Future research should consider methodological quality, following best practice guidance for conducting and reporting specific study designs. Special attention should be paid to full and consistent reporting of participant characteristics, especially those relating to inequality in opportunity or outcomes (e.g. ethnicity, LGBT+ status), and any variations in findings between groups (e.g. differences in preferences among social minority groups). Providing a detailed description of participating ECH schemes (e.g. housing and care providers, size, facilities) will allow comparison between different types of scheme, and improve the usability of research by allowing decision makers to decide on the applicability of findings to their specific case.

We also identified implications for policy and practice based on our findings: the need for a nation-wide approach to create a standard definition for ECH; ensuring the physical infrastructure of schemes meets the needs of residents; and that training is available to enable a skilled workforce (a need raised by ECH staff at Edwards Court).

ECH is known by different names (e.g. assisted living). This created challenges in finding studies and understanding whether the housing model being studied met our definition of extra care housing. As we took an inclusive approach, some included studies may have focused on other types of housing with care.

Conclusions

There is a body of evidence that supports the provision of ECH as a model of housing for older people. However, given the changing health and social care landscape and the increasing care needs to the population, more and higher quality research may be needed to support the future development of ECH, both adding to the evidence base on its effectiveness and cost-effectiveness, and addressing specific knowledge gaps, such as whether it can offer a home for life. There is also a need in policy and practice to more clearly define ECH.

Study registration

The protocol was published on Zenodo (doi.org/10.5281/zenodo.12698241).

Funding

This project was funded by the National Institute for Health Research (NIHR) Health Service and Delivery Research (HSDR) programme and supported by the NIHR

Applied Research Collaboration South West Peninsula and will be published in full in XXX Journal; Vol. XX, No. XX. See the NIHR Journals Library website for further project information.

1. Background

Both globally and in the UK, the population is ageing. By 2050, the proportion of the people over the age of 60 will have doubled worldwide,[1] whilst in the UK, the number of people aged 80 and over is predicted to increase, from three to six million, in the next 40 years.[2] As people get older, their health and social care needs tend to be greater; higher rates of non-communicable diseases are seen in older age groups,[3] and older people are more likely to have multiple long-term health conditions.[1, 4]

A long-standing policy objective, in the UK and internationally, has been to enable 'ageing in place', allowing people to live independently for as long as possible without having to move home or to a different area.[5] There are two main ways of enabling independence: taking preventative measures to reduce disease, and adaptation, to make environments and infrastructure suitable for people with additional needs or disabilities.[4] The Chief Medical Officer's Annual Report 2023 identifies the supply of suitable housing as a key factor in facilitating ageing in place in the UK.[4] However, only 9% of homes in the UK had four key accessibility features (e.g. step-free access) in 2018,[5] and half of homes that fail to meet basic decency criteria, as defined by the government, have a head of household who is aged over 55.[2]

Even with adaptations, mainstream housing may not meet people's needs as they age. Service-integrated housing covers a range of different housing types, such as supported living and sheltered housing (see Glossary for definitions), which are built specifically for older people and provide support and/or care services.[6, 7] The 2022 Mayhew Review found that 10% of older households currently live in these types of specialist retirement housing in the UK but, with the ageing population, provision needs to expand to ensure a supply of housing suitable to meet future need.[8]

Extra care housing (ECH) is one form of service-integrated housing; it aims to help people maintain their independence, with residents living in self-contained accommodation with 'its own front door' but able to access on-site care and support when needed.[9] Whilst the provision of ECH in the UK has been increasing – the number of schemes in England was around 711 in 2005[10] rising to 1729 in 2025[11] – it has been far lower in the UK than similar countries. Market research from 2015 found that at least 5% of over-65s lived in a housing with care setting in Australia

and the US, compared to 0.6% of over-65s in the UK.[12] However, the potential of ECH to enable healthy ageing has been recognised by the UK Government – its development has been supported through initiatives such as the Department of Health Extra Care Housing Fund, which ran between 2004 and 2010,[13] and the 2013-2017 Department of Health Care and Support Specialised Housing Fund.[14] Most recently, it is one of the models of housing for older people the Older People's Housing Taskforce recommended for expansion in their 2024 report for the UK government's Ministry of Housing and Communities and Local Government and Department of Health and Social Care.[15]

1.1. Defining extra care housing

Whilst there is no single definition of ECH, it is generally considered to be a "*model of housing that combines independent housing with flexible levels of care"*,(p.10; Dutton 2009, for the Housing and Dementia Research Consortium)[16] with key features including:

- Self-contained accommodation (e.g. a flat or bungalow in a larger complex).
- Communal activities (e.g. social events) and facilities (e.g. café/restaurant, hairdresser, lounge).
- Flexible and individualised 24-hour care provided onsite (including emergency assistance).[17]

As well as there being no single definition of ECH, there is also uncertainty over its purpose and whether, for example, it should serve as accommodation for those anticipating increased future care needs, prolong independence for people with low levels of need, or serve as an alternative to care homes for those with moderate or higher needs.[18, 19] Whilst having residents with a mix of care needs is thought to be necessary to allow schemes to function effectively[20] this can be difficult to achieve.[21] Some schemes cater only for those with specific care needs (e.g. dementia), other schemes offer integrated accommodation (i.e. units that have a mix of people with conditions such as dementia and people with no or fewer care needs), or separate accommodation units within the scheme for those with specific care needs.[18, 22]

Beyond the key features that characterise most ECH, there are differences between schemes such as their size, with larger village-type schemes often being new builds

and smaller schemes remodelled sheltered housing,[23] the facilities provided, and their accessibility to the wider community.[18] Schemes also vary in terms of being single sites, or spread geographically (e.g. as 'core and cluster' arrangements, where there is a central site with facilities and smaller, linked accommodation units in other locations).[18]

Provision of ECH is divided mainly between housing associations, local authorities, and the private sector.[24] In England, in 2012, there were over 1100 ECH schemes, the majority of which were provided by housing associations (~770), followed by private sector organisations (~200) and local authorities (~150).[24] There has been change over time in who provides ECH, with public sector development constrained by budget reductions, leading some local authorities to encourage private sector investment.[17]

Accommodation and care are contracted and paid for separately in ECH. Unlike residential care homes, where people are usually licensees (see Glossary), residents of ECH will own, part-own, or rent their accommodation.[24] Whilst the same organisation may provide housing and care within a scheme, this is not always the case. In some schemes, care is delivered by a separate care provider,[14] and residents can also arrange their own care as they are not obliged to use a specified provider.[25] This delineation between housing and care is important, meaning ECH schemes are considered housing developments, with the care provider, not the scheme itself, requiring inspection and regulation by the Care Quality Commission.[14] Residents may receive funding for social care, or self-fund, depending on their resources. The distinction between healthcare, other personal care, and support is complex and may depend on funding. *Personal care* generally refers to direct help (e.g. with getting up, getting dressed, and minor medical tasks that do not need a qualified nurse), whereas *support* is typically practical help (e.g. with shopping and washing).[24]

1.2. Existing evidence on extra care housing

There has been research into the benefits of ECH. Most recently, Atkinson et al. 2023[22] conducted a scoping review of ECH for people with dementia which found various advantages such as the promotion of independence and social inclusion, and integrated service provision, but also disadvantages relating to the management

of advanced dementia and resourcing flexible care. These findings correspond with those of a previous review of ECH for dementia.[16]

A review focusing on general populations living in ECH in the UK, published in 2006, found that ECH can promote independence and provide social support but that this is not the case for all residents, and that it does not necessarily offer a home for life.[26] There has also been recent primary research (e.g. the ECHO[20] and PSSRU evaluations[13]) on ECH which has found that the benefits include increased quality of life for residents and reduced costs to the NHS.[5]

1.3. How extra care housing might work

A number of ideas have been put forward to explain how living in a scheme can benefit residents, with the key features of ECH thought to underpin three key principles:[18]

(i) The promotion of independence, to enable the individual to maintain autonomy and live in a community.[27]

(ii) Empowerment, as services – care and support - come to the individual when needed.[28]

(iii) Accessibility, as the environment and services are adapted for the individual.[18]

Independence and accessibility, through the provision of care and support when needed, and adaptations to housing, together should enable ageing in place.[29] The benefits of ageing in place are thought to range from those for the individual (e.g. increased quality of life) to those at the system level (e.g. reduction in health service use). Another element of ageing in place is avoiding relocation in later life, which can be costly and potentially stressful.[22] ECH is meant to reduce this need, although, as noted in section 1.2, there is some debate about whether it can offer a home for life.[30] Similarly, whilst ECH is regarded as having the potential to reduce loneliness and social isolation,[29] it may not do so for all residents.[19]

The principle of empowerment is linked to the emphasis in social care policy on personalisation. As described in section 1.1, housing and care are provided separately in ECH, with this separation thought to offer greater choice and control.[28, 31] However, our conversations with stakeholders suggest that it may also lead to

challenges, such as poor communication and coordination between providers, which undermine the ability to provide person-centred care.

1.4. Why it is important to do this review

This review of research and other evidence was commissioned by the NIHR HSDR Strategic Commissioning Group.

Demand for extra care housing and other forms of supported housing (see Glossary for definition) is greater than supply.[18] A 2024 report from the Older People's Housing Taskforce found that of new homes built in the UK every year, only 5,000-7,000 are for older adults, whereas there is a need for 30,000 -50,000 to be built annually.[15] With a rapidly ageing population, many with diverse care and support needs, and a significant proportion of older adults indicating that some form of supported housing would be their preferred option for the future, knowledge is needed to inform future research and policy related to ECH.[18] As identified above, recent reviews of ECH have focused on specific populations (older people with dementia),[22] whilst there has been both the publication of further primary research, and a changing policy landscape regarding ECH,[5] since the publication of older reviews.[16, 26]

Questions remain regarding ECH, with key topics including:

- Relocation, both the process (e.g. accessing information on the different housing options available), and the 'push' and 'pull' factors which may encourage or discourage people from choosing a specific ECH scheme;[32]
- Development and funding, including procurement of the site (e.g. obtaining planning), partnership working, accessing funding for the initial cost of development (i.e. capital funding) and ongoing costs (i.e. revenue funding, such as through rents and service charges for maintenance), the commissioning of care, and how individuals fund their housing and care;
- Scheme design (e.g. accessibility, adaptations to climate change) and staffing (e.g. the provision of person-centred care, meeting the needs of residents with varying care needs);[28]

- Residents' care needs, as these are likely to change over the period of time that someone lives in ECH, whilst different models of ECH may be needed to support people with different needs to live well (e.g. separate or integrated accommodation for people with dementia);[16, 22]
- Outcomes and experiences, and how these differ for different minority groups, or compare to older people in different housing situations (e.g. the community, nursing homes).

To support the development of ECH schemes, ensuring that they meet the needs of older people, it is important to recognise what we already know about the provision of ECH. This review is intended to scope the current evidence base, identifying where the gaps might be, and therefore inform the commissioning of future research regarding ECH. The review aimed to identify, appraise and describe the available empirical evidence about ECH in the UK.

2. Research question

What is the volume, focus/questions, study design, quality and main findings of empirical research and evaluations relating to extra care housing in the UK?

3. Methods

We conducted a scoping review, following best practice guidelines;[33] a scoping review is a type of evidence synthesis which aims to identify and describe the quantity, focus and variety of research that has been conducted on a particular topic, and may also assess the quality of that research, but generally does not formally synthesise the findings of included studies.[34, 35]

A protocol detailing inclusion criteria and methods for the review was developed and published on Zenodo (doi.org/10.5281/zenodo.12698241).[36] We report the results below according to the PRISMA Extension for Scoping Reviews (PRISMA-ScR).[37]

3.1. Inclusion criteria

Our inclusion and exclusion criteria are described below in sections 3.1.1 to 3.1.5 and Table 1.

Table 1 Detailed eligibility criteria for inclusion in the review

	Include	Exclude
Focus/setting	Extra care housing, defined as: • Residents live in fully self-contained properties with their own front doors (e.g. with private kitchen and bathroom facilities). • The property is rented or owned by the resident. • Care and support staff are available on-site, contracted to a care agency or provided by the local social services department. • Housing and care are contracted, funded and managed separately. • There are communal facilities and services such as a lounge, dining area and garden.	People living in their own homes with assistance from carers. Other forms of housing with care that do not meet our definition of extra care housing: • Supported housing or other sheltered accommodation where a warden is present on site but no care. • Naturally occurring retirement communities. • Residential care homes and nursing homes. • Community led housing or cohousing. • Alms houses. Ambient assisted living.
Population	Residents must be ⩾55 years of age. Mixed schemes, where there are also younger residents, will be included.	Schemes for groups with specific conditions that are not related to age: • People with learning disabilities • People with mental health conditions. • Homelessness. • Substance abuse.
Participants	Older people, who may or may not be current ECH residents. People who could provide insight into the effectiveness or experience of ECH: • Family or informal carers • ECH scheme managers • Care staff • External stakeholders such as local authority housing or social care departments, or housing providers.	

	Include	Exclude
Country	Studies conducted in the UK. Where studies include multiple countries e.g. a systematic review, they will be included if they report results from the UK separately.	Studies that are not conducted in the UK, or that do not report results from the UK separately.
Outcomes	Any outcome – effectiveness, cost-effectiveness, experience.	
Language	English.	
Study design	Primary research or evaluations. All study designs - quantitative, qualitative and mixed-methods. Systematic reviews will be included if they meet the following criteria: • Have a clear review question. • Use a reproducible search strategy. • Pre-specify their inclusion/exclusion criteria and screening methods. • Assess the methodological quality of the included studies. • Report their method(s) of data analysis.	
Publication status	Peer-reviewed papers and grey literature.	
Date	Since 2010. Relevant conference abstracts published in 2022 or later if no full text publication is identified.	Studies published before 2010.

3.1.1. Types of evidence

We included systematic reviews (as defined below) and both primary research and evaluation evidence generated using an established research method. We considered research to be aiming to produce generalisable knowledge, typically by answering a pre-specified question. Evaluations, however, usually have more local and practical aims, such as informing the decision-making of a particular organisation. Nevertheless, good quality evaluations can produce potentially generalisable knowledge and insights that are as valuable as those from data collection and analyses framed as research, regardless of their original purpose. All study methodologies - quantitative, qualitative and mixed-methods – were eligible for inclusion.

Systematic reviews focusing on ECH in the UK were included, as well as those with a broader scope that reported the results of studies from the UK separately. They also needed to meet the following criteria:

- Have a clear review question.
- Use a reproducible search strategy.
- Pre-specify their inclusion/exclusion criteria and screening methods.
- Assess the methodological quality of the included studies.
- Report their method(s) of data analysis.

3.1.2. Types of population and study participants

We included publications on ECH for all older people, or schemes which are specifically for older people with dementia or other conditions or specific needs commonly related to older age. We considered residents of 55 years old or older to be older people, as this is a common eligibility criterion for ECH schemes for older people. Studies including younger populations were considered if they also included residents aged 55 years old or older.

In terms of study participants, we included studies reporting data from or about residents (or potential residents), their families and informal carers, ECH scheme staff

(e.g. formal carers, managers or wardens), and other stakeholders (e.g. local authorities or housing associations responsible for commissioning or providing ECH).

3.1.3. Focus of study

We included studies that focused on any aspect or outcome (e.g. effectiveness, cost-effectiveness, experiences) of ECH, as defined in section **Error! Reference source not found.**.

3.1.4. Types of location

We included only studies conducted in the UK. This was to ensure that the results from the review were relevant to ECH in the UK, as provision is organised differently in other countries (e.g. eligibility criteria, with places in ECH often allocated by local authorities based on care needs in the UK), and the review was specifically commissioned by the NIHR Health Service Delivery Research (HSDR) Strategic Commissioning team to inform research into ECH in the UK.

3.1.5. Types of housing

There is no single definition of ECH, and it is often described using different terms (e.g. very sheltered housing, see Glossary). For the purpose of this review, we defined it as a type of 'housing with care' that meets the following criteria (see section 1.1 for further detail on these components of ECH):

- Residents live in fully self-contained properties with their own front doors (e.g. with private kitchen and bathroom facilities).
- The property is rented or owned by the resident, or can be a shared ownership (part rent/part buy) arrangement.
- The provision of individualised and flexible care, with care and support staff available on-site 24/7, contracted to a care agency or provided by the local social services department.
- Housing and care are contracted, funded and managed separately.
- There are communal facilities and services (e.g. a manager's or care team office, a lounge, catering facilities/dining area, guest suites, and a garden or outdoor space).

Our initial intention was to only include studies which focused on schemes meeting all of these criteria. However, in many cases, publications did not give a clear description of the included schemes – or of their own definition of ECH. We considered the first two criteria - self-contained accommodation and the provision of care – to be key to a scheme being ECH. We included publications which clearly met these criteria as well as studies where it was unclear, but likely, that this definition was met.

3.2. Search methods and sources

3.2.1. Electronic searches

Database searches were conducted using search strategies developed by an information specialist (AB) in consultation with the review team. Search terms were derived from both the literature and stakeholders and experts' input. Controlled vocabulary was used in the ASSIA database only as this had relevant terms for our question; for the rest, free-text searching was used. Searches were limited to texts published since 2010. This pre-specified date was agreed with stakeholders and experts based on changes to the funding, demographic, housing design and policy landscape for ECH over time. It captures, for example, policy change following the formation of the coalition government in 2010, and the resulting shift in Department of Health funding from the Extra Care Housing Fund to the Care and Support Specialised Housing Fund, with the later having a greater private sector focus.[13, 14]

The following databases were searched on the 25th or 26th June 2024 for studies and the full search strategies are detailed in Appendix 1:

- ASSIA (ProQuest)
- CINAHL (EBSCOhost)
- HMIC (Ovid)
- Medline (Ovid)
- PQDT Global (ProQuest)
- SPP (Ovid)
- Science Citation Index, Social Science Citation Index, Arts and Humanities Citation Index, Conference Proceedings Citation Index – Science, Conference Proceedings Citation Index – Social Science and Humanities, Emerging Sources Citation Index (Web of Science)

3.2.2. Searching other resources

Relevant websites were searched for grey literature (any publication not published by a commercial publisher, such as government, academic and industry reports[38]). These websites were identified from initial briefing documents for the review and stakeholder consultation. They were searched for publications in June 2024. Where websites had a free text search function, we searched for "extra care housing", and if no free text search option was available, we used the navigation menu to identify relevant pages to browse for publications (e.g. 'Resources'). The following websites were searched; details of the search dates and search terms for each can be found in Appendix 2:

- Housing LIN (www.housinglin.org.uk)
- Elderly Accommodation Counsel (https://housingcare.org/)
- Age UK (https://www.ageuk.org.uk)
- Centre for Policy on Ageing (www.cpa.org.uk)
- The ExtraCare Charitable Trust (www.extracare.org.uk)
- Joseph Rowntree Foundation (www.jrf.org.uk)
- International Longevity Centre (https://ilcuk.org.uk/infrastructure/retirement-housing/?filter=categories:reports)
- Associated Retirement Community Operators (ARCO) (www.arcouk.org)

Forward and backward citation searching were completed, where possible, for all publications that met our inclusion criteria (n=92). Where publications were not found in citation databases (Web of Science, Scopus, Spidercite, Google Scholar), their reference lists were checked for relevant publications manually (n=36). Once the records were downloaded into EndNote 20 (Clarivate™) and duplicates removed, a *simple search* (which searches all fields in the Endnote library) for housing or care was used to find the most relevant articles which were then screened by two reviewers (SDB, ZZ).

3.3. Screening and study selection

All screening was conducted in EndNote 20 (Clarivate™), apart from the results of the web searches which were screened using a Microsoft Excel spreadsheet (Microsoft Corporation 2024).

3.3.1. Stage 1: Title and abstract

Members of the review team (SDB, ZZ) independently applied the inclusion and exclusion criteria to a random sample of the citations (n=100). Decisions were discussed in a group meeting (SDB, ZZ, JTC, RA, AB) to clarify the inclusion and exclusion criteria, with definitions elaborated or refined where necessary. These clarifications enabled the reviewers to consistently interpret and judge whether criteria were met.

The remaining results were then screened by two reviewers (SDB, ZZ), who independently applied the inclusion and exclusion criteria to the title and abstract of each identified citation.

As policy and other documents identified from web-searching do not usually have abstracts, our approach to screening these as full-text documents is detailed below.

3.3.2. Stage 2: Full text

For papers where either reviewer judged the title and/or abstract to meet the inclusion criteria, we obtained the full text. For web searches, documents that were felt to meet the inclusion criteria were recorded in a Microsoft Excel spreadsheet (Microsoft Corporation 2024). Two reviewers (SDB, ZZ) assessed the full text publication of each record independently for inclusion, with disagreements settled through discussion, and where necessary the involvement of a third reviewer (RA).

A PRISMA-style flowchart was produced to show the study selection process (Figure 1), with a reason reported for exclusion of each record assessed at full text (see Supplementary Material 1).

3.4. Data extraction and management

We developed a data extraction form which can be found in Supplementary Material 2. The following data were extracted:

- Type of publication (e.g. paper, report)
- Study aims
- Study design – using the study design categories of the mixed methods appraisal tool (MMAT)[39]: qualitative research, randomised controlled trials,

non-randomised studies, quantitative descriptive studies, and mixed methods studies. We considered mixed methods studies to be any study using multiple methods (e.g. a questionnaire survey and interviews). Whilst not all of these studies described themselves as mixed methods, they were using these methods to answer the same, or related, research questions, implying the need for integration or combined consideration of their results.

- Definition of ECH (any explicit information on what the study considered to be ECH, whether located in the Introduction or Methods)
- Description of participating ECH (e.g. location, housing/care provider, facilities) and characteristics of residents (e.g. age, diagnosis of dementia)
- Study characteristics (e.g. number of participants, any information on PROGRESS-Plus characteristics of participants, outcomes)
- Findings and recommendations.

The form was piloted independently by two reviewers on a small sample of included documents. Data was then extracted by one reviewer (SDB, ZZ) and checked by a second reviewer (SDB, ZZ), with any disagreements resolved through discussion. For systematic reviews which included studies conducted in multiple countries, we only extracted data on studies from the UK.

3.5. Data analysis

Our first step in analysing the data involved tabulating the extracted information, focusing on three areas:[35]

- Study characteristics (study design, focus, aims, number and type of participants)
- Characteristics of participating ECH schemes (number of schemes, rurality, type of housing provider, tenure, capacity)
- Characteristics of participants or residents of participating ECH (age, sex, LGBTQ+ status, ethnicity, health and disability, marital status)

Categories for 'focus' were determined by grouping studies thematically according to their aims. From this, we produced a narrative summary of the data.[35] This includes a description of the main categories of studies, as outlined above; we then mapped the main findings[33] so that they follow the journey of an older person from (i) considering a move into ECH, to (ii) living in ECH, and potentially (iii) moving on from ECH.

We also analysed whether and how the included studies defined ECH. We took the definition given in section 3.1.3 and broke it down into six criteria: self-contained property, rented / owned by resident, provision of individualised and flexible care, care and support staff present on premises 24/7, housing and care contracted separately, and communal facilities and services. We then assessed how many criteria were met by the definition given in each study.

A number of the publications were linked, either being different publications from the same study or different studies (e.g. in term of aims and methods) resulting from the same research project, using the same or different datasets. We reported this by grouping them into the following categories:

- Single studies – either a single publication or publications with the same aims/data/results (e.g. reports/theses and an associated journal article).

- Linked studies (same research project) with different aims/methods but using the same dataset (e.g. in the ECHO project, Cameron et al. 2020[28] explored resident perceptions of ECH, whilst Cameron, Johnson & Evans 2020[25] investigated the views of staff).

- Linked studies (same research project) with different aims/methods using different datasets (e.g. in the Evaluation of Older People's Living Environments (EVOLVE) project, Barnes 2012[40] explored the views of residents and relatives regarding the physical design of ECH, whilst Lewis 2015b[41] conducted a mixed methods study with professionals to identify barriers to compliance with UK guidance on daylighting in the design of ECH).

This allowed us to represent the breadth of research in terms of aims and focus whilst highlighting the fact that some publications were based on the same data. To avoid double counting, such publications were included as a single study when summarising

characteristics of the ECH schemes investigated and study participants. Further detail on linked publications, and when and where we considered them to be single studies, can be found in the Results section.

Our final consideration during data analysis was the critical appraisal score of each study. Whilst a significant proportion of included publications were grey literature, these were often part of linked studies (i.e. their results were also reported in a journal article), and others were publication types that had undergone peer review (e.g. theses). We therefore discussed the findings of the studies in relation to their critical appraisal scores, as a more accurate reflection of their quality than the type of article.

3.6. Critical appraisal

The methodological quality of primary studies included in the review was assessed using the MMAT.[39] MMAT was chosen due to the likely diversity of study designs among included studies indicated by the initial scoping searches – it is designed for use in systematic reviews in which two or more of the following five study designs are included: qualitative research, randomised controlled trials, non-randomised studies, quantitative descriptive studies, and mixed methods studies. The MMAT has five categories, one relating to each of the five study types for which it is designed to be used. The reviewer chooses the category which is appropriate for the study they are reviewing and rates each criterion within the chosen category as either 'Yes', 'No', or, if the information provided is unclear, 'Can't tell'. These criteria are specific to the study design, for qualitative studies, for example, MMAT asks whether: the approach and data collection methods are appropriate to answer the research question, the findings are adequately derived from the data, the interpretation is sufficiently substantiated by the data, and there is coherence of data sources, collection, analysis and interpretation.

As described in section 3.4, we considered mixed methods studies to be any study using multiple methods (e.g. a survey and interviews). As a result, we interpreted the MMAT questions regarding the integration and interpretation of results for this study design broadly (i.e. we did not expect studies to detail formal methods of integration, but to have provided some consideration or discussion linking or comparing the results from different methods).

MMAT is not intended to give an overall score; instead, we indicate criterion on which studies tended to score highly and those which tended to be scored as 'No' or 'Can't tell' for each type of study.

We assessed included systematic reviews using an adapted version of AMSTAR 2.[42] Whilst AMSTAR 2 was originally developed to appraise systematic reviews of quantitative studies of healthcare interventions with randomised or non-randomised designs, eligible reviews included a broader range of study designs. We developed this adapted version of AMSTAR 2, based on the version used by Lam et al. 2021,[43] for a previous evidence and gap map which included reviews of both quantitative and qualitative studies.[42] AMSTAR 2 contains 16 domains, covering aspects of study quality such as the use of PICO, the development of protocol before the review was started, a comprehensive literature search strategy, study selection and data extraction in duplicate, appropriate description and analysis of studies, and interpretation (e.g. in terms of risk of bias, explanations of heterogeneity).

The MMAT was piloted by two reviewers (SDB, ZZ) on a small number of studies (n=5). Disagreements were discussed and operational definitions updated to improve reliability and the consistent interpretation of the questions. Primary studies were then critically appraised independently by two reviewers (SDB, ZZ) and disagreements were resolved through discussion. As only two systematic reviews were included in the review, two reviewers (SDB, ZZ) independently assessed each using AMSTAR 2 and resolved disagreements through discussion.

3.7. External engagement

3.7.1. Stakeholder engagement

It is important to engage stakeholders – the intended users of evidence synthesis - in the process of producing reviews to ensure that the outputs of the research meet their needs.[44]

We consulted the following stakeholders during the review process:

- NIHR Health Service Delivery Research (HSDR) Strategic Commissioning team (who commissioned the research)
- Housing Learning and Improvement Network (LIN)
- Association of Directors of Adult Social Services (ADASS)

- Associated Retirement Community Operators (ARCO)
- National Care Forum

Online meetings were held during the process of developing the protocol (with NIHR HSDR, Housing LIN and ADASS), and whilst we were undertaking screening and data extraction for the review (ARCO and the National Care Forum), with these being arranged to suit project progress and stakeholder availability. These meetings developed our understanding of ECH in the UK and clarified the focus of the review (see Table 2 for further details) as well as being used to discuss dissemination plans.

We also presented initial findings from the review for comment during a meeting of the South West branch of the Housing LIN.

Table 2 Impact of stakeholder consultation on the review

Topic or point	**Impact on review**
Stakeholders considered there to be no single definition of ECH, but there were aspects they considered important (e.g. self-contained accommodation, either rented or owned; access to 24/7 care and support; the enabling of independent living). They also talked about the variability in terminology reflecting the framing of ECH by different providers (e.g. signalling its distinction from residential care).	We developed our definition of ECH based on these discussions and key documents (e.g. Riseborough, Fletcher and Gillie 2015[17]); stakeholders were asked for feedback on the definition (NIHR HSDR and Housing LIN). The lack of a single definition and unified terminology informed our searches and our decision to include studies where it was not clear they met all criteria in our definition (see section 3.1.5).
Changes in capital and revenue funding for ECH (e.g. reduced government funding) and consequent market implications (e.g. increases in private sector provision) were discussed. The separation between housing and care providers, and potential effects on residents, were also raised.	This context is captured in the Introduction of the review (section 1). Data extraction categories were developed to try and capture this information from included studies (e.g. whether schemes included in studies were run by non-profit or private providers, whether housing and care were provided separately).
There was discussion of how there are different considerations in providing rural and urban ECH (e.g. greater access to resources but less access to land in urban areas).	As above, this informed data extraction categories (regarding scheme location).
Stakeholders discussed some of the challenges in managing ECH (e.g.	This highlighted the importance of considering the needs and perspectives of different resident groups.

supporting residents with dementia and high care needs).	It also helped us understand ECH not only as a setting but as a process, with entry, evolution (of care needs), and exit. This informed the structure of section 4.5.
Beyond the effectiveness and costs of ECH, stakeholders discussed the physical design of ECH, its placement in the community (e.g. whether ECH facilities were available to the general public), the use of technology in ECH, and workforce challenges.	These points informed the development of the categories which are used to discuss the focus and findings of the studies included in the review.

3.7.2. Public and patient involvement and engagement

We visited Edwards Court, an ECH scheme based in Exeter, and held a drop-in consultation session for residents, family/carers and staff. The session was advertised around the housing scheme by the scheme manager, and posters in communal areas, in the week preceding the drop-in. During the drop-in, two team members (SDB, ZZ) sat in the reception area and talked to those who were interested.

Preliminary findings from the project were discussed with four ECH residents (three women, one man; one of whom had dementia and one of whom was a resident carer) and two staff members (a cleaner and the scheme manager). The topics of these conversations are detailed in section 5.7; they supported the categories used to organise section 4.5 and informed the Discussion (e.g. needs for further research).

3.8. Departures from the protocol

Whilst the majority of the studies included in the review were critically appraised using MMAT, this tool is not suitable for appraising modelling studies. As a result, we did not appraise the two modelling studies included in the review.

4. Results

4.1. Results of the search and studies included in the review

An overview of the search and screening process is shown in Figure 1. Database searches retrieved 7976 hits; after duplicates were removed, 5132 records were screened at title and abstract level. Of those, 224 were selected for full text screening and 86 were included in the review. Websites with search functionality yielded 732 hits; after screening three were judged to meet the inclusion criteria, and citation chasing found a further nine publications, meaning a total of 98 publications were included in the review. Further details on the website searches are provided in Appendix 2, Table 5, and a list of studies with reasons for exclusions can be found in the supplementary material. Aside from duplicate records, the primary reasons for exclusion were the study type (n=62) and the setting (n=23).

Of the 98 publications included in the review, two were systematic reviews and 96 were primary research, 55 of which were linked. Some studies were reported in more than one publication, and sometimes different studies (i.e. with different aims) were based on different analyses of the same dataset. As a result, there were 86 unique studies, in terms of having the same aims and methods, and 70 unique datasets. To avoid double counting, we used these groupings when summarising study characteristics (e.g. the aims and focus of a study, Appendix 2, Table 6) and ECH schemes and study participants characteristics (Appendix 3, Table 7 and Table 8), respectively. A narrative description of the linked publications is provided in section 3.5 and further details reported in Table 3.

Figure 1 PRISMA flow diagram of the screening process

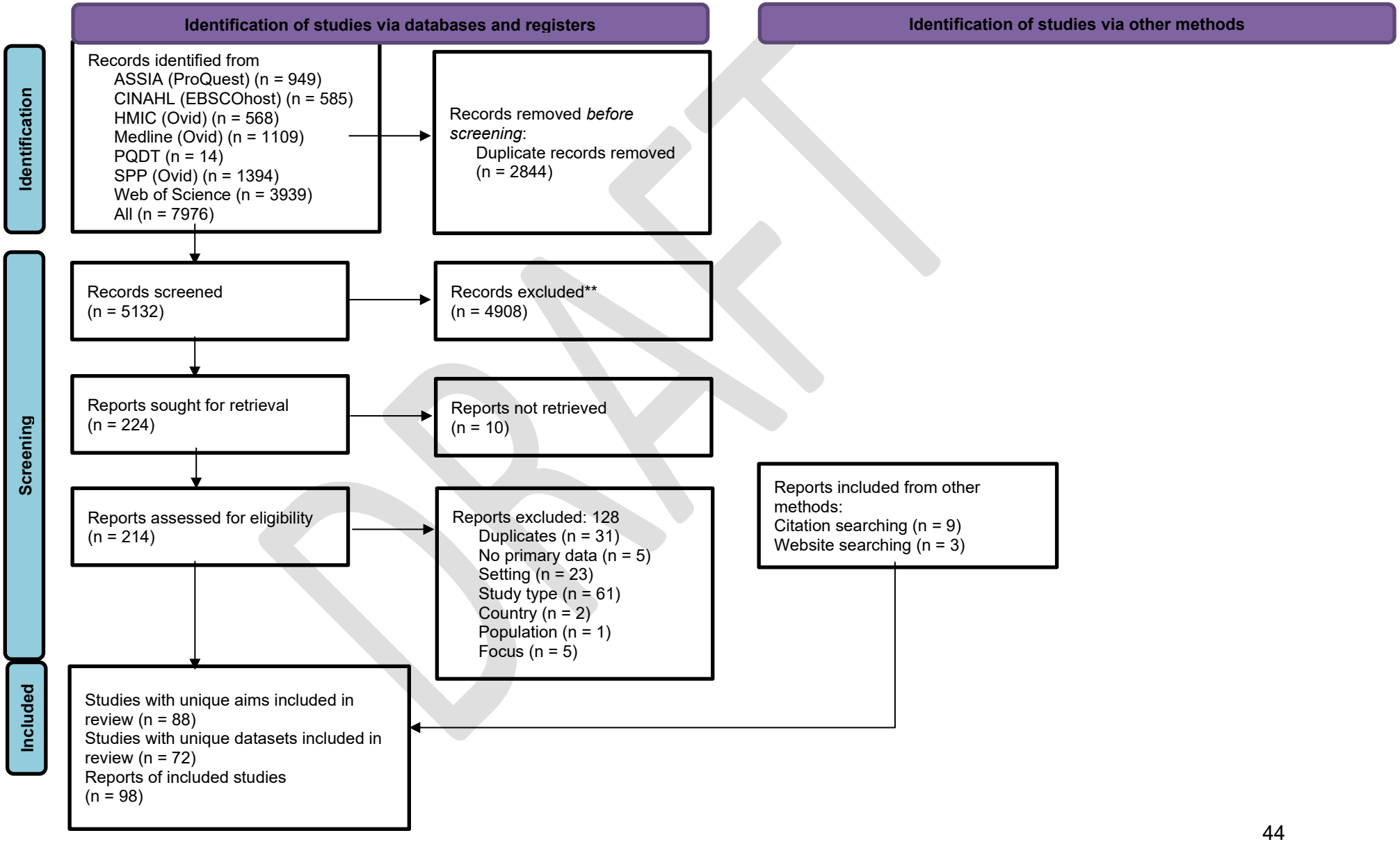

Table 3 Studies which are linked or have multiple publications

Study (if named, in italics) and references (publications with same aims in bold)	**Number of publications**	**Number of studies (with same aims)**	**Number of unique datasets (on same ECH and participants)**
Atkinson 2023,[45] Oatley 2024[46]	2	1	1
Barrett 2020a,[47] Barrett 2020b[48]	2	1	1
Barret 2021,[49] Barrett 2023[50]	2	1	1
Blood 2012,[51] Blood 2013,[52] Pannell 2012[53]	3	2	2
Burholt 2011,[54] Hillcoat-Nalletamby 2014,[27] Hillcoat-Nalletamby 2019,[31] **Phillips 2015[55]**	4	3	1
Chakkalackal 13,[56]Chakkalackal 14[57]	2	1	1
DICE: Beach 2022,[29] Powell 2024,[58] Vickery 2023,[59] Willis 2022,[60] Willis 2023[61]	5	5	5
Dutton 2021a,[62] Dutton 2021b[63]	2	1	1
ECHO: Cameron 2019,[64] Cameron et al. 2020,[28] Cameron, Johnson & Evans 2020,[25] Evans 2018,[65]Johnson 2020[66]	5	5	1
EVOLVE and associated: Barnes 2012,[40] Lewis 2013,[67] Lewis 2015b,[41] Orrell 2013[68]	4	4	4
FOCUS: Holland 2015,[69] Holland 2017,[70] Holland 2019,[71] Holland 2021,[72] Shaw 2016,[73] West 2017[74]	6	6	1
Kneale 2011,[19] Kneale 2013[30]	2	1	1

LARC: Bernard 2012,[75] Liddle 2014[76]	2	2	1
Lipman 2015,[77] Lipman 2017[78]	2	1	1
Matlabi 2011,[79] Matlabi 2012[80]	2	2	1
Mayagoitia 2015,[81] Wright 2010[21]	2	2	1*
PSSRU: Bäumker 2010,[82] Bäumker 2011,[23] Bäumker 2012,[83] Darton 2012[84]	4	4	2
Twyford 2016,[85] Twyford 2018[86]	2	2	2
Wales 2020,[87] Wales 2023[88]	2	1	1
Linked publications	55	45	29
Single study publications	41	41	41
Systematic reviews	2	2	2
Total	98 publications	88 studies	72 unique datasets

*study conducted on same ECH schemes but different samples of participants

4.2. Summary of included primary research

Detailed descriptions of the characteristics of included primary studies can be found in Appendix 3, in Tables 5-7. There were no particular patterns in **publication rate** of research on ECH between 2010 and 2024 (Figure 2), with the highest number of publications (n=11) seen in 2014, and excluding 2024, the lowest seen in 2016 and 2022 (n=3). Fifty-seven of the primary studies were journal articles, whilst 38 were reports or other forms of grey literature (e.g. theses).

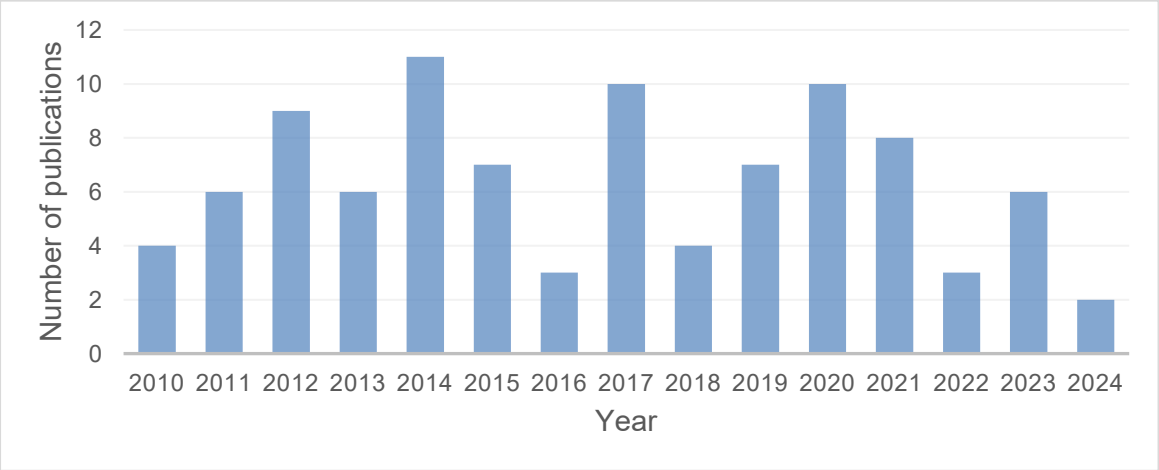

Figure 2 Number of publications about ECH per year 2010-2024.

Note: multiple publications from the same study/dataset are included; the number of publications in 2024 is for the first half of the year only, as searches were completed by the end of June 2024.

In terms of **study design**, 28 of the included studies were quantitative, 37 were qualitative, 19 took a mixed methods approach, and two were modelling studies using secondary data. Of the quantitative and qualitative studies, 45 were cross-sectional (21 quantitative and 24 qualitative), and 19 longitudinal – reporting data from multiple timepoints (six quantitative and 13 qualitative). The length of follow up in most qualitative longitudinal studies was between one and two years, with the DICE study taking place over three years[58, 59, 61] and the LARC study over four years.[75] The quantitative studies had either a shorter or longer follow-up period. In terms of longer studies, the quantitative element of the FOCUS study took place over 60 months,[71, 72] and Kneale 2011 and Kneale and Smith 2013[19, 30] used data collected over a 12-year period. Shorter studies either followed up with residents immediately after their move into ECH,[70] or within 6 to 9 months.[82, 89]

One of the 28 included quantitative studies was a randomised controlled trial.[90] Additionally, there were nine quantitative studies[19, 29, 30, 70-72, 84, 89, 91, 92] and three mixed methods studies[47, 48, 54, 55, 69, 93-95] that had a comparative element. In terms of comparison groups, eight of the comparative studies compared residents of ECH to older people living in the community.[19, 29, 30, 54, 55, 69-72, 91, 92] Three of these studies also included care home residents as an additional comparison group.[54, 55, 91, 92] Four studies included only care home residents as comparators.[84, 93-95]

Almost half of studies (n=45) **focused** on the experiences of older people living in ECH; 18 investigated the effectiveness of ECH, and 12 the costs of ECH. Twenty-seven studies had more than one focus (e.g. seven of the 19 effectiveness studies also evaluated the costs of ECH). The focus of 43 publications was classified as 'other', as they focused on aspects of ECH that were not experiences or effectiveness. Further exploration of the focus of included publications, including more detail on topics in the 'other' category, is provided in section 4.5.

The **type of participants** most often included in the studies were older people (57 studies, with 32 of these only including older people), most of whom were residents of ECH, although some studies focused on older people living in the community who might consider living in ECH.[32, 96-99] Other participants included professionals, either staff working in a housing scheme (n=24), or external stakeholders (n=21) such as housing providers, local authorities, or architects. Family members or informal carers were also participants in some studies (n=10). All studies that included family members/informal carers also included other groups of participants, whereas there were studies which included only staff (n=2) or only external stakeholders (n=7).

There was a large variation in the number of older people included as participants in the studies; across all studies, this ranged from seven to 7071, with a median of 65 (IQR 26 – 152). The median number of older people included in qualitative, quantitative and mixed methods studies were 45 (IQR 17 – 53), 225 (IQR 100 – 741) and 49 (IQR 20 – 95), respectively. The number of other stakeholders included in the studies was smaller. The median number of family members/carers included was five (IQR 5 - 8), whilst the median number of staff and external stakeholders included as study participants were similar, 15 (IQR 7 – 28) and 18 (IQR 9 - 33) respectively.

4.2.1. Definitions of ECH

There were 22 studies which did not provide any explicit definition of what they considered to be ECH. Of those that did, none specified all of the six criteria included in our definition of ECH (see section 3.5) when describing ECH. Most indicated that in ECH, residents should have self-contained accommodation (n=46), for example, in Barnes et al. 2012[40] "*to qualify as extra-care, housing schemes should consist of groups of self-contained apartments or bungalows*" (p.1194), whilst Cameron et al. 2019[64] stated that ECH should "*include own front door*" (p.1). In some (n=3) this was implied, such as Croucher and Bevan 2012[100], whose definition indicated that ECH should allow people to *"remain in their homes*" (p.9). Thirty-six studies specified that ECH should have communal facilities and services, 35 studies mentioned the provision of individualised and flexible care, and 30 that care and support staff should be present on the premises 24/7. In a number of studies, it was unclear whether these last three criteria were met (nine, 13, and five studies respectively). Only five studies included all four of these criteria in their definition of ECH.

Fifteen studies indicated that in ECH, accommodation should be rented or owned by the resident, although an additional four did mention that residents should have 'security of tenure'. Only five studies specified that housing and care should be contracted separately. Again, there were additional studies (n=3) where this criterion was unclear (e.g. "*Extra care schemes offer a higher level of care as part of the package. There are onsite subcontracted carers responsible for personal care (helping, for example, with showering and getting dressed), in addition to scheme managers*." (p.442).[95]

We do not consider the fact that so many studies did not fully define the specific characteristics of ECH in their publications to not mean that the studied ECH schemes do not meet our definition. It is likely this simply reflects variations and limitations in the reporting of these studies.

4.2.2. Characteristics of ECH

Thirty studies did not report details on the **geographic location of participating scheme(s)**; of those that did, most included both urban and rural ECH schemes (n=20), or urban (n=9). No further detail on location was provided by four studies;[49, 50, 58, 59, 101] but most did give more description, with some specifying the name of the

included scheme (e.g. Denham Garden Village, a long established ECH scheme), whilst others indicated a more general geographic location (e.g. the Midlands). The majority of studies included ECH schemes in England (n=30); seven studies[27, 31, 51-55, 60, 102-104] had participating ECH schemes from Wales (two of these studies focused solely on Wales[27, 31, 54, 55, 102]), and four studies had schemes from Scotland,[51-53, 103] with one study focusing soley on a scheme in Scotland.[105] Two studies included ECH schemes from Northern Ireland.[51-53]

In studies that reported **details of the ECH provider** (n=40), the majority (n=26) focused on schemes run by non-profit organisations (e.g. housing associations, charities). Seventeen studies named these providers – multiple studies included schemes run by the ExtraCare Charitable Trust and Housing 21, with providers running schemes in single studies including the Joseph Rowntree Housing Trust and Sentinel Housing. One study included only a private provider, although 13 studies included both non-profit and private providers. Named private providers were Audley Retirement (now Audley Villages), Retirement Security Ltd and McCarthy Stone. Whilst most studies (n=56) did not report whether participating ECH schemes had different housing and care providers, three studies included schemes with the same housing and care providers, two with separate housing and care providers, and eight included schemes with both.

The **number of schemes** included in studies varied, ranging from one to 449, with a median of eight (IQR 3 – 23). There was also a **range in terms of size**, with participating schemes including small blocks of flats to village-style developments. Whilst the number of residential units was not described consistently, most studies that gave details(n=16) reported a range, with the smallest number of units reported in a scheme being two and the largest 326. Few studies (n=5) provided details on whether the included schemes were generalist, or specialist – specialist schemes that participated in studies were mainly for people with dementia,[25, 28, 45, 46, 64-66, 101] with one study including a scheme specifically for people with sight loss.[106] Further description of participating schemes, such as whether they were adapted or purpose-built, and their communal facilities (e.g. café, hairdresser), were not reported consistently.

In terms of **tenure of residents**, the majority of studies did not provide details (n=37). Of those that did, most included schemes where residents could either rent or own their accommodation (n=27), with only one study focusing solely on a private ownership scheme, and one on a rental-only scheme.

4.2.3. Characteristics of participants and residents in ECH

In addition to extracting sociodemographic information on study participants, we attempted to extract information on the residents of the participating schemes, as these groups might differ (e.g. healthier residents may be more likely to participate in a study). A minority of studies provided information on the sociodemographic characteristics of residents at scheme-level (i.e. a profile of the entire scheme; n=12). Instead, most studies reported sociodemographic characteristics for study participants (n=45).

Age and gender were the **characteristics most often reported by included studies**, with 39 studies reporting age and 42 studies reporting gender, and a significant proportion of studies also reporting marital or cohabiting status (n=28). LGBTQ+ status was least often reported (n=7). Whilst ethnicity was reported by 23 studies, this showed that in most studies the majority of participants were white (n=15), and that there were five studies that did not include any participants from ethnic minority backgrounds.[45, 46, 82, 86-88, 107] One study included only Jewish participants,[97] one included "*approaches that specifically addressed the needs of groups of older people who have been identified as being marginalised on the basis of ethnicity [and other characteristics]*" (p.14),[100] and one was focused on older people from black and ethnic minority backgrounds,[77, 78] though neither reported the ethnicity of participants clearly. There was significant variation between studies in how characteristics apart from gender were reported (e.g. when reporting age, whether mean, median, range, or age bands were reported).

Five studies reported no information on the characteristics of residents or participants.[67, 95, 99, 108, 109] Twelve studies did not include information as they focused on aspects of ECH such as building design or included staff or external stakeholders as participants (Appendix 2, Table 6).

4.3. Summary of included systematic reviews

Of the two included systematic reviews, one took a mixed methods approach,[110] including 38 studies in the qualitative component of the review and 17 in the quantitative (four studies in each were conducted in the UK). The second review was a qualitative evidence synthesis which included 11 studies in total, eight of which were conducted in the UK.[111]

Neither review focused specifically on ECH – whilst Coyle et al. 2021[110] specified that people should have 'their own front door' and care and support available, they described this as 'housing with support', whilst Smith et al. 2022[111] was interested in a broad range of types of supported housing, those with lower levels of support (e.g. sheltered housing) as well as those offering higher levels of support such as ECH. Participants in studies included in Smith et al. 2022[111] could be older people, their family or carers, staff, or external stakeholders, whereas Coyle et al. 2021[110] only considered studies where the participants were older people.

Coyle et al. 2021[110] had a broad focus: the review was interested in the effectiveness of housing with support (including its costs), in terms of its impact on quality of life, and older people's experiences of living in this type of accommodation. Smith et al. 2022,[111] on the other hand, was interested only in experiences, and specifically how living in supported housing influenced the lives of older people with dementia, as well as the views of the family and professionals supporting them.

4.4. Quality of the included evidence

Thirty-seven studies were critically appraised using the qualitative appraisal component of MMAT, one using the randomised controlled trial component, 11 using the non-randomised component, 15 using the quantitative descriptive component, and 19 using the mixed methods component. Details for individual studies can be found in Appendix 4, Appendix 4: Results of critical appraisal of included studies

Table 9.

Overall, the 37 qualitative studies scored better than the other study designs, with 17 scoring 'yes' to all items. Eleven of the 37 studies were from the grey literature – these were less likely to score highly, although two[86-88] scored 'yes' to all items. Studies scored most highly on items 1, 2 and 4, which concerned whether a

qualitative approach was appropriate, whether data collection methods were adequate, and whether the results were substantiated by the data (e.g. supported by quotes). Whilst only one study (a journal article) scored 'no' for item 3 and no study scored 'no' for item 5, there were a number of studies which were found to be 'unclear' in these areas, 16 and eight respectively (nine and seven of which were grey literature). Many studies did not provide sufficient detail on their analysis (e.g. type of analysis used, whether more than one researcher was involved in analysis) to demonstrate that their findings were adequately derived from the data, or show coherence between data sources, collection, analysis and interpretation.

Brooker et al. 2011,[90] the only randomised controlled trial in the review, scored 'yes' on four items, and 'no' on one as outcome assessors were not blinded to the intervention. Another limitation of this study was that the primary outcome measure was changed half-way through the trial. Although all non-randomised studies scored 'yes' to item 5 (whether the intervention/exposure occurred as intended), and eight scored yes to item 2 (use of appropriate measurements), they did not score as well for other items on the checklist. For no study was the population representative of the target population (item 1), with six scoring 'unclear' and five 'no'. One scored 'unclear' and six 'no' for item 3 (complete outcome data), and eight scored 'no' for item 4 (consideration of confounders). Six studies were journal articles and five were reports; there were no patterns in scores between these publication types. For example, of the two studies – Callaghan and Towers 2014[91] and Kneale 2011[19] and Kneale and Smith 2013[30]– which scored 'yes' to all items apart from item 1, where they were 'unclear', one was a journal article and the other a report.

Scores for quantitative descriptive studies were mixed, with no studies consistently scored high or low. Out of 15 studies, nine scored 'yes' for item 1 (relevant sampling strategy), ten for item 3 (appropriate measurements), and 11 for item 5 (appropriate statistical analysis). However, for items 2 (whether the sample was representative of the target population) and 4 (risk of non-response bias), no study scored yes. For item 2, six scored as 'no' and nine as 'unclear', for item 4 these were five and eight. Ten of the studies were grey literature, five were journal articles, with the journal articles more likely to score 'yes' for items 1, 3, and 5 than the grey literature studies.

With the exception of Liddle et al. 2014,[76] which scored 'yes' to all items, and Halloran 2017,[95] which scored 'yes' to all apart from item 5, which was 'unclear', mixed methods studies scored poorly on the quality appraisal checklist. Most studies (n=14) did score 'yes' on item 4, giving adequate explanation for divergences and inconsistencies between quantitative and qualitative results. For many, this was as they did not note any inconsistencies. For item 2 (effective integration of different components of the study), seven scored 'no' and one 'unclear'; correspondingly for item 3 (adequate interpretation of the outputs of integration), seven scored 'no' and three 'unclear'. Studies most frequently scored poorly on item 1 (whether an adequate rationale was given for the use of a mixed methods approach) and item 5 (whether the components adhered to quality guidelines appropriate to the quantitative or qualitative approach taken), with 13 and 11 scoring 'no' respectively. Studies from the grey literature were more likely to score poorly than journal articles.

MMAT was not suitable to assess two studies; Hastings, Copeman and Porteus 2020[112] and Robinson and Wilson 2023[113] as they were modelling studies, so these studies were not critically appraised.

AMSTAR-2 was used to critically appraise the two included systematic reviews (see Appendix 4, Table 10). Smith et al. 2022[111] scored highly on the checklist, with all applicable items apart from three scored 'yes', two of which (providing a list of excluded studies with reasons for exclusion and describing included studies with adequate detail) were scored 'partial yes', and one (reporting the funding sources of included studies) 'no'. Coyle et al. 2021[110] scored the same as Smith et al. 2022[111] for these three items, but was not rated as highly in terms of overall quality as it did not provide a protocol, account for risk of bias when interpreting results, or discuss heterogeneity, so was scored 'no' for these items.

Fifty-four of the included studies (52 primary studies and both systematic reviews) reported their source of funding. These were varied, ranging from governmental funding (e.g. Department of Health, research council) to charitable sources (e.g. Joseph Rowntree Foundation). Ten studies were funded by providers of ECH, both private providers such as McCarthy and Stone, and non-profit providers (e.g. the ExtraCare Charitable Trust).

4.5. Focus of the included primary research

In the following sections we provide brief narrative summaries of the characteristics and findings of studies which had a similar focus (see Box 1 for an overall summary). As explained earlier, and visualised in

Figure 3, by 'focus' we mean the specific aspect of ECH the study looked at, with studies grouped together within the overarching narrative of older people's typical journey throughout ECH. Twenty-seven studies had more than one focus (e.g. effectiveness and experience; see summary in Table 4 and detailed characteristics of the included studies in Appendix 2, Table 6), so they are included in more than one section.

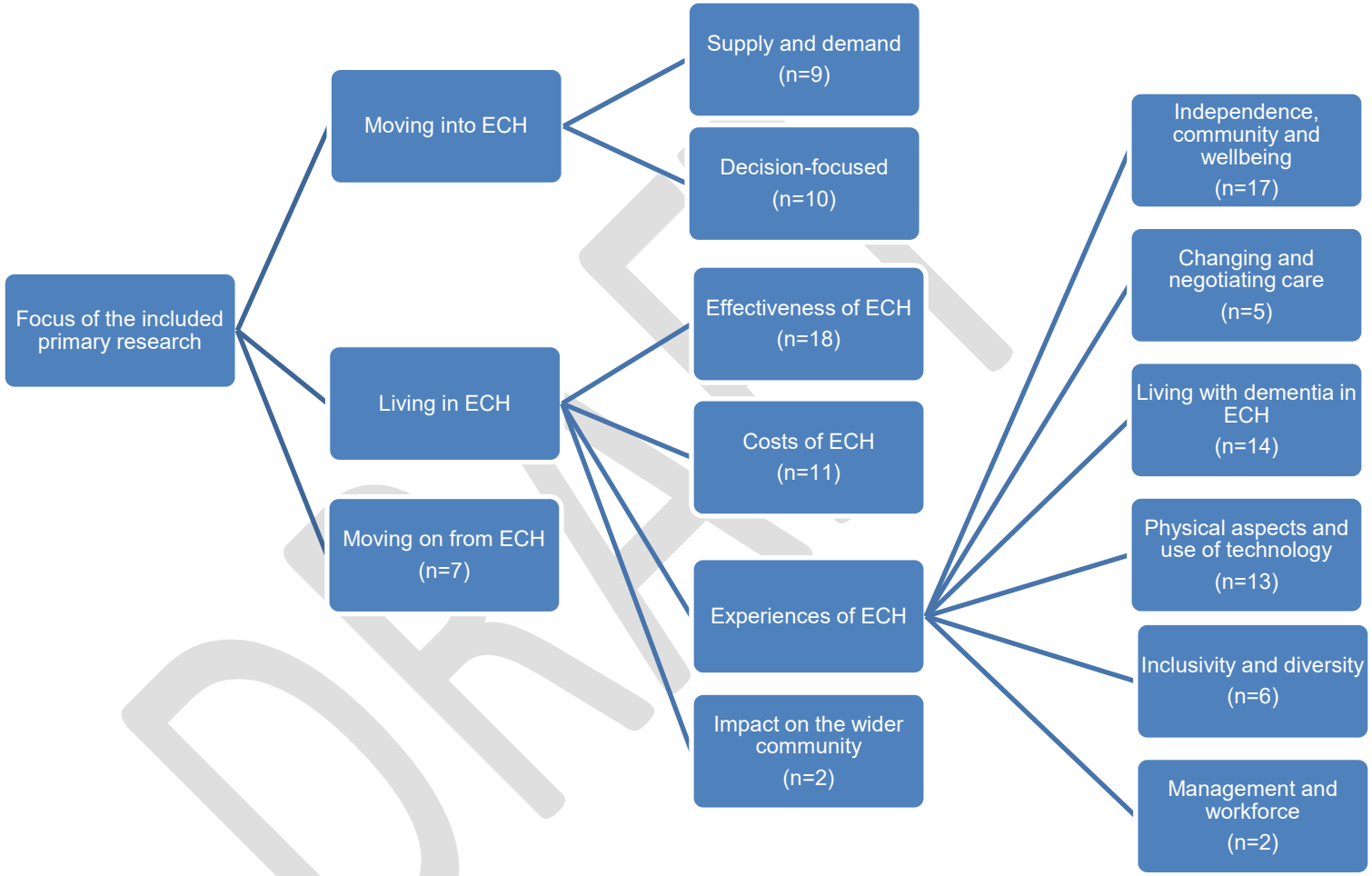

Figure 3 The focus of included primary research and number of studies within each category, organised according to older people's typical journey through ECH.

Box 1 Summary of the main points in each area of focus of the included primary research.

Moving into ECH

Supply and demand (9 studies)

- This group of studies considered the availability and characteristics of ECH, both in the present and future, finding demand is greater than supply.

Decision-focused studies (10 studies)

- These studies explored moving into ECH, finding differences in older people's motivations and circumstances (e.g. whether a move was proactive or reactive).

Living in ECH

Effectiveness (18 studies)

- Some studies in this group investigated the impact of living in ECH on residents, finding improvements particularly in the psychological and social wellbeing of residents, although study quality was variable.

- Others evaluated the effectiveness of specific features of ECH, or interventions.

Cost-effectiveness (11 studies)

- Studies in this group reported on the costs of ECH, whether their development and operational costs, or residents' personal, health and social care costs. Findings varied, with some studies showing a move to ECH led to reduced costs, whereas others indicated it was more expensive than other care settings.

Experiences of residents, staff and other stakeholders

Independence, community and wellbeing in ECH (17 studies)

- This groups of studies explored residents' experiences of living in ECH schemes, in terms of community, independence and wellbeing.

- Overall, living in ECH was thought to support independence and wellbeing, as well as offering opportunities for social contact. However, not all residents reported positive experiences (e.g. social isolation still occurred).

Changing and negotiating care (2 studies)

- Residents' care needs were found to change over time, with these studies indicating that relationships with care staff were important to residents receiving care and helped in the negotiation of change.

Living with dementia in ECH (19 studies)

- Some studies in this group investigated specific interventions for people living with dementia in ECH, finding that, although evidence on their effectiveness was not conclusive, they were perceived positively.

- Others explored the benefits and challenges of living with dementia in ECH from the perspectives of residents and staff. Benefits included living in a safe, age-friendly location with flexible support, whilst challenges related to staffing and knowledge of, and attitudes towards, dementia within schemes.

Physical aspects of and use of technology within ECH dwellings (13 studies)

- Within this group of studies, some investigated physical aspects of ECH, whilst others focused on the use of technology within schemes.

- The physical design of ECH, in these studies, was often found not to meet the needs of residents with disabilities or additional needs (e.g. sight loss, mobility issues), or to be appropriate for the thermal comfort of older people.

- Technology in ECH schemes tended to be basic and studies stressed the importance of social interaction and support in its use.

Inclusivity and diversity (6 studies)

- Studies focusing on inclusivity and diversity in ECH explored the experiences of residents from minority groups (e.g. those with disabilities, LGBTQ+ people and people from black and other ethnic minority groups) and approaches to develop supportive communities in ECH.

- Whilst some groups reported feeling isolated in ECH, factors to promote social inclusion were identified (e.g. staff support, age-friendly design).

Management and workforce (2 studies)

- In this group, one study looked at the management of ECH schemes during Covid-19 and one at the workforce more generally (e.g. emerging roles with overlap between housing and care).

Impact on wider community (2 studies)

- Studies in this group investigated whether ECH schemes can form community hubs, and the potential benefits of schemes for the community whilst being constructed and when up and running. Although they indicated positive benefits, both studies had limitations.

Moving on from ECH (7 studies)

- These studies investigated whether and how residents leave ECH, finding that changes in residents' care, particularly increases in complexity, are factors in leaving ECH.

4.5.1. Moving into ECH

Supply and demand studies

Nine studies focused on **the current provision of, and future demand for, ECH** as well as the challenges that local authorities and other providers are facing when developing ECH schemes.[84, 99, 102, 104, 105, 109, 112-114] Within this broader theme, studies had different focus (e.g. current use of ECH, projection for future demands) and methods – quantitative and qualitative designs using primary and/or secondary data and including residents, staff and external stakeholders, such as local authorities and housing associations. The scope of the studies also differed, with some reviewing the ECH provision in specific geographic areas (e.g. Wales, South East of England) while others took a case study approach and focused on a particular scheme. Four of the studies were published before 2016. Six studies did not meet two or more (out of the five) methodological quality criteria on the MMAT checklist, one study failed to meet one and we did not assess the methodological quality of the two modelling studies. All but one study reported their funding; two were funded by ECH providers and the rest by government organisations.

The supply and demand studies reviewed the availability and characteristics of ECH at specific time points and geographical areas or across the country (e.g. looking at the distance between ECH and the residents' previous dwelling[104]). Analyses indicated that demand outstripped supply and this gap was predicted to widen further given the range of challenges ECH developers and providers were facing and without adequate state intervention. Some of these challenges were at scheme level (e.g. balancing the expectations and needs of diverse groups of residents, the difficulties of selling properties in a time of recession).[114] Others related to the wider context of ECH schemes (e.g. the need of 'cultural' change in the way commissioners, providers and developers/contractors work together).[109] Some studies suggested solutions and made recommendations including increasing stock, meeting the distinctly varied needs and aspirations of older people by providing alternatives, managing complex communities, understanding and working closely with local communities, early involvement of all relevant stakeholders, and marketing and information.

Decision-focused studies

Nine studies focused on **older people's decision to move into ECH**, exploring a range of topics such as motivation, relative attractiveness and importance of different ECH features,[32, 83, 97, 98, 107, 115] the process through which such decisions are made (including involvement of other stakeholders)[31, 53, 116] and the use of a 'moving on' service.[96] Four of the decision-focused studies were published before 2016.

In terms of study design, all studies were cross-sectional, three were quantitative, five qualitative and one was mixed methods. Various methods of data collection and analysis were used including interviews, focus groups, survey questionnaires, simulation and Q-methodology (see Glossary for definition). The sample size ranged from eight[107] to 949.[83] Eight studies included potential or actual ECH residents, with one of them also including family carers, staff and external stakeholders; and one study, which focused on people with dementia, included only care coordinators and other frontline staff.[116]

The methodological quality of the qualitative studies was relatively good whereas the quantitative studies and the mixed methods study had serious limitations or failed to report essential methodological details. Two studies did not report their funder[32, 97] and two were funded by ECH providers, private[115] and non-for-profit,[31] respectively. One study reported on the characteristics of residents,[83] the other eight gave details on the study participants. However, none of the studies reported the LGBTQ+ status of residents/participants and only three studies reported participants' ethnicity: one as it was focused on the Jewish community,[97] one included White British and Irish people[107] and 13% of the participants in the third study were from Black and ethnic minority groups.[24]

Although motivation for choosing ECH varied among participants, reflecting different circumstances and preferences, some features such as safety and security were considered important by participants in the majority of studies. The process of deciding whether to move into ECH also varied in terms of knowledge or ways of identifying different options, degree of engagement (e.g. from deliberated to passive) and temporality (e.g. planning for the future or responding to a crisis). For instance, the qualitative study by Buckland and Tinker 2020[107] found that all seven participants moved to ECH in response to deteriorating health and almost all felt that their children

played an important role in their decision.[107] One of the studies (also qualitative) concluded that "*…choosing a care option in later life is a diverse, interactive and time-bound social phenomenon, inadequately captured by the rational choice approach where it is understood more as an individualised, linear and logical process.*" (p.277).[31] Verbeek et al. 2019,[116] a mixed methods study, reported that whilst frontline practitioners (NHS and social care staff) considered ECH a valuable alternative to care homes for some people with dementia, they did not feel it was suitable for people who needed care at night, and they were also more likely to recommend a care home placement for people who had a high level of care need, a lack of capacity to make informed decisions, had previously received social care, or previously being admitted to an inpatient ward. The findings were discussed, by the study authors, as indicating that study participants (who also included senior social managers and care coordinators) were not very clear where exactly in the care pathway ECH lay and their main priority was to maintain people at home for as long as possible.[116]

4.5.2. Living in ECH

Effectiveness of ECH

In this section, we summarise effectiveness studies – studies that tried to 'measure' **the impact of living in ECH on residents or the effectiveness of specific interventions within this setting** (e.g. support for residents with dementia). Eighteen publications reported on effectiveness (Table 4), 11 of them published before 2016; seventeen of them are discussed here. Kneale 2011[19] and Kneale and Smith 2013[30] are detailed in section 4.5.3 as they investigate whether and how people leave ECH. Studies evaluating the impact of specific interventions without measuring their effectiveness (e.g. experience with bereavement support groups[117]) are included in other sections.

Four reported on the FOCUS study;[69-72] another four were linked studies (DICE, EVOLVE, PSSRU and Matlabi et al. 2011[79] and 2012[29, 68, 79, 82]); as the related publications for these studies focused on different aspects of ECH, they were included in other sections of this report. In terms of study design, one was a randomised controlled trial, four were mixed methods studies and the rest were cross-sectional or longitudinal studies with or without a comparison group. The quantitative component in three of the four mixed methods studies had a before-and-after design;[56, 118, 119] the

fourth was part of the FOCUS study which had a longitudinal comparative design.[69] In four of the five non-randomised studies that compared ECH to another housing setting, data on comparison groups was secondary data from other studies; only in the FOCUS study were controls recruited prospectively.[70]

The randomised controlled trial was a pragmatic trial comparing the experiences of people living with dementia and other mental health problems in ECH schemes that implemented the Enriched Opportunities Programme intervention with schemes that employed an active control intervention, with some methodological limitations.[90] Firstly, the primary outcome of the study was changed from Dementia Care Mapping to a dementia-specific quality of life measure (QOL-AG) because "… *it became apparent that the QOL-AD was more useful…* [as it] *…allowed us to directly collect meaningful data from a greater number of residents.*" (p.1016). Secondly, due to the nature of the intervention, blinding of outcome assessors was not possible and the authors acknowledge "*… that bias may have crept into some of the data collection, particularly those collected by interview or by observation.*" However, they report using "*… methodological triangulation … to minimise any researcher bias and the incidence of reactivity in participants' responses.*" (p.1016).[90] All but two of the remaining studies failed to meet two or more of the five methodological quality criteria of the MMAT checklist. Prevalent issues were non-representative samples, failure to control for confounders and incomplete data, or failure to report such information in sufficient detail.

The studies looked at the effects of ECH on a range of outcomes relating to the physical, psychological and social wellbeing of residents. Commonly used tools, such as ASCOT (Adult Social Care Outcomes Toolkit), CASP-19 (19 item scale with four domains, Control, Autonomy, Self-Realization and Pleasure), the Barthel Index of ADL (activities of daily living) and IADL (instrumental activities of daily living; measuring ability to perform daily tasks) were used to collect data in some studies but, in general, there was variation in the instruments used to measure specific aspects of the residents' outcomes.

Studies reported improvement in the overall quality of life, or specific aspects of it, such as control over daily life, personal safety and loneliness and social isolation, after people moved into ECH.[54, 82, 89, 103, 115] Studies comparing these outcomes for people

living in ECH to those living in other settings or the general population produced more mixed results. For instance, Beach et al. 2022[29] reported that ECH residents felt less lonely but more socially isolated compared to matched controls from the English Longitudinal Study of Ageing (ELSA). The difference was explained by less frequent contact with friends and reduced membership of social organisations.[29] Callaghan and Towers 2014[91] reported that residents in care homes and ECH had similar levels of control over daily life; levels were higher for both groups compared to older people receiving care at home.[91]

The FOCUS study[52-54, 99] collected data from 14 ExtraCare Charitable Trust schemes over five years, although a new cohort was recruited after the first 18 months, and new participants were included at various time points in the original and the follow-up cohorts to counteract the effects of attrition. The study used growth curves modelling to explore the impact of living in ECH on residents' physical and mental health and social wellbeing, compared to a self-selected sample of older adults living in their own homes. The study reported three different categories of results: 1) continuous improvement in depression, perceived health, memory and autobiographical memory, which were not observed in the control group; 2) positive effects on anxiety levels, communication limitations and cognitive fluency (executive function) that were not significantly different between the ECH residents and the control group; 3) outcomes which varied with age in the control group but not in the ECH residents: IADL and social function limitations. This was interpreted as evidence "… *that ExtraCare may be reducing the normally expected reductions in function with increasing age*."(p.26).[69] Some of the positive effects observed at three months disappeared later on and, given the high risk of bias, the longitudinal results are difficult to interpret as conclusive, despite the very positive interpretation of the authors.[69-72]

In addition to the overall impact of ECH, some studies investigated the effects of specific features of, or interventions within, ECH. Orrell et al. 2013,[68] a quantitative cross-sectional study, found positive correlation between the design of ECH buildings and the residents' quality of life, while Matlabi et al. 2011[79] (also a quantitative cross-sectional) reported that the use of multiple home-based technologies was associated with better quality of life among ECH residents.[79] A mixed methods study conducted by the Mental Health Foundation found that peer support groups in the context of ECH

were well-received and appreciated by residents, even though the quantitative analysis (which had serious limitations) found *"… no impact on the outcome areas relating to life satisfaction, loneliness, wellbeing and social connectedness*." (p.4).[119]

Three studies, including the above-mentioned cluster randomised controlled trial, focused on interventions designed for ECH residents with dementia. The interventions included the Enriched Opportunities Programme,[90] nature-based interventions[118] and peer support groups.[56] They all reported that the interventions were well-received, both by residents and staff, but the quantitative results, even from the randomised controlled trial, were less conclusive and all three studies had a high risk of bias.

Cost implications

Eleven studies, nine of which were published before 2016, investigated **the cost implications of moving into or living in ECH** (Table 4). Some reported on the development and operational costs of ECH[23, 102, 109] while others focused on health and social care costs and the residents' living and personal expenses, comparing them to the period prior to moving into ECH or to another setting. The risk of bias was assessed to be high in most of the studies; as with the effectiveness studies, the main study limitations were potential selection bias, failure to control for confounders and incomplete data, or failure to report such information.

Studies varied in terms of focus and methods, so comparing specific results across studies is unlikely to produce valid conclusions. Although most of the studies looked at both costs and outcomes in the same group of participants, none of them conducted an incremental cost-effectiveness analysis (which is the accepted approach to conducting economic evaluations of two or more alternatives, and where reliance on a single quantitative measure of effectiveness is acceptable). Most studies found that health service costs decreased after moving into ECH[82] or when comparing ECH residents to control participants living in the community.[69, 71, 89] However, social care costs for ECH residents increased in one study relative to their costs prior to moving into ECH;[82] although according to another study, the increase was smaller for ECH residents than the control group living in the community (76% vs 90%, no statistical significance reported).[89] Bäumker, Netten & Darton 2010 also reported that overall costs, including health services, social care and living and personal expenses

increased after people moved into ECH, but that this was related to improvement in their quality of life.[82]

Nash, Farr and Phillips 2013[92] compared the costs of care delivery between residents living in their own homes, residential care and ECH in Wales, following up on the study conducted by Burholt et al. 2011 (which failed to collect sufficient data on costs).[54] They found that the least expensive environment was the service users' own homes and the most expensive was residential care. They note, however, that residential care supports older adults with higher care needs and includes housing costs which ECH and community care do not. Equipment and modification costs were the lowest in ECH and highest in the community, likely reflecting the age of housing stock and support infrastructure. Residential care incurred higher inpatient (healthcare) costs compared to ECH and was the most expensive for all costs relating to GP activity (reflecting different care needs). Outpatient admissions and A&E costs were relatively stable across care environments.

Brooker et al. 2011[90] reported that the Enriched Opportunities Programme for people with dementia led to a 42% decrease in hospital inpatient days in the sites implementing the programme over an 18-month period compared to a 52% increase in the active control sites (still ECH) which had a Project Support Worker Coach. On the other hand, the number of GP visits at home increased in the Enriched Opportunities Programme group and decreased in the control group, while the number of visits that people made to their GP remained the same at baseline and 18 months. Similar patterns were observed in contact with other professionals, such as physiotherapists, chiropodists and occupational therapists.

Pannel, Blood and Copeman 2012[53] interviewed residents, families, staff and other stakeholders across 21 ECH schemes and found that most, although not all, of the respondents considered ECH good value. They also found that respondents had a range of uncertainties, including the affordability of ECH as their care needs increased and the changes that the schemes are likely to undergo over time.

Experiences of residents, staff and other stakeholders

Independence, community and wellbeing in ECH

Six single publications[107, 117, 120-123] and 11 publications from linked studies (Pannell, Blood and Copeman 2012,[53] Burholt et al. 2011 and associated publications,[27] DICE,[59] ECHO,[25, 65, 66] FOCUS,[69, 73, 74] and LARC[75, 76]) discussed **residents' experiences of living in ECH schemes**. One study was quantitative,[123] two studies used a mixed methods approach;[69, 76] the others were qualitative, of which four were longitudinal[25, 59, 65, 66], three publications reported qualitative elements of longitudinal mixed methods studies[73-75], and eight were cross-sectional.[27, 53, 107, 117, 120-122] All studies included residents as participants; additionally, two included staff,[65, 69] one staff and external stakeholders[75, 76] and two families, staff and external stakeholders.[53, 117] All the qualitative studies scored well on the MMAT checklist, as did the quantitative study[123] and one of the mixed methods studies,[76] whereas Holland et al. 2015,[69] the other mixed method study, scored 'no' to four items.

There were recurrent findings in this group of studies in relation **to independence and security**.[107, 120] Independence was the focus of Hillcoat-Nalletamby 2014,[27] with themes in the study which were specific to ECH relating to being able to live, do things and make decisions alone, but also have help at hand if needed. Independence was discussed in Mansfield and Burton 2020[122] in terms of perceptions of ECH as a supportive environment, with living in ECH thought to facilitate identity, as being part of a collective environment contributed to a person's sense of self.[73-75, 122] Cameron, Johnson and Evans 2020[25] and Johnson et al. 2020,[66] from the ECHO study, and Liddle et al. 2014,[76] also discussed independence, with residents raising concerns regarding the increasing care needs of new residents and what this meant for their care in the future, a point also raised in West et al. 2017[74] and Pannell, Blood and Copeman 2012.[53] Evans et al. 2018,[65] drawing mainly on the experience of residents with dementia, reported that "…*while there was evidence that both staff and residents valued the ethos of independence, this commitment to the aspirations of ECH did not always translate into practice in the dementia specialist scheme*" (p.1497). Vickery et al. 2023[59] focused specifically on experiences of living in ECH during the Covid-19 pandemic, finding that lockdown had a negative impact on resident's feelings of autonomy and independence. Whether this would have been any different in other residential settings is not known however.

Resident's **experiences of social life and community**,[74, 107, 122] and seeking companionship[27] in ECH were discussed in this group of studies, with this felt to be one of the most important aspects of living in ECH by residents in Burns 2014.[120] Mansfield and Burton 2020[122] found that opportunities for social contact in ECH could be protective for residents experiencing bereavement and other negative life events. Studies were not universally positive; whilst Shaw et al. 2016[73] found that ECH did provide new opportunities for social contact (also reported in Holland et al. 2015[69]), negotiating these new relationships was not always straightforward, and Bernard et al. 2012[75] discussed instances of social exclusion and isolation as well as feelings of belonging (see also the "*Inclusivity and diversity*" section below). The Covid-19 lockdown had a negative impact on social interactions and relationships in ECH, requiring residents and providers to seek solutions.[59] Relationships outside ECH were also discussed; living in ECH was reported to improve relationships with family,[120] although Shaw et al. 2016[73] found that maintaining friendships outside the community became more difficult, particularly as physical capacity declined.

Moore 2021[123] was a Q-methodology study, with similar findings regarding the preferences and perceptions of residents as identified by the studies above. For example, in terms of preferences and perceptions at the 'macro-level', two perspectives were identified, residents who were (i) independent, secure and connected, or (ii) cared for, helped, and included. The study compared the preferences of ECH and retirement housing participants, finding a high degree of consistency in views between the two settings.

Finally, some studies discussed **residents' perceptions of health and wellbeing**, with living in ECH felt to benefit health and wellbeing,[107, 121] and quality of life.[122] Specific interventions, such as bereavement support[117] or dementia-focused interventions (discussed in the previous section), were experienced as beneficial by both residents and staff. However, quality of life was also associated with [concerns about the] affordability of care, especially for self-funders. For instance, Pannell, Blood and Copeman 2012 reported that even though residents had positive views on different aspects of quality of life in ECH, some had to adopt various strategies, such as relying more on unpaid help from family, to manage the rising costs associated with increasing needs.[53] Residents perceptions of the impact of living in ECH on their

quality of life are also discussed in studies included in other sections of this report.[51-53]

Changing and negotiating care

Resident's **experiences of care, and relationships with those providing it**, were the topics of two studies, one qualitative cross-sectional[51, 52] and one which used a Q-methodology approach,[124] along with three publications from the ECHO project,[28, 64, 65] which was a qualitative longitudinal study. All studies included residents, family, staff, and external stakeholders, with two focusing on specific populations of residents, those with high support needs (and comparing non-profit and private providers)[51, 52] and residents with dementia.[65] The qualitative cross-sectional study,[51, 52] and publications from the ECHO project,[28, 64, 65] scored 'yes' to most items on the critical appraisal checklist; Grimshaw, McGowan and McNichol 2017[124] scored 'unclear' to two MMAT items, and 'no' to one.

Blood 2012 and 2013[51, 52] and publications from the ECHO study[28, 64, 65] discussed resident's changing care needs over time, and how staff and other stakeholders worked with them to meet these needs. Blood 2012 and 2013[51, 52] found that whilst most residents were positive about life in ECH, some had experienced gaps, delays or confusion in service provision (often for tasks that were relatively small) due to 'boundary issues' where responsibilities were unclear between teams, providers and other stakeholders. These were often related to local authority policies, funding, regulating and monitoring, and different models of ECH, with Evans et al. 2018[65] finding, similarly, that staffing arrangements and systems were important in whether residents with dementia could continue to be cared for in ECH. Cameron et al. 2020[28] discussed how staff performed 'favours', unrecorded and often informal tasks, for residents which sometimes helped with these issues. Changing care needs were also discussed in Pannell, Blood and Copeman 2012,[53] with a focus on cost, and negotiation of care in FOCUS;[69, 73, 74] both of these studies are considered in more detail elsewhere (in the sections on *Cost implications*[53] and *Independence, community and wellbeing in ECH*[69, 73, 74]).

Grimshaw, McGowan and McNichol 2017[124] used a Q-methodology approach to establish factors reflecting a healthy relational environment in ECH – considering relationships between residents, family and professionals - and used these to define

a relational framework for use by health and social care leadership. Compassion and empathy were factors considered particularly important in relationships both between residents and staff, and between members of staff. Whilst some statements, such as those relating to respect for culture and tradition, were considered less important by participants, the lack of ethnic diversity in the sample should be noted.

Living with dementia in ECH

The likelihood of developing dementia increases with age and developing dementia is one of the common reasons for older people to consider alternative housing and care options. The importance of this topic is reflected in the relatively high number of papers we found that focused on dementia, and our decision to summarise them separately.

Nineteen publications reported on **people with dementia living in ECH** (including eight sets of linked publications) of which 14 were unique studies reporting on different data and/or results.[46, 48, 50, 57, 65, 78, 85, 86, 90, 93, 101, 106, 116, 118] Of the latter, three were published before 2016,[57, 90, 106] one was a randomised controlled trial,[90] five were qualitative studies,[46, 65, 78, 86, 101] three were quantitative cross-sectional,[50, 85, 106] and five were mixed methods studies combining qualitative methods with an online survey,[48, 93] tools for measuring residents wellbeing[57, 118] or statistical modelling of frontline staff recommendations for the best care setting.[116] As discussed earlier, the main limitations of the randomised controlled trial were lack of blinding and changing the main outcome measure during the trial. Three of the qualitative studies scored 'yes' to all the criteria on the MMAT checklist, the other two did not meet two of the criteria, mainly because they did not report their methods in sufficient detail. The remaining studies did not meet two or more of the five study quality criteria.

In terms of focus, three of the studies evaluated the effectiveness of, and response to, specific interventions (the Enriched Opportunities Programme,[90] peer-support groups[56, 57] and nature-based activities),[118] whilst one focused on innovations and approaches to address the needs of residents with dementia from black and ethnic minority communities,[78] and one focused on 'walking with purpose' in the context of ECH.[48] The rest of the studies had a broader scope, including decision makers' views regarding appropriate housing options for older people with dementia, models of ECH and provisions for residents with dementia, and residents, staff and external

stakeholders' experiences and views of ECH in relation to housing residents with or at risk of dementia.

There was no conclusive evidence about the effectiveness of the three specific interventions,[56, 57, 90, 118] but they were perceived as helpful and appreciated by both residents and staff. The study looking at the needs of residents from black and ethnic minority communities[78] found that none of the included schemes (number not reported) had fully integrated the three strands of housing services, dementia care and cultural or ethnicity-related needs and preferences. A range of strategies were reported as being developed to meet tenants' changing circumstances but there was also anxiety about the cost of adaptations, the nature and extent of which were ill-defined. 'Walking with purpose' was found to be more challenging in ECH than retirement housing but ECH was also more likely to make use of design features and assistive technology to deal with such behaviour.[48] Various approaches were used in practice but, overall, there were a lack of policies, awareness and training to support staff in adopting the most effective and appropriate methods to address walking with purpose (e.g. distracting or redirecting the resident, or walking with them). Another study compared ECH and residential care in terms of 'green dementia care' provision – outdoor and indoor opportunities for residents to interact with nature.[93] ECH differed from care homes in that they were less likely to offer structured or indoor nature-based activities, but more likely to allow residents to keep pets and organise nature-based activities themselves.[93]

Although frontline practitioners saw ECH as a valuable alternative for some care home entrants (e.g. people with a formal diagnosis of dementia who lived alone), they were more focused on maintaining people at home and were unsure about the place of ECH in the ideal care pathway. A range of factors were considered in the decision-making process, such as the overall level of care people needed and whether they needed care at night.[116]

For people with dementia, living in ECH had both advantages and disadvantages. The advantages included owning your own home, having a safe, age-friendly location with flexible support, social interaction and (for some) continuing to live as a couple. The challenges were staff availability and organisation of care (e.g. need for 'flexible resourcing', where staff might have commissioned time that was not assigned to a

specific task to meet the evolving needs of residents), dementia awareness and stigma, location of the schemes, lack of truly person-centred care, loneliness and those related to advancing symptoms of dementia.[45, 46, 65] Further themes that emerged from qualitative research included the need for dementia-friendly design, interacting with the local community, 'green' dementia care, assistive technology, staff skills and expertise, and activities and opportunities to socialise.[101]

Although the prevalent and preferred way to include people with dementia in ECH was integration in non-specialist schemes,[85, 101] Barrett et al. 2012[106] found that (in 2011) there was little specialist provision for people with dementia in the six integrated model schemes used as case studies, except for one which had adopted the Enriched Opportunities Programme. One specialist dementia scheme was included in the study – this showed good provision for people with dementia of various forms and severity. Similar findings were reported by Evans 2018[65] who discuss how it might be easier to incorporate dementia-friendly design in a specialist scheme than in a non-specialist setting. They recommend further research to explore the relative advantages and disadvantages of integrated and separated accommodation units considering the needs of residents at different stages in their dementia. Aside from design, problems in integrated schemes resulted from the prejudice shown by other residents against those with dementia; management were aware of this challenge, and wished to reduce negative attitudes.[106]

A more recent study[45, 46] found that there are potential benefits and challenges within each model of ECH for people with dementia (integrated or specialist, see Glossary for definitions), but the limited diversity of stock limits choice. Factors beyond the model of provision seem to affect the lived experience, leading authors to conclude that there is no universal model of optimal support but rather, the approach and resources of each site are more important than the underlying model.[45, 46]

Implementation of ECH

Physical aspects of and use of technology within ECH dwellings

Thirteen studies, eight published before 2016, investigated **physical aspects of ECH** (n=9) and/or **the use of technology within ECH schemes** (n=5, one study looked at both). Six of the studies were qualitative, three were quantitative and four were mixed

methods. In terms of quality, seven of the studies did not meet two or more of the MMAT criteria or failed to report sufficient detail to allow such a judgement.

Two papers from the EVOLVE study reported on the design of ECH in relation to the needs of people with sight loss[67] and the barriers to compliance with current UK guidance on daylighting.[41] The former concluded that buildings not designed specifically for people with sight loss were not very good at supporting their needs; the issues included suboptimal lighting levels, few buildings that gave people the opportunity to control their lighting, and lack of contrast and colour schemes to assist visual tasks and wayfinding.[67] In addition, all participants appreciated having sunlight and a view from their home.[67] Lewis et al. 2015a[41] found that the interviewed architects rarely undertook daylight factor calculations and lacked awareness of how their housing schemes measured up to current standards, with most of the identified barriers relating to financial concerns.[41]

Two studies looked at thermal comfort in ECH dwellings. Gupta et al.[94] used a mixed methods case study design to examine the magnitude, causes, preparedness and remedies for addressing the risk of summertime overheating in two care homes and two ECH schemes in different regions of the country. Although overheating was found to be a current and prevalent risk, there was little awareness and preparedness to implement suitable and long-term adaptation strategies. Both designers and managers believed that cold was a bigger threat to older occupants and there was a lack of effective thermal management. Lewis et al. 2015b[125] adopted a socio-technical approach to examine how ideas about ageing inform those aspects of ECH that relate to thermal control. Participants – stakeholders involved in the design, development and management of ECH – "*…characterised imagined occupants as vulnerable to cold, at risk from fuel poverty and liable to be burned by hot surfaces or fall from high windows.*" (p.204).[125] The design of ECH reflected these stereotypes, with schemes including features such as communal heating, under-floor heating, restricted window opening and heated corridors. However, the authors point out that older people's thermal comfort needs are diverse and question the usefulness of designing for a standard resident.

Sattar et al. 2021[126] explored residents' perceptions of a refurbishment programme of ECH schemes and its impact on their wellbeing. They identified two categories of

residents – healthy active older adults and older frail adults (some 85 years of age or older). All residents appreciated the refurbishment and stated that the provision of indoor and outdoor communal areas had a positive impact on their social and emotional wellbeing. However, older frail residents were able to access these spaces only when staff took them in their wheelchairs. Although investigating the general physical design of ECH[40] and the availability and use of communal spaces,[58] Barnes et al. 2012[40] and Powell et al. 2024[58] both had similar findings regarding the impact of building design on accessibility for residents with impairments.

Wright et al. 2010[21] and Mayagoitia et al. 2015[81] investigated ten schemes in different regions of England after remodelling. Mayagoitia et al. 2015[81] conducted an inventory of accessibility features and assistive technology items in ECH flats and common areas. They report that "*Most of the AT* [assistive technology] *found was low-technology supporting independence, such as grabbers; some was specific to care provision, such as hoists. Even after remodelling, the design and layout of most buildings did not fully comply with accessibility standards, leading to increased provision of care for some tenants*" (p.3).[81] Qualitative research by Wright et al. 2010[21] found that although most residents viewed the remodelling positively, there common barriers within scheme, particularly relating to their entrances, internal doors, and doors to individual flats and kitchens.

Four further studies reported on the use of technology in ECH schemes. Matlabi et al. 2012[80] found that the most basic appliances and emergency call systems were used in the living units and no new home-based technological devices, such as electrical window openers, were available in the 23 ECH schemes which took part in the study. They concluded that "*…in order to increase the use of technological devices among the elderly, their perceptions, capabilities, attitudes, and needs should be assessed in the designing, planning, and supplying process.*" (p.293).[80] A related publication[79] from the same study reported a positive association between the use of home-based technology and the quality of life of ECH residents.

Halloran 2017[95] used a mixed methods design to investigate the acceptance and patterns of use of assisted living technology (ALT) in ECH. They introduce the concept of 'social leveraging' which "… *relates to how user engagement with key ALT including personal pendant alarms, pull cords and intercoms is shaped and supported in*

important ways by the ongoing social interaction of residents and skilled staff at independent living schemes." (p.438).[95] In their conclusions, the authors stress the importance of human resource as a part of independent living services which might be overlooked in a time of transition to new technological models in the context of limited funding.

Links between social interaction and technology were also made by Wales 2020[87] and Wales 2023,[88] who explored residents' use of the internet for social contact. This research thesis and associated paper found that internet use supported residents' offline social relationships, both with family and friends, and that they were able to form new friendships and reconnect with previous friends. Internet use also offered additional benefits, enabling participants '*to re-establish a continuous sense of their own biography*'(p.iii)[87] and regain some skills from their earlier years.

Inclusivity and diversity

Six papers, one published before 2016,[100] reported on **topics related to inclusivity and diversity** (those focusing on dementia are discussed in the respective section). Four were linked publications from the DICE study which had a longitudinal design and collected data over a period of three years.[58-61] Five were qualitative studies and one was mixed methods (including a survey as a quantitative component).[60]

The DICE study identified that despite the success of ECH in counteracting social isolation and preventing loneliness among older residents, "*…pockets of isolation still exist among some residents, particularly people from social minorities.*" (p.4).[60] Three of the papers discussed the experience of residents from social minority groups, such as people with disabilities, LGBTQ+ people and those from black and other ethnic minority groups. The study identified a range of interpersonal, organisational, physical and environmental factors that could help promote social inclusion in ECH schemes: supportive neighbour relations, on-site staff presence, inclusion with the local area, listening to the views of residents, inclusive and age-friendly design, adequate digital infrastructure, and a supportive policy environment. The fourth DICE study focused more broadly on the experience of ECH residents during the Covid-19 pandemic, but most of the quotes were from residents from social minority groups.[59]

The remaining two studies reported on current approaches that promote supportive communities and minimise frictions and tensions between groups of people and individuals with and without high support needs;[100] and on innovations and approaches that show promise in addressing the needs of, and improving the wellbeing of, older people with dementia from black and ethnic minority communities.[78] Few other studies reported the inclusion of social minorities in their samples, with none reporting any specific results for these groups.[52, 53, 84, 117, 119] However, physical and cognitive impairment were discussed, as noted in various sections e.g. 'Physical aspects of and use of technology within ECH dwellings'.[40, 58, 126]

Management and workforce

Two studies focused on **management of the workforce in ECH schemes**: one was mixed methods and one a quantitative cross-sectional study. Dutton 2021[62, 63] was not judged as good quality using the MMAT checklist, with four out of five items - concerning aspects of the study such as the representativeness of the sample and use of appropriate measurements - scored 'no'. Whilst Sitra 2014[127] only scored 'no' for one item (whether divergences and inconsistencies between study components were adequately addressed), it did score 'unclear' for two items, relating to the integration of study components and whether these components met relevant methodological standards. It should also be noted that both studies included only external stakeholders as participants; the views of staff, such as care workers and scheme managers, are also relevant to this topic (e.g. although management and workforce was not the primary focus of Cameron, Johnson and Evans 2020,[25] staff discussed the organisation of their time into task-focused 'care runs', which were felt to be frustrating both in terms of achieving the set times and as they compromised the ability to provide appropriate care).

Dutton 2021[62, 63] looked specifically at the response of ECH operators to the Covid-19 pandemic, finding that operators were consistent in the use of measures taken to protect the health of residents and staff (e.g. social distancing) but that there were specific factors that impacted the housing with care sector, such as a lack of leadership and clarity from the government due to their focus on care homes when providing guidance. Sitra 2014[127] had a much broader remit, exploring job roles, both existing and emerging, with overlap between housing and social care, and assessing

workforce development needs. Some of the key findings from the report related to the increasing numbers of integrated job roles across housing and care, and new roles around support, health and wellbeing and community engagement, all with broader skills sets. However, there was concern that the responsive way in which these integrated roles were being created was *"not allowing for strategic development of the learning that might underpin these roles"* (p.28),[127] leading to unmet learning needs. Significant issues were also identified around workforce recruitment.

Impact on wider community

The importance of being able to easily **access the wider community beyond an ECH scheme** was discussed in a number of studies. However, only two assessed the impact of ECH on the community outside the scheme. One focused specifically on schemes which were community hubs, considering the general sharing of scheme facilities and activities between residents and the wider community, as well as "*the provision of care or activities coming from the wider community into the scheme (in-reach), [and] care being extended out into the community from within the scheme or activities outside of the scheme being utilised by residents (out-reach)*" (p.23).[128] The other considered the broader impact of a scheme throughout its lifecycle.[103]

Evans et al. 2017[128] investigated community hubs using a mixed methods approach, highlighting benefits (e.g. the greater sustainability of scheme amenities), facilitators which enabled community hubs to work well, such as age friendly design, and barriers, of which opposition by residents was one of the most significant. A report by the Oxford Brookes University Institute of Public Care 2014[103] was a quantitative cross-sectional study using secondary data, focusing on private ECH schemes run by McCarthy and Stone. The analysis considered the benefits of ECH to the local community during the construction phase, such as construction workers' use of local cafes and accommodation, and the use of Section 106 and other similar payments for purposes such as affordable housing. It also considered scheme's contributions once up and running, in terms of employing local people and releasing family homes back onto the market, and through residents' use of shops and other facilities.

Although both studies indicated the potential for ECH to positively impact the local community, limitations should be noted, as Evans 2017[128] did not include any community residents, and the study by the Oxford Brookes University Institute of

Public Care 2014[103] focused only on private schemes operated by a single provider. Critical appraisal also indicated some limitations, with Evans et al. 2017[128] scoring 'no' to three items on the MMAT checklist (related to the integration of different components of the mixed methods design and meeting the appropriate methodological standards for both components), and Oxford Brookes University Institute of Public Care 2014[103] scoring 'no' for two items (representativeness of sample and accounting for confounding factors) and 'unclear' for two (use of appropriate measurements and complete outcome data).

4.5.3. Moving on from ECH

Only one study was included, reported in Kneale 2011[19] and Kneale and Smith 2013,[30] that explicitly aimed to investigate **whether and how residents leave ECH**. However, there were six studies, reported in seven publications, that considered whether ECH could be a home for life as part of a more general or different focus.[25, 53-55, 76, 85, 90] The quality of the studies was variable. Four scored positively, with one meeting all MMAT criteria[76] and three meeting four (the fifth was scored unclear for all).[19, 25, 30, 53] The methodological issues with the included randomised controlled trial are discussed in **Error! Reference source not found.**.[90] The other two studies were a quantitative cross-sectional study,[85] which had issues relating to the representativeness of the sample and risk of non-response bias, and a mixed methods study,[54, 55] which did not provide an adequate rationale for the approach or adhere to the relevant quality guidelines for both components of the study. Three of the studies were funded by ECH providers, two through government support, one by a charitable organisation, and one did not report its funding source.

Kneale 2011[19] and Kneale and Smith 2013,[30] had a number of aims related to investigating the effectiveness and costs of ECH. Event history models were used *"… to analyse the duration of stay in extra care housing and propensity [score] matching to compare the situation in extra care housing with those in receipt of domiciliary care in the community*" (p.283),[19] including consideration of factors that might moderate length of stay and likelihood of entering institutional accommodation. The component of the study focused moving on from ECH used data from a non-profit ECH provider and the British Household Panel Survey. It found that the median length of stay in ECH was 6.5 years, although this did depend on the characteristics of residents, with men,

older people, and those with higher care needs likely to stay for a shorter time. After 5 years, models showed that 8.2% of residents would be expected to have moved to a nursing or care home; there was some indication that this was lower than for the matched community sample, with ECH residents ≥80 years of age approximately half as likely to enter institutional care compared with those in the community. The authors concluded that ECH can offer a home for life, but "*there may be greater scope for improving resident outcomes and the aspiration of a home for life, with better management of changing care needs from low to high care"* (p.66).[19]

Other studies did not provide comparisons with non-residents, but considered factors internal to ECH that might enable or prevent it being a home for life. The included randomised controlled trial found that those *"supported by the EOP [Enriched Opportunities Programme] intervention were half as likely to have to relocate to care homes than those supported in the control schemes*" (p.1015).[90] The other five studies - a qualitative longitudinal study, a qualitative cross-sectional study, a quantitative cross-sectional study, and two mixed methods studies – all had similar findings. Burholt et al. 2011[54, 55] noted that residents were aware that complex care needs were unlikely to be supported in ECH, and that managers were unwilling to admit or continue to support these needs, particularly if they were cognitive. Similarly, Cameron, Johnson and Evans 2020[25] found that *"some residents were concerned that, having lived in ECH for many years, they would have to move to another type of residential care setting as their health deteriorated"* (p.286), with participants in Liddle et al. 2014[76] expressing similar views regarding whether ECH would have appropriate support to enable them to age in place. These concerns were also discussed specifically in terms of being able to afford to pay for more care by self-funding residents,[53] and in relation to the needs of people with dementia.[85]

Table 4 Summary of characteristics of included studies.

Single publications are arranged alphabetically in three categories: papers, which are peer reviewed journal articles; reports; and other types of publication (e.g. theses). Single studies reported in multiple publications are listed with the single publications, whilst linked publications are separate but also arranged alphabetically; for both * indicates those that are reports or other publication types. For studies with the focus 'other', we have indicated the specific area of focus of the study.

Study	**Study design**	**Focus**	**Schemes (n, location)**	**Participants**	
Papers					
Aitken 2019[32]	Quantitative cross-sectional	Other (moving into ECH)	Schemes: n/a	45 older people (41 in main study, 4 in pilot)	
Atkinson 2023[45], Oatley 2024[46]	Qualitative cross-sectional	Experiences	Schemes: 8 Central England (4), southeast England (1) and northeast England (3)	**100 total** 49 older people 5 family/carers	34 staff 12 external stakeholders
Barrett 2020a*,[47] Barrett 2020b[48]	Mixed, cross-sectional, comparative	Experiences	Schemes: not clearly reported Not reported	Survey: 148 staff (42 ECH, 106 retirement housing)	Case studies of individual residents (not interviewed), interviews (n=14) with family/carers and staff, in ECH: 5 older people 1 family/carer 5 staff
Barret 2021*,[49] Barrett 2023[50]	Quantitative cross-sectional	Other (living with dementia in ECH)	Schemes: 71 Not reported	71 staff	
Brooker 2011[90]	Randomised controlled trial	Effectiveness; costs	Schemes: 10 Not reported	Baseline - 144 older people (intervention), 149 older people (control)	18 months - 102 older people (intervention), 97 (control)
Buckland 2020[107]	Qualitative cross-sectional	Experiences	Schemes: 5	8 older people	

Study	Study design	Focus	Schemes (n, location)	Participants	
			Warwickshire (1 scheme); Tower Hamlets, London (4 schemes)		
Callaghan 2014[91]	Quantitative, cross-sectional, comparative	Effectiveness	Schemes: 15 Multiple locations (15 of the first 19 schemes funded by the Department of Health Extra Care Housing Funding Initiative (2004-06))	618 older people (102 from ECH, 215 from care homes, 301 receiving care at home)	
Chandler 2014[121]	Qualitative cross-sectional	Experiences	Schemes 2 Southeast England	18 older people	
Chester-Evans 2019[93]	Mixed, cross-sectional, comparitive	Other (living with dementia in ECH)	Schemes: Survey - 144 (50% ECH) Interviews - 3 Not reported	Interviews: 35 total	19 older people (7 ECH, 12 care home) 16 staff (7 ECH, 9 care home)
Dutton 2021a,[62] Dutton 2021b*[63]	Quantitative cross-sectional	Effectiveness; experiences; other (management and workforce)	Schemes: 62 retirement villages, 387 ECH schemes All main regions of England	38 external stakeholders (ECH providers who completed the survey)	
Evans 2017[128]	Mixed	Experiences; other (impact on wider community)	Schemes: Surveys - 99 (majority ECH) Case studies - 4 Survey: not reported Case studies: large Midlands town, large town in Southwest England; village in Southwest England; suburbs of a large city in Southeast England	Surveys: 99 staff	Case studies (interviews): 13 older people 15 staff 4 external stakeholders

Study	Study design	Focus	Schemes (n, location)	Participants	
Grimshaw 2017[124]	Mixed	Other (changing and negotiating care)	Schemes: n/a n/a	**27 total** 7 older people 5 staff	15 external stakeholders and family/carers
Gupta 2017[94]	Mixed, cross-sectional, comparative	Other (physical aspects/ technology)	Schemes: 4 (2 care homes, 2 ECH) Southeast England (1 scheme), southwest England (1 scheme)	9 external stakeholders	
Halloran 2017[95]	Mixed, cross-sectional, comparative	Experiences; other (physical aspects/ technology)	Schemes: 7 (number of ECH not reported) Not reported	100 older people	[probably] 7 staff (not clearly reported)
Hillcoat-Nallétamby & Sardani 2019[96]	Qualitative cross-sectional	Other (moving into ECH)	Schemes: n/a Wales	18 older people	
Holland 2010[97]	Qualitative cross-sectional	Other (moving into ECH)	Schemes: n/a Not reported	105 older people	
Kneale 2011*,[19] Kneale 2013[30]	Quantitative, longitudinal, comparitive	Effectiveness	Schemes: 32 Audley: Willicombe Park, Tunbridge Wells, also Derbyshire, Yorkshire and Kent ExtraCare Charitable Trust: Staffordshire (2), Wolverhampton (2), Cheshire (1), Merseyside (1), Nottinghamshire (1) and Worcestershire (2) Retirement Security: London, East, and the Southeast (8), the Southwest (2), the Northwest (8),	3992 older people (not all contributed to all outcomes)	

Study	Study design	Focus	Schemes (n, location)	Participants	
			the Midlands (5), West Midlands (6) and North Wales (1)		
Lewis 2015a[125]	Qualitative cross-sectional	Other (physical aspects/ technology)	Schemes: 4 Not reported	13 staff and external stakeholders	
Lipman 2015*,[77] Lipman 2017[78]	Qualitative cross-sectional	Other (living in ECH with dementia)	Schemes: not reported, 12 housing associations Not reported	Multiple staff	
Mansfield 2020[122]	Qualitative cross-sectional	Experiences	Schemes: 1 West Midlands	7 older people	
Poyner 2017[98]	Qualitative cross-sectional	Other (moving into ECH)	Schemes: 1 South of England	17 older people and family/carers	
Robinson 2023[113]	Modelling	Other (moving into ECH)	n/a England	n/a	
Sattar 2021[126]	Qualitative cross-sectional	Other (physical aspects/ technology)	Schemes: 9 Not reported	45 older people	
Verbeek 2019[116]	Mixed	Other (moving into ECH; living in ECH with dementia)	Schemes: n/a England	61 older people 20 external stakeholders	
Wild 2018[105]	Qualitative cross-sectional	Other (moving into ECH)	Scheme: 1 Scotland	9 external stakeholders	
Report					
Barrett 2012[106]	Quantitative cross-sectional	Other (living with dementia in ECH)	Schemes: 7 St Neots, Northampton, Rushden, Hammersmith London, Coventry, Birmingham, Moreton Merseyside	14 staff	

Study	Study design	Focus	Schemes (n, location)	Participants	
Barrett 2016[101]	Qualitative cross-sectional	Experiences	Schemes: 5 Not reported	**35 total** 18 older people	7 family/carers 10 staff
Batty 2017[102]	Mixed	Costs; experiences; other (moving into ECH)	Schemes: Administrative data - 47 Survey - 35 Case studies – 6 Focus groups – 9 All local authority areas in Wales, with the exception of Rhondda Cynon Taf	Surveys: 51 external stakeholders (surveys)	Case studies (interviews): External stakeholders and staff, numbers not reported Focus groups: Over 80 older people
Beach 2015[115]	Quantitative cross-sectional	Effectiveness; other (moving into ECH)	Schemes: 7 Yorkshire, Midlands, Kent, and Denham Garden Village in Buckinghamshire	201 older people	
Chakkalackal 13,[56] Chakkalackal 14[57]	Mixed	Effectiveness; experiences; other (living with dementia in ECH)	Schemes: 3 London	Outcome evaluation: Baseline - 21 older people Follow-up – 11 older people 5 family/carers 1 staff	Process evaluation: 12 older people 9 staff 5 external stakeholders
Croucher 2010[114]	Qualitative longitudinal	Experiences; other (moving into ECH)	Scheme: 1 Hartlepool	Meetings: 45 older people Focus groups 16 older people	Interviews: 3 older people Staff and external stakeholders, number not reported
Croucher 2012[100]	Qualitative cross-sectional	Other (independence, community and wellbeing in ECH; inclusivity and diversity)	Schemes: Stage 2 - 9 (7 ECH, 2 sheltered housing) Stage 3 – 3 (type not clearly reported)	Stage 2: 72 older people 29 staff Stage 3: 21 older people	

Study	Study design	Focus	Schemes (n, location)	Participants	
			Not reported		
Goswell 2014[89]	Quantitative, longitundinal, comparative	Effectiveness; costs	Schemes: 1 Blandford Forum, Dorset	Outcomes: 47 older people (compared to historical data from 385 older people)	Costs: 54 older people (compared to 16 controls)
Hastings 2020[112]	Modelling	Other (moving into ECH)	n/a All 22 local authorities in Wales		
Healthwatch Salford 2018[108]	Qualitative cross-sectional	Experiences	Schemes: 6 schemes Salford	**115 total** 49 older people	9 family/carers 57 staff
Healthwatch Wokingham 2017[129]	Qualitative cross-sectional	Experiences	not reported Wokingham Borough		
Joint Improvement Partnership 2011[109]	Mixed	Costs; other (moving into ECH)	Schemes: 2 (focus groups) Not reported	2 focus groups with older people (number not reported)	External stakeholders (number not clearly reported)
Mental Health Foundation 2018[119]	Mixed	Effectiveness; experiences	Schemes: not clearly reported (19 implemented peer support groups) Not reported	13 older people (quantitative)	45 older people (qualitative, 57 at follow up)
Nash 2013[92]	Quantitative, cross-sectional, comparative	Costs	Schemes: not reported Swansea	7071 older people (94 in ECH)	
Oxford Brookes University Institute of Public Care 2014[103]	Quantitative comparative	Effectiveness; costs; other (impact on wider community)	Schemes: 10 The five English regions, Scotland and Wales	100 older people	
Promatura 2022[99]	Quantitative cross-sectional	Other (moving into ECH)	Schemes: n/a Not reported	966 older people	

Study	Study design	Focus	Schemes (n, location)	Participants	
Roleston 2021[117]	Qualitative cross-sectional	Experiences; other (independence, community and wellbeing in ECH, inclusivity and diversity)	Schemes: 4 Birmingham	Phase 1: 58 older people	Phase 2: 43 older people (some participants may be the same across phases, not clearly reported)
Sitra 2014[127]	Mixed	Other (management and workforce)	Schemes: n/a n/a	(i) not reported (ii) 108 ECH respondents to survey	(iii) 24 managers in learning & development or human resources in ECH interviewed; 13 other stakeholders interviewed
Other					
Browne 2021[118]	Mixed	Effectiveness; experiences	Schemes: 1 Bournville Gardens, Birmingham	18 older people	
Burns 2014[120]	Qualitative cross-sectional	Experiences	Schemes: 1 Fleet, Hampshire	17 older people	
Carterwood 2014[104]	Quantitative cross-sectional	Other (moving into ECH)	Schemes: 87 Schemes: East Midlands (7); East (11); London (7); Northwest (14); Southeast (13); Southwest (14); Wales (1); West Midlands (13); Yorkshire & Humber (7)	3823 older people	
Craddock 2014[130]	Quantitative cross-sectional	Effectiveness	Schemes: 7 5 local authority areas: Midlands, Northeast, Southwest and a borough of London	83 older people	

Study	Study design	Focus	Schemes (n, location)	Participants	
Moore 2021[123]	Quantitative cross-sectional	Experiences	Schemes: 5 (ECH) and 11 (retirement housing) Suffolk, Cotswolds, a naval city, East Midlands, urban Northeast	68 older people (ECH) 157 older people (retirement housing)	
Wales 2020,[87] Wales 2023[88]	Qualitative longitudinal	Experiences	Schemes: 2 Northeast England	10 older people	
Linked publications					
Blood 2012, Blood 2013, Pannell 2012					
Blood 2012,[51] Blood 2013*[52]	Qualitative cross-sectional	Experiences; other (independence, community and wellbeing in ECH)	Schemes: 19 All 4 nations, most English regions	47 older people (3 also carers) 5 family/carers	52 staff and external stakeholders
Pannell 2012*[53]	Qualitative cross-sectional	Costs; experiences	Schemes: 21 Most regions of England (14 schemes), Northern Ireland (2 schemes), Scotland (2 schemes), Wales (3, schemes)	78 older people 4 family/carers 7 staff	40 external stakeholders
Burholt 2011 and associated publications					
Burholt 2011*,[54] Phillips 2015[55]	Mixed, cross-sectional, comparitive	Effectiveness; costs; experiences	Schemes: not reported North Wales (Conwy, rural), South Wales (Cardiff, urban)	Survey: 183 older people ECH (n=58), residential care (n= 66), people receiving care in the community (n= 59)	Interviews: 91 older people ECH (n=30), residential care (n=31), receiving care in the community (n=30)

Study	Study design	Focus	Schemes (n, location)	Participants	
					14 staff ECH scheme managers (n=4), residential care home managers (n=5), community care team managers (n=5)
Hillcoat-Nalletamby 2014[27]	Qualitative cross-sectional	Experiences		Subsample of Burholt 2011[54]	91 older people
Hillcoat-Nalletamby 2019[31]	Qualitative cross-sectional	Experiences; other (moving into ECH)		Subsample of Burholt 2011[54]	29 older people (whose choice of care option involved moving to an ECH in Wales)
DICE					
Beach 2022[29]	Quantitative, cross-sectional, comparative	Experiences	Schemes: 94 (HWC) Not reported	741 older people	
Powell 2024[58]	Qualitative longitudinal	Experiences	Schemes: Interviews (cross-sectional) - 9 Interviews (longitudinal) – not clearly reported Not reported	72 older people 51 (cross-sectional) 21 (longitudinal)	
Vickery 2023[59]	Qualitative longitudinal	Experiences	Schemes: 24 Not reported	56 older people	
Willis 2022*[60]	Mixed	Experiences; other (inclusivity and diversity)	Schemes: (all HWC) Survey - 95 Interviews (older people) - 26 Interviews (staff) - 6	Survey: 741 older people	Interviews: 72 older people (21 from social minority groups) 21 staff

Study	Study design	Focus	Schemes (n, location)	Participants	
			England and Wales		23 external stakeholders
Willis 2023[61]	Qualitative longitudinal	Experiences	Schemes: not reported Not reported	15 older people 4 (cross-sectional) 10 (longitudinal) 1 (unknown)	
ECHO					
Cameron 2019[64]	Qualitative longitudinal	Experiences	Schemes: 4 England, a unitary authority (urban) and a county council two-tier authority (rural)	51 older people (in first round; 164 complete interviews and 40 missing overall after 4 rounds)	
Cameron et al. 2020[28]	Qualitative longitudinal	Experiences			
Cameron, Johnson & Evans 2020[25]	Qualitative longitudinal	Experiences		27 staff	
Evans 2018[65]	Qualitative longitudinal	Experiences		**80 total** 51 older people 27 staff	2 external stakeholders
Johnson 2020[66]	Qualitative longitudinal	Experiences		See Cameron 2019 and Cameron et al. 2020	
EVOLVE					
Barnes 2012[40]	Qualitative cross-sectional	Experiences	Schemes: 5 England	32 older people 3 family/carers	
Lewis 2013*[67]	Quantitative cross-sectional	Experiences; other	Schemes: Survey - 11 Building survey – 23 (see Orrell 2013) Not reported	44 older people	

Study	Study design	Focus	Schemes (n, location)	Participants	
Lewis 2015b[41]	Mixed	Other (physical aspects/ technology)	Schemes: 23 Not reported	20 external stakeholders	
Orrell 2013[68]	Quantitative cross-sectional	Effectiveness	Schemes: 23 North of England (11), Midlands (5), south of England (7)	163 older people	
FOCUS					
Holland 2015*[69]	Mixed, longitudinal, comparative	Effectiveness; costs; experiences	Schemes: 13/14 (as baseline) 19 (additional schemes added in Holland 2019 follow up)* Midlands	Quantitative: Baseline (2012) 193 older people 162 ECH 33 controls Follow-up (18-months) 108 ECH 29 controls Follow-up (2017, 60 months) 22 ECH 2 controls	Diaries: 79 older people 57 ECH 22 controls Qualitative 144 older people 2 staff
Holland 2017[70]	Quantitative, longitudinal, comparative	Effectiveness			
Holland 2019*[71]	Quantitative, longitudinal, comparative	Effectiveness; costs			
Holland 2021[72]	Quantitative, longitudinal, comparative	Effectiveness			
Shaw 2016[73]	Qualitative longitudinal	Experiences		6 older people	
West 2017[74]	Qualitative longitudinal	Experiences		Focus groups: 122 older people	Interviews and case studies: 13 older people (4 took part in both)
LARC					

Study	Study design	Focus	Schemes (n, location)	Participants	
Bernard 2012[75]	Mixed	Experiences	Schemes: 1 Denham Garden Village, Buckinghamshire	68 total 52 older people 16 external stakeholders	
Liddle 2014[76]	Mixed	Experiences		Surveys: 122 older people (2007), 156 older people (2009) 12 staff and external stakeholders	Interviews: 16 external stakeholders Focus groups: 10 staff
Matlabi 2011 & Matlabi 2012					
Matlabi 2011[79]	Quantitative cross-sectional	Effectiveness, Other (physical aspects/ technology)	Schemes: 23 England	160 older people	
Matlabi 2012[80]		Other (physical aspects/ technology)			
Mayagoitia 2015 & Wright 2010					
Mayagoitia 2015[81]	Mixed	Experiences; other (physical aspects/ technology)	Schemes: 10 England, northeast (1 scheme), northwest (1 scheme), southwest (1 scheme), southeast (3 schemes), London (1 scheme), east of England (3 schemes)	40 older people	
Wright 2010[21]	Qualitative longitudinal	Experiences		**183 total** 96 older people	56 staff 31 external stakeholders
PSSRU					
Bäumker 2010[82]	Quantitative longitudinal	Effectiveness; costs	Schemes: 1 Bradford	Baseline: 40 older people	Follow-up: 22 older people

Study	Study design	Focus	Schemes (n, location)	Participants	
Bäumker 2011[23]	Quantitative cross-sectional	Costs	Schemes: 19 8 regions in England: Yorkshire and the Humber (5), Southeast (4), London (3), Northeast (2), East Midlands (2), Northwest (1), West Midlands (1), east of England (1)		
Bäumker 2012[83]	Quantitative cross-sectional	Other (moving into ECH)		949 older people (493 in villages, 456 in smaller schemes)	
Darton 2012[84]	Quantitative, longitudinal, comparative	Other (moving into ECH)		609 older people in ECH	(132 in villages, 477 in smaller schemes) 494 older people in care homes
Twyford 2016 & Twyford 2018					
Twyford 2016*[85]	Quantitative cross-sectional	Other (living with dementia in ECH)	Schemes: 64 Birmingham (6), West Midlands (10), East Sussex (4), Kent (4), Northamptonshire (5), Staffordshire (6), other areas (29)	n/a	
Twyford 2018*[86]	Qualitative cross-sectional	Experiences; other (living with dementia in ECH)	Schemes: 2 East Midlands	11 older people 15 staff	

5. Discussion

5.1. Summary of findings

In this scoping review, we aimed to identify empirical research and evaluations focusing on ECH in the UK, and summarise key aspects of these studies, including their focus and main findings. A total of 98 publications were included in the review, 2 systematic reviews and 96 primary research (representing 70 unique datasets, due to multiple publications resulting from some included studies). Fifty-seven of these were published as journal articles, 39 were grey literature. Over a third of the studies were qualitative (n=37), 28 were quantitative, 19 took a mixed methods approach, and two were modelling studies using secondary data. Qualitative studies scored well on the MMAT checklist; the quality of other study designs was assessed to be more variable and many of them, mixed methods studies in particular, failed to meet two or more of the five criteria on the MMAT checklist. Description of the characteristics of the participating ECH schemes and residents/participants was also variable, with few characteristics reported consistently.

In terms of focus, there were a group of studies which investigated ‘moving into ECH’, focusing either on the supply and demand for ECH, or the decision-making process which led to a move to ECH. The largest group of studies were about ‘living in ECH’. This group included studies assessing the effectiveness of ECH for a range of outcomes; 18 studies evaluated outcomes such as quality of life or ability to perform daily activities, whilst 11 studies investigated costs. However, most studies explored experiences of living in ECH; some of these were directly focused on residents, exploring topics such as independence and community within ECH, changing care needs, and inclusivity and diversity. Others were to do with the physical infrastructure of schemes, or their management and workforce. Finally, there was a single study which investigated ‘moving on from ECH’ - whether and how residents leave ECH - although six other studies considered whether ECH could offer a ‘home for life’ as part of a wider focus.

5.2. Findings in context

This review is the most comprehensive overview of evidence on ECH for older people in the UK to date. Its focus on older people is broader than previous systematic and

scoping reviews, which have looked at ECH for specific populations (e.g. people living with dementia[16, 22]), and reports on a wider range of outcomes (e.g. than Coyle et al. 2021[110] and Smith et al. 2022[111]). It has found a body of research and evaluative evidence exploring ECH in the UK, with much of the available research supporting the provision of ECH as a model of housing with care for older people. For example, the qualitative research detailing experiences of ECH demonstrates the benefits older people feel they receive as a result of living in ECH. However, a comprehensive and robust evidence base is needed to inform policy and practice, including investment, further research and innovation, and studies were variable in their methodological quality and reporting. Key issues were identified from the included studies relating to the current provision of ECH, and its future development:

- Inconsistency in how ECH was defined and the implications for older people and those commissioning and providing ECH.
- Whether ECH can be a 'home for life' for residents, particularly given that older people are tending to enter ECH with greater care needs.
- The need for studies to consider best practice and report consistent information regarding participating ECH residents and schemes.

These are described below, with further discussion of future research needs in section 5.3 and implications for policy and practice in section 5.4.

Included studies were not consistent in their definition of ECH. Even the name varied,[21] with ECH being more likely to be used by schemes for social rent whereas 'assisted living' or 'retirement village' were often used by private sector organisations to describe their developments.[5, 14] There are likely to be a number of factors causing this variation. Housing with care has evolved over time, with other models, such as sheltered housing, preceding ECH.[5] Redevelopment of sites into ECH, from sheltered housing or residential care homes for example, has led to differences between schemes, with Croucher et al. 2006[26] noting that these were often dependent on the aims of the provider (e.g. whether they were trying to promote their schemes as alternatives to residential care). Private providers understandably endeavour to ensure their developments are appealing to potential residents, and there have been changes in the funding landscape,[5, 14] with reductions in government funding leading to increasing private sector provision and corresponding differences in schemes.

Whilst we found there was a lack of consistent information on the characteristics of the ECH schemes participating in included studies, where these were reported there was considerable variation in aspects such as communal facilities (e.g. larger village type developments were noted to have more facilities[69-72]) or adaptations to meet the needs of residents with specific needs, such as visually impaired people[67] or people with dementia.[65] Different local authorities also have different requirements for the provision of housing and care, leading to geographic variation.

This lack of a shared definition, and agreed minimum standards across the sector, is an issue, with implications for older people and their carers when considering whether ECH is the best option for them. In order to make informed decisions, older people need to understand exactly what ECH is, as "*the diverse range of specialist housing is confusing for older people and professionals alike*" (p.298).[5] Concerns were raised in studies included in the review about the lack of up-front information and clarity about the services provided by schemes, the charges for these services,[54] and the uncertainties older people faced regarding the level of support they required and how this might change, the financial implications, and future changes to ECH schemes.[92]

Linked to these concerns about what exactly constitutes ECH is the potential need to reexamine whether ECH can be, or should feasibly be encouraged to be, a home for life. The "*underlying philosophy behind extra care as a concept when it comes to housing with care is that it offers an alternative to residential care, providing a home for life*" (p.4).[115] This has been central to its appeal as a model of housing for older people that can enable ageing in place. However, ECH might not be suitable for everybody, particularly those with higher care needs, and end-of-life care in ECH was rarely discussed. Evidence suggests that social care managers are less willing to consider ECH as a suitable option for,[116] and schemes are less willing to admit or continue to support, older people with high care needs.[54, 55] Such residents are more likely to stay in ECH for a shorter period and eventually move to residential care.[19, 30] As more people were noted as entering ECH with high care needs,[25] often due to local authority requirements, this suggests that ECH may not be a home for life for all residents. Also, for self-funding residents, it may not be financially affordable to stay in ECH as their needs increase.[53] This does not mean that ECH is not a valuable model of housing of older people - it could offer greater independence and provide greater choice in planning for later life as well as having the potential to improve the

quality of life of older people.[115] However, its limitations should be acknowledged upfront and openly discussed, so older people, carers and social workers can make an informed choice and select the best option for an individual's circumstances.

Uncertainty over the level of care need that ECH is able to support is reflected in how it was defined in the included studies. As noted above, this was not consistent. That residents had their own self-contained accommodation was the criterion most often specified in definitions of ECH. Whilst the provision of individualised and flexible care, along with care and support staff present on the premises 24/7, were commonly included in definitions, this did vary. The distinction between 'care' and 'support' was not always clear and was another area of variation across schemes. This had implications for residents, informal carers and the workforce (e.g. leading care staff in some cases to carry out 'favours' for residents[28]) and was linked to the organisation and management of schemes, such as whether the housing and care providers were from different organisations. For example, residents sometimes had problems as small care or support tasks were not carried out due to 'boundary issues', where the organisation responsible for the task was not clear.[51, 52]

5.3. Implications/recommendations for future research

One of the most evident needs for further research identified by the review was on moving on from ECH. We identified only one study focused on whether and how people leave ECH;[19, 30] more information is needed on the factors that cause people to leave and where they go, to understand if ECH can offer a home for life, and if so, how. Even if the majority of residents are able to stay in ECH, there will always be cases where ECH is no longer able to meet the care needs of an individual and an alternative housing option needs to be considered. Twyford 2016[85] notes that "*Further research could usefully explore the exit criteria that do exist, the basis for making individual decisions to leave and whether any formal or informal guidelines are available to support making transition plans to help someone to move with the least possible impact on their physical and emotional wellbeing.*" (p.9). Whilst this need is noted specifically in relation to dementia, exploration is also needed in relation to residents without dementia. This would support the planning and management of transitions to ensure positive outcomes for older people and might help the consistent provision of ECH (see further discussion in section 5.4). Another aspect of this

research gap is the extent to which the limitations of ECH are openly acknowledged and discussed during the initial decision-making process when moving into an ECH scheme.

ECH is changing in various ways, with more residents entering with high care needs (as discussed above and noted e.g. in Cameron, Johnson and Evans 2020[25]). Additionally, the longer residents stay in ECH, the more likely they are to develop care needs, resulting in a higher prevalence of residents with higher care needs. We found limited research looking at the organisation and management of ECH; this is an area that requires further investigation in order to ensure that residents with high care needs can be supported in ECH. Whilst we found that, in studies that reported details on housing and care providers, non-profit and private providers were included, there was little comparison of similarities and differences, or whether different models of care (e.g. having the same or separate housing and care providers) were more or less effective. Understanding this is important in supporting the future development of ECH.

Various approaches and interventions were proposed for addressing specific issues (e.g. creating inclusive environments for minority groups,[78, 100] supporting people with specific needs such as dementia[57, 90]) but there was very little good quality research assessing the effectiveness, cost-effectiveness, sustainability and implementation of such interventions. There was also a lack of research placing ECH in the context of the surrounding community and the benefits schemes might be able to provide to the local area.

Future research should also consider the methodological quality and reporting of studies:

- Best practice guidance for conducting and reporting specific study designs should be followed. Mixed methods studies in particular scored poorly on the MMAT checklist, whilst some of the effectiveness studies had serious limitations in terms of internal validity (i.e. how well the study is conducted) and external validity (i.e. applicability of findings), and failed to acknowledge this in the interpretation of their results.

- Diversity and inclusion need further consideration. Participant/resident age and gender were the only consistently reported characteristics in included studies.

Where other characteristics, such as ethnicity and LGBTQ+ status, were reported, they often indicated a lack of diversity. The need to consider different minority groups in ECH to ensure inclusion has been identified;[60] further research focused specifically on different minority groups and their integration in ECH is needed, and better reporting of the inclusion of different groups in studies, including differences in views between groups if present. Studies should also aim to report information on the sociodemographic characteristics of ECH residents, as the profile of residents and study participants may vary (e.g. those with higher care needs may have lower capacity to take part in research). Our data extraction form (Supplementary Material 2) describes categories that might be important to capture for both study participants and residents.

- Participating ECH schemes should be clearly described (e.g. housing and care providers, size, communal and other facilities, care provision; Supplementary Material 2 details categories we considered during data extraction). This will allow comparison between different models, a research need identified above.

5.4. Implications for policy and practice

Howe et al. 2013[6] note that the *"Discussion of housing for older people that is combined with provision of various support and care services is confounded by the lack of consistent terminology*" (p.548). The lack of a clear definition of what is and is not ECH is a significant issue for policy and practice – there is a need to agree a definition for ECH, whether at a policy level, or between providers. This would aid older people and their carers in understanding and potentially choosing to live in ECH. It would also help ensure consistency in the provision of ECH, for example, by setting minimum standards to ensure that ECH is meeting the needs of residents and that they are aware of its limitations and able to make informed choices. The need for a standardised definition for ECH is supported by the recent recommendation in the Older People's Housing Taskforce 2024 report for standardised definitions across the sector.[15]

Other issues that are likely to need a more general, nation-wide approach were identified by the review. For example, there was a failure in some ECH schemes to meet building standards,[41, 67] including those related to accessibility,[40, 58, 126] or

addressing the needs of specific groups (e.g. people with visual impairments[67]). As demand for supported housing (which includes ECH) is greater than supply,[8, 131] there is a need to develop new ECH schemes;[5] the physical infrastructure should meet the needs of residents as well as considering issues such as climate change adaptation. Best practices for creating and sustaining a diverse and evolving community should be embedded from the beginning of development, including collaboration between different stakeholders. The skills and knowledge needed by the workforce, and provision of appropriate training, also need further consideration.

Managers and commissioners have tended to seek a balance of care needs amongst ECH residents: those with no or minimal care needs; those with medium-level needs and those with high-level care needs, to ensure schemes function as communities.[25] However, it was evident from included studies that the financial pressures facing local authorities have meant that priority for publicly funded ECH residents is often given to those with higher care needs, leading to changes in the care and support needs of residents in ECH.[25] We have identified understanding how ECH can be organised and managed to support residents with high care needs as a research need, but the increasing care needs of residents also have immediate implications for providers and their management of ECH.

5.5. Strengths and limitations

Due to the variation in the terms used to describe ECH - which may include assisted living and (continuing care) retirement communities[5, 14] - we conducted comprehensive searches, including electronic database searches, searching the websites of relevant organisations, and citation searches, using all potential terms, which is a strength of the review. However, some of these terms may also refer to other types of housing with care, and it was often unclear what individual studies meant by care or support, or what exactly was being provided by schemes participating in studies (e.g. many studies did not clearly describe whether care and support was available on site 24/7). Where it was difficult to decide whether a study met our definition of ECH we took an inclusive approach. Whilst this may mean that some studies in the review focus on models of housing which provide a lower level of care than ECH, their findings should still be relevant to the provision of ECH.

An additional strength of the review is that critical appraisal was conducted for included studies. This is not a requirement for scoping reviews, but we considered it to be important as this review was intended to inform the commissioning of future research. Critically appraising current research allows the identification of any areas where there is existing research, but for which higher quality research is needed.

5.6. Equality, Diversity and Inclusion

The NIHR-INCLUDE guidelines were used to reflect on Equality, Diversity and Inclusion (EDI) during the development of the protocol for the review and whilst writing the final report; we also used the PROGRESS-Plus characteristics during data extraction, recording available data on these characteristics for study participants.[132, 133] As discussed above, we found that age and gender were the only characteristics that were consistently reported in included studies, and where other characteristics such as ethnicity and LGBT+ status were reported, there was a lack discussion of any differences in findings in relation to different groups - apart from in studies specifically focused on minority groups. It is likely that research reflects practice in this area, although the need to improve inclusion for different minority groups has been identified,[60] and we did find some studies focusing specifically on the needs of minority groups. The need for more detailed reporting on the characteristics of participants and further consideration of the needs of different groups have been identified as areas for future research. This might usefully also include consistent information about the socioeconomic background of ECH residents, and whether residents enter ECH housing as couples or single residents.

5.7. Public and patient involvement and engagement

We intended to recruit a Patient & Public Involvement and Engagement (PPIE) group including ECH residents and their families/carers. However, despite approaching a number of organisations/schemes, this proved challenging. We had few responses to our enquiries and staff who did respond had significant time constraints, as well as considering virtual engagement activities unsuitable. As a result, we changed our approach to PPIE and decided to hold a drop-in session at Edwards Court, an ECH scheme in Exeter. This allowed the two main reviewers on this project to engage with residents, family/carers and staff in person. The scheme manager felt that all

groups would be most comfortable with this format, and that it would allow people to engage as much or as little as they wished, accommodating differing care needs.

These discussions helped us to place the findings of the review in context, with residents' motivations for moving in and the importance of the provision of care and support to their feelings of independence corresponding with findings of studies included in the review. Residents discussed the high turnover of residents within their scheme, partly because of people dying, which had an impact on their social and psychological wellbeing and support needs. They also talked about the importance of informal support from family and friends, especially for those with higher care needs, and for activities outside the scheme. These topics resonate with those identified in the included studies, with some of them identified as needing further research.

Conversations with the Edwards Court staff identified knowledge gaps which were evident in the review, such as understanding how best to organise and manage ECH, and the skills and knowledge required by the workforce. They also suggested that the findings of the review would be best targeted at policy and provider level in terms of dissemination, as staff at scheme level do not tend to use research directly.

6. Conclusions

This review identified a large body of research focused on ECH for older people in the UK. Some of these studies provided evidence on the effectiveness, or costs, of ECH, and many explored residents' experiences (e.g. their sense of community and independence), or other aspects of ECH such as the physical infrastructure of schemes. The findings of these studies broadly support the provision of ECH as a model of housing with care for older people, and corresponded with views expressed by residents and staff in PPIE consultation, but there was variation in their quality and reporting (e.g. on the characteristics of schemes and participants). Further research is needed to address knowledge gaps, and better research design and reporting are required to ensure that the growing evidence base is valid and applicable to other countries and settings.

A significant issue identified from some included studies was the lack of a clear definition of ECH. Whilst there was agreement on some aspects, such as the need for self-contained accommodation, communal facilities, and the provision of flexible care and support, this was not consistent between studies. An agreed definition of ECH is important, both to enable older people to understand ECH and make informed decisions about their housing and care in later life, and to ensure the provision of ECH to a minimum standard.

Whilst the ambition of ECH is to offer a home for life, there was a lack of research on this topic and an indication it might not be for all residents, whether due to their financial constraints or the ability of ECH to meet their care needs. Further research into 'moving on from ECH', and end-of-life care in ECH settings, is needed, to understand the factors that cause residents to leave and support transition planning to ensure the best outcomes for older people. Related topics identified as needing further investigation were of best practice to integrate and support residents with specific needs (e.g. people with dementia), and for creating and managing inclusive, diverse and evolving communities. Additionally, studies indicated that care needs in ECH were changing, with more high need residents being admitted. This is important context when considering whether ECH can offer a home for life, with immediate implications for policy and practice, and suggesting a research need regarding the organisation and management of housing and care within ECH schemes.

Glossary

Assisted living another term for extra care housing in the UK context, often used by private care providers (assisted living can also be used to refer to residential care facilities in some contexts).[6, 17]

Cross-sectional study "*A 'snapshot' observation of a set of people at 1 time*".[134]

Extra care housing a "*model of housing that combines independent housing with flexible levels of care"* (p.10).[16]

Housing with care "*provides people with the opportunity to live in their own purpose-built, self-contained household, while accessing care and meals on-site*"; an umbrella term that includes extra care housing, assisted living, and retirement villages.[135]

Licensee a license is "*personal permission for someone to occupy accommodation*",[136] with the licensee being the individual entering into agreement with the landlord to occupy that accommodation. In the context of residential care, residents are licensees as the care services provided mean they do not have the right to exclusive occupation.[135, 136]

Longitudinal study "*A study of the same group of people at different times*".[134]

Q-methodology *"extracts patterns of meaning from multiple responses to a given set of statements"* (p.1171).[124]

Randomised controlled trial A study where "*similar people are randomly assigned to 2 (or more) groups to test a specific drug, treatment or other intervention. One group (the experimental group) has the intervention being tested, the other (the comparison or control group) has an alternative intervention, a dummy intervention (placebo) or no intervention at all*".[134]

Separated extra care housing "*general extra care but with a specialist wing or unit (for example for people with dementia, or learning disability)*" (p.5).[17]

Service-integrated housing "*all forms of accommodation built specifically for older people and in which the housing provider took responsibility for delivery of one or more types of support and care services*" (p.1).[6]

Sheltered housing accommodation consisting of the provision of a home (e.g. flat, bungalow), with communal facilities such as a common room and communal laundry, and a resident warden, linked to residents' accommodation with an alarm system.[6]

Specialist extra care housing "*extra care designed to accommodate a particular group, for example people with dementia*" (p.5).[17]

Supported housing "*Any housing scheme where housing is provided alongside care, support or supervision to help people live as independently as possible in the community*", including assisted living, supported living complexes, extra care schemes, sheltered and very sheltered housing.[7]

Very sheltered housing A term used to refer to extra care housing (as defined above) in the UK context.

Additional information

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CRediT Statement of author contributions

Sian de Bell: Conceptualisation, Formal analysis, Investigation, Writing – original draft (lead), Writing – editing and reviewing.

Zhivko Zhelev: Conceptualisation, Formal analysis, Investigation, Visualisation, Writing – original draft (supporting), Writing – editing and reviewing.

Alison Bethel: Conceptualisation, Investigation, Writing – editing and reviewing.

Jo Thompson Coon: Conceptualisation, Funding acquisition, Project administration, Writing – editing and reviewing.

Rob Anderson: Conceptualisation, Funding acquisition, Project administration, Writing – editing and reviewing.

Publications

There are no publications associated with this review.

Data sharing statement

This is an evidence synthesis study based on published primary research, it did not generate new data. All data extracted from the included publications, along with links to each publication, can be found in the report or Appendices. Further information can be obtained from the corresponding author.

Ethics statement

This was an evidence review, based on published primary studies, so did not require ethical approval.

Information governance statement

All data used in this paper is taken from published sources: no personal data was included.

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Siân de Bell - Disclosure of interest: none declared

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Alison Bethel - Disclosure of interest: none declared

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Rob Anderson - Disclosure of interest: none declared

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Appendix 1: Search strategy and databases

ASSIA via ProQuest

(((TI,AB(Housing) NEAR/2 TI,AB(care)) OR (TI,AB(extra) NEAR/2 TI,AB(care)) OR (((TI,AB(housing) NEAR/2 TI,AB(integrated)) OR (TI,AB(Living) NEAR/2 TI,AB(support*)) OR (TI,AB(Retirement) NEAR/2 TI,AB(village*)) OR (TI,AB(Retirement) NEAR/2 TI,AB(home*)) OR (TI,AB(retirement) NEAR/2 TI,AB(communit*)) OR (TI,AB(Integrated) NEAR/2 TI,AB(living)) OR (TI,AB(housing) NEAR/2 TI,AB(sheltered)) OR (TI,AB(housing) NEAR/2 TI,AB(specialist))) AND TI,AB(care)) OR (((TI,AB(Living) NEAR/2 TI,AB(support*)) OR (TI,AB(Living) NEAR/2 TI,AB(assist*)) OR (TI,AB(Continuing) NEAR/2 TI,AB(care))) AND TI,AB(hous*))) OR MAINSUBJECT.EXACT("Retirement homes")) AND pd(20100101-20240626)

CINAHL via EBSCOhost

#	Query	Results
S24	S18 OR S20 OR S22	588
S23	S18 OR S20 OR S22	932
S22	S13 AND S21	605
S21	S3 OR S4 OR S5 OR S8OR S9 OR S11 OR S12	1,359
S20	S13 AND S14 AND S19	245
S19	S6 OR S7	4,938
S18	S14 AND S17	151
S17	S2 OR S10	2,787
S16	S13 AND S15	2,912
S15	S3 OR S4 OR S5 OR S6OR S7 OR S8 OR S9 ORS11 OR S12	6,210
S14	(TI hous* OR AB hous*)	79,186
S13	(TI care OR AB care)	1,027,870
S12	((TI Integrated OR ABIntegrated) N2 (TI livingOR AB living))	55
S11	((TI retirement OR ABretirement) N2 (TIcommunit* OR ABcommunit*))	693

S10	((TI Continuing OR ABContinuing) N2 (TI careOR AB care))	2,108
S9	((TI Retirement OR ABRetirement) N2 (TI home*OR AB home*))	237
S8	((TI Retirement OR ABRetirement) N2 (TIvillage* OR AB village*))	167
S7	((TI Living OR AB Living)N1 (TI assist* OR ABassist*))	2,934
S6	((TI Living OR AB Living)N2 (TI support* OR ABsupport*))	2,052
S5	((TI housing OR ABhousing) N2 (TIintegrated OR ABintegrated))	56
S4	((TI housing OR ABhousing) N2 (TI specialistOR AB specialist))	27
S3	((TI housing OR ABhousing) N2 (TI shelteredOR AB sheltered))	195
S2	((TI extra OR AB extra)N2 (TI care OR AB care))	709
S1	((TI Housing OR AB Housing) N2 (TI care ORAB care))	758

HMIC and SPP via Ovid

1	(Housing adj2 care).tw.	451
2	(extra adj2 care).tw.	245
3	(housing adj2 sheltered).tw.	294
4	(housing adj2 specialist).tw.	44
5	(housing adj2 integrated).tw.	12
6	(Living adj2 support*).tw.	169
7	(Living adj2 assist*).tw.	84
8	(Living adj2 independent*).tw.	615

9 (Retirement adj2 village*).tw. 21

10 (Retirement adj2 home*).tw. 14

11 (Continuing adj2 care).tw. 798

12 (retirement adj2 communit*).tw. 34

13 (Integrated adj2 living).tw. 11

14 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 2486

15 limit 14 to yr="2010 -Current" 568

Medline via Ovid

1 (Housing adj2 care).tw. 571

2 (extra adj2 care).tw. 771

3 (housing adj2 sheltered).tw. 204

4 (housing adj2 specialist).tw. 12

5 (housing adj2 integrated).tw. 45

6 (Living adj2 support*).tw. 1676

7 (Living adj2 assist*).tw. 3219

8 (Retirement adj2 village*).tw. 186

9 (Retirement adj2 home*).tw. 418

10 (Continuing adj2 care).tw. 2648

11 (retirement adj2 communit*).tw. 853

12 (Integrated adj2 living).tw. 94

13 care.tw. 1891966

14 (hous* or home or homes or communit* or scheme*).tw. 1452952

15 hous*.tw. 274857

16 3 or 4 or 5 or 8 or 9 or 11 or 12 1762

17 13 and 16 723

18 6 or 7 or 10 7463

19 15 and 18 471

20 2 and 14 136

21 (extra adj2 care).ti. 60

22 1 or 17 or 19 or 20 or 21 1836

23 limit 22 to yr="2010 -Current" 1104

PQDT Global via ProQuest

(title("extra care") OR title("extra-care")) OR ((abstract("extra care") OR abstract("extra-care")) AND (noft(hous*) OR noft(hous*)))

Web of Science databases

#	Search Query
1	TI=(Housing NEAR/2 care)
2	TI=(extra NEAR/2 care)
3	TS=care
4	TI=(Living NEAR/2 support*)
5	TI=(Living NEAR/2 assist*)
6	TI=(Continuing NEAR/2 care)
7	#4 OR #5 OR #6
8	TS=(home* or hous*)
9	TS=(Retirement NEAR/2 village*)
10	TS=(Retirement NEAR/2 home*)
11	AB=(Living NEAR/2 independent* NEAR/2 care)
12	TS=(housing NEAR/2 integrated)
13	TS=(housing NEAR/2 specialist)
14	TS=(housing NEAR/2 sheltered)
15	TS=(retirement NEAR/2 communit*)
16	TS=(Integrated NEAR/2 living)
17	#9 OR #10 OR #12 OR #13 OR #14 OR #15 OR #16

18 #17 AND #3

19 TS=(Living NEAR/2 support*)

20 TS=(hous*)

21 TS=(Living NEAR/2 assist*)

22 TS=(Continuing NEAR/2 care)

23 #19 OR #21 OR #22

24 #23 AND #20

25 #8 AND #7

26 #25 OR #24 OR #18 OR #2 OR #1

27 #25 OR #24 OR #18 OR #2 OR #1 and 2024 or 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014 or 2013 or 2012 or 2011 or 2010 (publication years)

Appendix 2: Details of website searches

Table 5 Details of the website searches

Organisation	URL	Search date	Search terms/location	No. of hits	No. of includes
Housing LIN	www.housinglin.org.uk	19/06/2024	Resource library - 'extra care' & 'report'	224	3
Elderly Accommodation Counsel Housing Care	www.housingcare.org/	13/06/2024	HousingCare Library - "extra care housing"	99	0
Age UK	www.ageuk.org.uk	18/06/2024	Searched reports and publications: https://www.ageuk.org.uk/our-impact/policy-research/publications/reports-and-briefings/	n/a	0
Centre for Policy on Ageing	www.cpa.org.uk	13/06/2024	extra care housing	175	0
The ExtraCare Charitable Trust	www.extracare.org.uk	13/06/2024	extra care housing	135	0
Joseph Rowntree Foundation	www.jrf.org.uk	18/06/2024	extra care housing	62	0

International Longevity Centre	www.ilcuk.org.uk/infrastructure/retirement-housing/?filter=categories:reports	18/06/2024	extra care housing	37	0
ARCO	www.arcouk.org	18/06/2024	Searched 'Reports and publications' page	n/a	0

Appendix 3: Characteristics of primary studies included in the review

Table 6 Characteristics of the included studies.

Single publications are arranged alphabetically in three categories: papers, which are peer reviewed journal articles; reports; and other types of publication (e.g. theses). Single studies reported in multiple publications are listed with the single publications, whilst linked publications are separate but also arranged alphabetically; for both * indicates those that are reports or other publication types.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Papers						
Aitken 2019[32]	Quantitative cross-sectional	To investigate older people's views of the relative level of attractiveness of potential features of a specialist housing development offering care and support.	Other	Schemes: n/a 45 older people (41 in main study, 4 in pilot)	Levels of attractiveness of different aspects of specialist housing	Four viewpoints were identified: adaptation of housing and care provision; care-indifferent luxurians, who placed less emphasis on care provision; connected separatists, interested in a distinct environment with good public transport connections; and independent engagers, who wanted social opportunities and to remain independent. Broad agreement was found on some topics, such as the generally high prioritisation of safety and security.
Atkinson 2023[45], Oatley 2024[46]	Qualitative cross-sectional	To explore the benefits and challenges of living in ECH for people with dementia and	Experiences	Schemes: 8 100 total 49 older people 5 family/carers	Understanding, experiences, advantages and disadvantages of	The benefits of living in ECH for those with dementia including owning their own home, having a safe, age-friendly location with flexible

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		those that support them (professionals and family carers), including the advantages and disadvantages of different models of ECH.		34 staff 12 external stakeholders	participants' ECH scheme	support, social interaction and being able to continue living as a couple. Challenges included the availability of staff, flexible resourcing, loneliness and the advancing symptoms of dementia. Whilst the models of ECH differ in terms of their potential benefits and challenges, the greater difficulty is the limited availability of different models. There is no universal model of optimal support - the approach and resources of each site is more important in determining lived experience.
Barrett 2020a*,[47] Barrett 2020b[48]	Mixed, cross-sectional, comparitive	To explore and understand walking with purpose among people with dementia living in ECH, retirement and domestic housing, along with the perceptions and responses of staff and family carers.	Experiences	Schemes: not clearly reported Survey: 148 staff (42 ECH, 106 retirement housing) Case studies of individual residents (not interviewed), interviews (n=14)	Challenges and successes in addressing walking with purpose, including design of schemes and impact on schemes.	Challenges to managing walking with purpose included ensuring safety, particularly when away from the scheme, and the use of staff time. Its management was felt to be more challenging in ECH than retirement housing. The preferred method of addressing walking with purpose was distraction or redirection; ECH were more likely to use design features and assistive technology than retirement homes. Knowing

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
				with family/carers and staff ECH 5 older people 1 family/carer 5 staff Retirement housing 3 older people 2 family/carers 3 staff Mainstream housing 2 older people 2 family/carers Specialist day care centre 1 older person 1 staff		the resident and understanding why the resident was walking were emphasised as important. There were a lack of policies regarding walking with purpose, and/or awareness of their existence, and staff did not have adequate training.
Barret 2021*,[49] Barrett 2023[50]	Quantitative cross-sectional	To explore the provisions, policies and procedures relating to people living with dementia in ECH settings including retirement villages.	Other	Schemes: 71 71 staff	Policies, procedures and provisions for people living with dementia: entry and exit criteria, suitability of scheme for people living with dementia including physical	Findings described the schemes (detailed in Appendix 2, **Table 7**).

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
					environment, use of assistive technology and other aids, staff skills and training, challenges and successes, desired changes	
Brooker 2011[90]	Randomised controlled trial	To evaluate the effectiveness of an intervention (the Enriched Opportunities Programme, EOP) for people with dementia and related mental health problems living in ECH schemes, in comparison to active control sites, in improving quality of life and enabling individuals with dementia to remain in ECH over time.	Effectiveness; costs	Schemes: 10 Baseline - 144 older people (intervention), 149 older people (control) 18 months - 102 older people (intervention), 97 (control)	Dementia-specific quality of life (QOLAD), Geriatric Depression Scale (GDS), perceived levels of social support and quality of relationships (Duke Social Support Index), impact on diversity of occupation and observed wellbeing in public areas (Dementia Care Mapping), level and enjoyment of activity collected from participants and staff. Economic: number and type of relocations to alternative care environments (e.g., care home). mortality rate, number of hospital in-patient days, use of community health resources	For the primary outcome, self-reported quality of life (QOLAD), the mean score was slightly higher in the control group but only significantly higher than baseline at 18 months. In the intervention group, a step increase in the baseline score at 6 months was maintained at 12 and 18 months. Staff-rated QOLAD score only improved in the intervention group. Self-rated depressive symptoms showed improvement in the intervention group over the course of the intervention, but only at 12 months in the control group. Enjoyment of activities increased with time in both groups. EOP was also associated with a 43% decrease in hospital admissions (vs 52% increase in control group) but higher

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						use of GP visits and other services; residents supported by EOP were half as likely to have to relocate to care homes than those in the control schemes. The authors concluded that the EOP had a positive impact on the quality of life of people with dementia in well-staffed ECH schemes, but acknowledged limitations that might have biased the results.
Buckland 2020[107]	Qualitative cross-sectional	To explore and compare the motivations and expectations that older people have when choosing to move into either a private or HA ECH scheme and to evaluate how ECH has impacted the residents' lives.	Experiences	Schemes: 5 8 older people	Residents' perspectives on motivations for moving to, and expectations related to, ECH	All residents moved into ECH in response to deteriorating health. However, almost all residents had felt obliged to move by others, generally their children. Few residents had any expectations of ECH on arrival, but many developed high expectations of an increased sense of independence and security and of an improved social life. ECH appeared to be beneficial for residents' health and wellbeing.
Callaghan 2014[91]	Quantitative, cross-sectional, comparative	To examine the association between control over daily life and	Effectiveness	Schemes: 15 618 older people (102 from ECH,	Control over daily life (Adult Social Care Outcomes Toolkit (ASCOT))	There was some evidence that the ECH residents in the sample were the most likely to feel more in control of their

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		the setting in which older people receive care and support (ECH, care homes or at home).		215 from care homes, 301 receiving care at home)		daily lives. However, the analysis also suggested that people receiving care at home in our sample were less likely to feel in control than both ECH and care home residents, even after controlling for confounders (e.g. dependency and age). Whilst the model fit statistics suggested that the model was a good fit, the proportion of variance in feelings of control explained by the model was fairly low (between 19% and 25%) so it is likely to be a poor predictor of outcome for any particular individual.
Chandler 2014[121]	Qualitative cross-sectional	To explore how experiences of living in a retirement village within the UK positively and negatively affect eudaimonic wellbeing, using Ryff's taxonomic model of wellbeing as an orientating framework.	Experiences	Schemes 2 18 older people	Experiences	Residents described how they experienced living in the retirement village environment as influencing wellbeing in both positive and negative ways.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Chester-Evans 2019[93]	Mixed, cross-sectional, comparitive	To explore the opportunities, benefits, barriers and enablers to interaction with nature for people living with dementia in residential care and ECH schemes in the UK.	Other	Schemes: Survey - 144 (50% ECH) Interviews - 3 Interviews: 35 total 19 older people (7 ECH, 12 care home) 16 staff (7 ECH, 9 care home)	Survey: demographic information about the scheme; current green dementia care experiences and activities; barriers and enablers to providing green dementia care; and the perceived impacts of green dementia care; interviews: nature-based activities were offered, who organised them, who took part, the perceived impacts, and any facilitators or barriers	A wide variety of indoor and outdoor nature-based activities were reported, and could be divided into organised activities such as gardening clubs and spontaneous activities like walking in the garden. ECH housing schemes differed from care homes in that they were less likely to offer structured or indoor activities and residents were more likely to organise activities themselves. Some of the reported benefits included improved mood, higher levels of social interaction and increased motivation for residents, and greater job satisfaction for staff. Opportunities for nature-based activities are promoted by the design and layout of spaces and empowered staff.
Dutton 2021a,[62] Dutton 2021b*[63]	Quantitative cross-sectional	To (i) understand how retirement village/extra care housing scheme operators and their residents have experienced and responded to the	Effectiveness; experiences; other	Schemes: 62 retirement villages, 387 ECH schemes 38 external stakeholders (ECH providers	Description of schemes (e.g. building design features), pressures and challenges caused by COVID (COVID-19 infection and testing rates, financial costs of the pandemic),	Operators were consistent in the use of measures taken to protect the health of residents and staff (e.g. social distancing). They also put in place measures to maintain resident's general health (e.g. social calls) and extra

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		COVID-19 pandemic, (ii) identify measures taken to preserve staff and resident well-being and their effectiveness, and (iii) share organisational learning about key challenges, innovations and accomplishments, and concerns, requirements and plans for the next 6-12 months.		who completed the survey)	responses and barriers and facilitators	measures to support wellbeing (e.g. help with digital technology). Fewer village/scheme residents died from confirmed COVID-19 than expected from March to December 2020 when compared to people with the same age profiles in the general population. A range of factors were deemed effective at providing protection (e.g. closing communal areas) but schemes faced pressures such as lack of PPE and awareness of housing with care, and have been financially impacted by the pandemic.
Evans 2017[128]	Mixed	To explore the potential of HWC schemes to serve as community hubs, and specifically: describe examples of good practice, identify potential benefits for residents and other stakeholders, highlight key facilitators and	Experiences; other	Schemes: Surveys - 99 (majority ECH) Case studies - 4 Surveys: 99 staff Case studies (interviews): 13 older people 15 staff 4 external stakeholders	Survey: scheme characteristics, services provided, funding and staffing. Case studies: care and other services received from outside the scheme, on-site staff providing care to the wider community, use of scheme facilities by the wider community	Most HWC schemes have a restaurant or café, communal lounge, garden, hairdresser, activity room and laundrette, with many also having a library, gym, computer access and a shop. Many of these facilities are open to the wider community, reflecting a more integrated approach to community health and adult social care. Potential benefits of this approach include reduced social isolation,

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		challenges to successful implementation of the approach, and make recommendations for housing providers planning to develop this model.				economies of scale for local services leading to increased cost effectiveness and maximising preventative approaches to health and wellbeing, but successful implementation depends on a range of criteria including location and public accessibility.
Grimshaw 2017[124]	Mixed	To (i) build a set of 'system-wide' relational statements for Q method subjective analysis, across ECH stakeholders and (ii) to develop perspectives (factors) from this work that when combined with the derived statement set can be used as a framework to sustainably and humanely consider system-level relational quality across ECH communities.	Other	Schemes: n/a 27 total 7 older people 5 staff 15 external stakeholders and family/carers	Set of 'system-wide relational statements' and factors (perspectives) which when combined can be used as a framework to consider system-level relational quality across ECH communities	Rank-ordering of 48 statements derived from literature and professionals, and interviews with participants, led to five factors/perspectives on system-wide quality relationships: 'Altogether now', 'Respect is two-way street', Free spirits', 'Families … strengths and challenges' and 'Helping hands'. These different views on the composition of quality relationships can be used to help ECH communities to understand and utilise relationships as a powerful and effective resource.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Gupta 2017[94]	Mixed, cross-sectional, comparitive	To examine the magnitude, likely causes, preparedness and remedies for addressing the risk of summertime overheating in case study residential care and ECH settings across the UK.	Other	Schemes: 4 (2 care homes, 2 ECH) 9 external stakeholders	Understanding the impact of briefing, building design and management of the schemes on overheating	Cold was perceived to represent a larger threat to occupants' health than heat (by designers, managers etc). However, overheating was found to be a current and prevalent risk in the case study schemes. There was a lack of effective heat management across the sites, including unwanted heat gains from the heating system, unclear responsibility for indoor temperature management, and conflicts between window opening and occupant safety. There was also little action regarding long-term adaptation (e.g. external shading).
Halloran 2017[95]	Mixed, cross-sectional, comparative	To investigate: (i) the acceptance of assisted living technology (ALT) (survey), (ii) patterns of ALT use (call logging study), and (iii) the observation that ALT user engagement takes place within the context of a social	Experiences; other	Schemes: 7 (number of ECH not reported) 100 older people [probably] 7 staff (not clearly reported)	Study 1: acceptability of ALT (how far residents feel they need ALT; how much they like it; whether residents know how to use ALT (that is, activate it); how easy it is to use; and how often it is used); Study 2: frequency and type of use of ALT over 21 days period; Study 3: residents and	The study shows that there is a key dimension of ALT user engagement (beyond design issues, user attitude and acceptance, and social factors such as the need to create ALT which appropriately supports the relationship between users and service providers). This is social leveraging which relates to how user engagement with key ALT (including personal

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		relationship which supports it: social leveraging (observational study).			managers' views (shadowing of managers to find out about their daily activities, interviews with managers about their work, a study of the use of ALT by residents, focussing on pendants)	pendant alarms, pull cords and intercoms) is shaped and supported in important ways by the ongoing social interaction of residents and scheme staff. Authors discuss the implications of social leveraging for reconsidering the importance of human resource as part of independent living services, during a time of transition to new technological models, and in light of current funding and organizational priorities.
Hillcoat-Nallétamby & Sardani 2019[96]	Qualitative cross-sectional	To explore how older people used a new “moving on” service and whether it empowered them to move voluntarily from their home to an ECH facility.	Other	Schemes: n/a 18 older people	Previous residential history, motives for wishing to move, sources of information about the service, and depending on relocation status and included use of the different service components, reasons for service use or discontinuation and appraisal of service benefits and disadvantages	A three-phase framework for residential transition was conceptualised, involving the pre-move, decision/action, and post-decision. Not all participants decided to move from their home after using the moving on service, with three patterns of use identified (continuous, partial, and discontinued) and two intensities of use (high and low). It was instrumental in empowering clients to exercise decisional, executional, delegated, and/or consumer autonomies.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Holland 2010[97]	Qualitative cross-sectional	To explore preferences for and/or interest in ECH, including the specific forms of ECH that might attract middle aged Jewish people as they get older.	Other	Schemes: n/a 105 older people	Views on current common forms of ECH provision, current knowledge of ECH, personal plans for future care, financial considerations, and preferences (e.g. physical standards, location, access, and cultural amenities)	Knowledge of housing with care was varied and few participants had considered what they would do in the future. Financial considerations and continuity of care were considered to be significant; location (proximity to their community) was essential. The accessibility of the scheme, to visitors and so residents could go to shops and other amenities, was also considered important. Most participants showed some preference for Jewish-run schemes, or schemes exclusively for Jews, although there was some disagreement. There was agreement that religious and cultural observance should be supported.
Kneale 2011*,[19] Kneale 2013[30]	Quantitative, longitudinal, comparitive	To compare residents of ECH schemes to those dwelling in the community in terms of characteristics, duration of stay in ECH and whether it results in a move to	Effectiveness	Schemes: 32 3992 older people (not all contributed to all outcomes)	All: characteristics of extra care residents (age, gender, whether part of a couple), date of entry, health care challenges or social care needs on arrival	Compared to those living in the community in receipt of domiciliary care, residents in ECH were less likely to enter institutional accommodation, and many remained stable or found their care needs improved. Residence in ECH was also associated with a

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		residential care and change in health care status.			Audley Retirement and Extra Care Charitable Trust: date of exit, destination of exit Audley Retirement: falls among extra care housing residents Extra Care Charitable Trust: subsequent changes in needs Retirement Security: patterns of inpatient hospital stays among residents, benefits and additional hours of care received.	lower likelihood of an overnight stay in hospital (although ECH residents were likely to stay longer if admitted) than those in the community, and with fewer falls. ECH residents tended to be older and with higher support needs than those in the community. The benefits of residence in extra care housing could translate into substantial cost savings, particularly in the long-term.
Lewis 2015a[125]	Qualitative cross-sectional	To consider how ideas about ageing inform those aspects of ECH design that relate to thermal comfort, using a socio-technical approach.	Other	Schemes: 4 13 staff and external stakeholders	Representations of the thermal comfort of older people and how they are scripted into building design	Older people's thermal comfort needs can be highly diverse. However, residents were imagined to be vulnerable to cold, at risk of fuel poverty, burns from hot surfaces and falls from high windows. These stereotypes of older people are seen in the design of ECH schemes (e.g. communal heating, under-floor heating, restricted window opening and heated corridors), raising

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						questions about the suitability of ECH design for thermal comfort.
Lipman 2015*,[77] Lipman 2017[78]	Qualitative cross-sectional	To identify innovations and approaches among housing associations which showed promise in addressing the needs of, and improving the well-being of, older people with dementia from black and ethnic minority communities.	Other	Schemes: not reported, 12 housing associations Multiple staff	(i) the policies in place in the housing association, and the 'fitness of purpose' of the housing provision for people from a black and minority ethnic background who develop dementia while being tenants (ii) what the housing association anticipated to be tenants' changing needs and how they were responding to these (focusing on physical environment but including social).	All housing associations were developing their understanding of dementia; some were augmenting their standard rented property portfolio to include HWC provision; and most had policies relating to equality and diversity and were offering dementia training to members of staff. None appeared to have fully integrated the three strands of housing services, dementia care, and cultural or ethnicity-related needs and preferences. A range of strategies was reported as being developed to meet tenants' changing circumstances. Anxiety about the cost of adaptations was commonly reported, although the nature and extent of this were ill-defined.
Mansfield 2020[122]	Qualitative cross-sectional	To explore individuals' day-today experiences of quality of life within an assisted	Experiences	Schemes: 1 7 older people	Experience of quality of life in assisted living	There were three themes relating to the way quality of life was understood: facilitation of identity coherence and transition, the essential nature

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		living environment using photo-elicitation and interpretative phenomenological analysis.				of socialising, and perceptions of a supportive environment. Assisted living has the potential to act as a bearer for cues of identity continuity with nostalgic devices facilitating environment transition and limiting biographical disruption. Furthermore, opportunities for social contact offer a protective function for residents adapting to negative life challenges such as bereavement.
Poyner 2017[98]	Qualitative cross-sectional	To explore the perceived barriers and facilitators of a relocation to ECH (specifically 'shared care' ECH), from the perspective of people living with dementia, and their care partners.	Other	Schemes: 1 17 older people and family/carers	Perceived barriers and facilitators to relocation	Relocating to ECH was seen to offer benefits including the opportunity for couples to remain living together for longer, being in a supportive, dementia-friendly community, and a reduction in the strain experienced by care partners. However, barriers was also identified (e.g. a sense of loss, stress and uncertainty). Being able to live and receive care at home was seen as preferable to shared care, casting doubt on the viability of extra care facilities designed for couples living with dementia.
Robinson 2023[113]	Modelling	To map the landscape of	Other	n/a	Supply, demand, factors affecting supply	Specialist housing provision for older people in England is

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		specialist housing provision for older people, the extent to which this meets needs, and how this is situated within wider debates about the reimagining of housing systems driven by the neoliberal transformation in housing politics.			and demand (regional location; urban or rural location; change in supply of specialist provision by housing associations; deprivation according to the indices of multiple deprivation; median house price in the area; limiting long term illness amongst people aged 75 years and over; the proportion of the population receiving day home care; home-ownership amongst people aged 75 years or older; the population aged 85 years or over; and dementia amongst people 75 years or older)	unevenly distributed and does not always correspond with local need. There is a national shortfall associated with variations in local geography, a situation that is likely to deteriorate further without state intervention. The provision of specialist housing is situated within wider debates about the reimagining of housing systems driven by the neoliberal transformation of housing politics, processes which can have uneven effects related to the nature of places.
Sattar 2021[126]	Qualitative cross-sectional	To explore residents' perceptions of a refurbishment programme of their homes (including perceptions of safety and their	Other	Schemes: 9 45 older people	(i) lived experiences of refurbishment; (ii) included questions on their length of stay, why they chose to live in an ECH scheme, their involvement during the refurbishment proposal,	The new indoor and outdoor communal areas resulting from the refurbishment were felt to have improved social and emotional wellbeing, increasing opportunities for social connection. However, residents with frailty or mobility

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		sense of belonging) and explore the extent to which this met the needs of different groups of residents.			and whether they felt in control of the changes that were taking place to their homes	issues were reliant on staff to access them. Conservatories and sensory gardens were the most popular new areas.
Verbeek 2019[116]	Mixed	To explore the views of a range of frontline practitioners and managers on when ECH is the most appropriate option for older people with mental health problems, in particular dementia, and examine the barriers to its wider use with this client group.	Other	Schemes: n/a 61 older people 20 external stakeholders	(i) whether ECH could be an appropriate placement for a care home entrant, factors affecting the decision (ii) social care managers' views on care home entrants for whom ECH could be more appropriate (iii) reasons that ECH was not considered suitable for actual care home residents	Frontline practitioners saw ECH as a valuable alternative for some care home entrants (e.g. people with a formal diagnosis of dementia who lived alone), but this was affected by factors such as whether people needed care at night and the level of care they needed overall. Whilst they generally supported ECH, social care managers were more focused on maintaining people at home and unsure where in the care pathway ECH lay.
Wild 2018[105]	Qualitative cross-sectional	To explore insights from key stakeholders on the preliminary potential parameters of the Crichton Care Campus	Other	Scheme: 1 9 external stakeholders	Themes relevant to further defining Crichton Care Campus	Respondents supported the Crichton Care Campus concept, and that it should cater for a range of morbidities and offer different tenure types, but there were two contrasting interpretations of what it should be. One was a broad-based and inclusive

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						community-oriented approach, with a wide range of embedded non-care services. The other was a more focused, professional service-orientation, taking an integrated and person-centred approach to care but with a greater focus on healthcare. Disagreement centred particularly on whether the campus should be multi-generational.
Report						
Barrett 2012[106]	Quantitative cross-sectional	To determine and compare the policies, procedures and provisions that are in place for people with dementia in a selection of HWC schemes from among the HDRC core members. This includes identifying whether the schemes provide person-centred care for residents with dementia, develop	Other	Schemes: 7 14 staff	Policies, procedures and provisions for residents with dementia	Six schemes were visited: those with an integrated model of dementia care provided little specialist provision for people with dementia, apart from one scheme which had adopted the EOP. The dementia specialist scheme provided good support for people with dementia of various forms and severity. Some residents had negative attitudes and a prejudice against those with dementia; management were aware of this and showed a desire to reduce it.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		staff knowledge and expertise in dementia, and their partnership and joint working.				
Barrett 2016[101]	Qualitative cross-sectional	To understand the views, concerns, experiences and needs of people living with dementia, family carers and staff across a range of HWC settings and models including extra care housing, retirement villages and continuing care.	Experiences	Schemes: 5 35 total 18 older people 7 family/carers 10 staff	Residents: views, perceptions, preferences, experiences, needs and concerns relating to their accommodation, care and support; Staff: views, preferences and requirements in terms of accommodation and support for people living with dementia	Residents discussed what they liked and disliked about their housing with care setting, and what they would change. Staff focused on achievements and successes, challenges and suggested improvements. Themes were identified regarding different models of housing with care for people living with dementia (with a preference for an integrated model by those living with dementia), dementia friendly design, interacting with the local community, green dementia care, assistive technology, staff skills and expertise, and activities and opportunities to socialise.
Batty 2017[102]	Mixed	To evaluate the ECH sector in Wales, (i) exploring where ECH fits in local authority strategies for meeting the future	Costs; experiences; other	Schemes: Administrative data - 47 Survey - 35 Case studies – 6 Focus groups - 9	Motivations for, barriers to, and experiences of developing ECH, future plans and demand. In ECH schemes, accommodation and services provided,	There has been an increase in provision of ECH in the last 10 years, with 75% of schemes developed since the Welsh government published guidelines and made funding available in 2006. Most

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		housing needs of older people, (ii) calculating the cost-effectiveness of ECH in Wales in terms of building and development and care costs, and (iii) investigating how ECH schemes are used by residents and the community.		Surveys: 51 external stakeholders (surveys) Case studies (interviews): External stakeholders and staff, numbers not reported Focus groups: Over 80 older people	profile of residents, delivery costs. Cost efficiency. Opinions and experiences of ECH.	schemes are owned by social landlords and offer housing for rent. Demand outstrips supply with this gap likely to widen, particularly as ECH is seen as challenging to develop. Residents' experiences of ECH are positive.
Beach 2015[115]	Quantitative cross-sectional	To examine the people's motivations for moving into their retirement villages, their experiences of them, and how their experiences might reflect the concepts of independence and control.	Effectiveness; other	Schemes: 7 201 older people	Reasons for moving to current housing, quality of life (Control, Autonomy, Self-Realization and Pleasure-19 (CASP-19), Older People's Quality of Life Questionnaire, feelings of loneliness (Three-Item Loneliness Scale)	Reasons for moving included maintaining independence and an active lifestyle, with few respondents reporting that current care needs were a factor, although expectation of future care played a role in their decision-making. Friends and relatives were important in helping respondents identify new housing, along with advertisements and living in the area. Respondents reported relatively low levels of loneliness and a high quality of life. Comparison with a sample of older people living in the

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						community suggested that residents in retirement villages have a higher sense of control and quality of life and lower levels of loneliness.
Chakkalackal 13,[56] Chakkalackal 14[57]	Mixed	To evaluate three peer support groups for people in the early stages of dementia living in ECH.	Effectiveness; experiences; other	Schemes: 3 Outcome evaluation: Baseline - 21 older people Follow-up – 11 older people 5 family/carers 1 staff Process evaluation: 12 older people 9 staff 5 external stakeholders	Quantitative: instrumental activities of daily living (IADL), Short Warwick-Edinburgh mental well-being scale (sWEMWBS), social relationships (level of social support and networks, participant expectations (on social support, loneliness, understanding memory loss, and novel activity), orientation in time. Qualitative: learning on managing memory and memory aids from the groups and the difference to their day-to-day lives.	The peer support groups positively impacted participants' wellbeing, social support and practical coping strategies. Participants improved in their communication abilities and in managing their memory and their lives. There was some deterioration in independent living skills of over time, but participants did have high levels of physical frailty and impairment. Staff and stakeholder interviews indicated that benefits extended beyond participants to staff, families, friends, other residents in the housing scheme and the housing provider. Groups did, however, need to become more embedded in the scheme (e.g. with dedicated staff time and resources), as sustainability was a concern.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Croucher 2010[114]	Qualitative longitudinal	To consider key decisions and challenges faced by organisations when developing large, complex, mixed tenure ECH retirement villages for older people.	Experiences; other	Scheme: 1 Meetings: 45 older people Focus groups 16 older people Interviews: 3 older people Staff and external stakeholders, number not reported	Ongoing and emerging issues regarding the development of the scheme, expectations and experiences of the scheme	Hartfields was designed and built within budget and on schedule, providing accommodation and facilities that are new to the area. The Partnership that developed the scheme was a highly effective mechanism for taking the development forward and the marketing strategy adopted various different approaches. A challenge for Hartfields is that of balancing the expectations and needs of diverse groups of residents, and how best to enable and empower residents to take a positive and active role in developing and shaping their communities. Further challenges facing the scheme include selling properties in a time of recession and addressing issues around the development of the surrounding area.
Croucher 2012[100]	Qualitative cross-sectional	To (i) explore current approaches that promote supportive communities and help to minimise	Other	Schemes: Stage 2 - 9 (7 ECH, 2 sheltered housing)	Wider learning and transferability of organisational level approaches for developing supportive communities which	Fifteen approaches were investigated and grouped into three categories: organisationally driven, resident-led, and approaches taken forward by external

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		frictions and tensions between groups and individuals with and without high support needs living in HWC schemes and (ii) examine which approaches are the best in delivering what older people with high support needs want and value in life.		Stage 3 – 3 (type not clearly reported) Stage 2: 72 older people 29 staff Stage 3: 21 older people	minimise or manage frictions and tensions in housing with care	organisations. Factors that made approaches work were identified (e.g. organisational commitment to change), as well as who they worked for, what made individuals and/or groups take the lead, what constituted success, and whose responsibility it was to develop approaches. Key themes identified were: promoting tolerance and respect; awareness raising (among staff and residents); background enabling; brokerage; linking with wider communities; and respecting autonomy, privacy, choice and dignity.
Goswell 2014[89]	Quantitative, longitundinal, comparative	To give commissioners a better understanding of the costs and outcomes of ECH compared to other options, to inform the efficient use of resources, by investigating whether: (i) ECH provides better	Effectiveness; costs	Schemes: 1 Outcomes: 47 older people (compared to historical data from 385 older people) Costs: 54 older people (compared to 16 controls)	Social care-related quality of life (ASCOT), secondary healthcare usage (e.g. hospital) and costs, social care costs	The study found improvement for residents on all social care-related quality of life domains, with scores before moving in lower than average (compared to the historical data) and higher after moving in. Health care costs reduced by 59% for residents of Trailway Court compared to a reduction of 66% in the control group, and social care costs in Trailway Court increased by 76%

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		outcomes than alternative forms of care over time, (ii) ECH is cheaper than alternative forms of care over time, and (iii) there are differences in costs for different agencies.				compared to 90% for the control group (although the control group had higher initial costs for both health and social care). Combined total costs increased from £149.19 to £150.07 (1%) in the ECH group, and from £185.33 to £193.41 (4%) in the control group (significance was not reported for either outcomes or costs).
Hastings 2020[112]	Modelling	To identify current provision of, and future demand to 2035, for different types of specialist housing and accommodation for older people in Wales.	Other	n/a	Future demand for ECH compared to other types of specialist housing for older people	This assessment of future demand estimated that across Wales there is likely to be a shortfall by 2035 of approximately 15,000 housing units for older people (both housing for social rent and retirement housing for sale). It also indicated that approximately 5,000 units of housing with care are needed: 3,500 units of ECH for social rent and 1,500 units of ECH for sale (including shared ownership). Whilst there was not thought to be need for additional residential care beds, there was a predicted need for approximately 7,000 nursing care beds.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Healthwatch Salford 2018[108]	Qualitative cross-sectional	To use enter and view reports from specific ECH schemes, along with other evidence, to: (i) assess the impact of the variation in care, as rated by the CQC, on tenants, (ii) evaluate whether ECH can reduce loneliness and social isolation, (ii) capture and share areas of good practice, (iv) determine whether communication is being conducted effectively, and (v) recommend areas for improvement.	Experiences	Schemes: 6 schemes 115 49 older people 9 family/carers 57 staff	Surveys: the effectiveness and responsiveness of communication from the provider to the tenant, provision of social activity within the schemes, with a focus on social inclusion, the quality and type of care provided	In many of the schemes, more than a third of tenants had high care needs. Care was commissioned by the hour on contract. This flexibility meant hours could be increased or decreased to meet the needs of each tenant, as assessed by social services. Relationships between care providers and ECH landlords were largely cooperative, though some areas for improvement were identified (e.g. shared communication to tenants and shared working around elements such as activities and mealtimes). All care providers and landlords were providing additional services, activities and support to tenants, going beyond their contractual obligations, as well as supporting independence and choice appropriate to this model of independent living.
Healthwatch Wokingham 2017[129]	Qualitative cross-sectional	To investigate whether ECH enables people to have a good quality of life - focusing specifically on	Experiences	not reported	Residents' experience of services both within and beyond the scheme, the social opportunities on offer, and levels of resident	The following themes were identified: the importance of good design, managing expectations of what ECH schemes can and cannot provide, the tension that exists

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		whether it improves and maintains people's independence whilst keeping them safe, and decreases social isolation and loneliness - by exploring residents' experience of services both within and beyond the scheme, the social opportunities on offer, levels of resident engagement in the running of the scheme, and collaboration between housing and care services at each site.			engagement in the running of the scheme	between staff seeing ECH as independent living but residents wanting coordinated support to enable opportunities for social gatherings, the importance of having a diverse and varied range of activities available, the importance of transport links in ensuring residents do not get cut off from town, and quality of care.
Joint Improvement Partnership 2011[109]	Mixed	To undertake a review of ECH in the southeast of England and consider how the next phases of development are	Costs; other	Schemes: 2 (focus groups) 2 focus groups with older people (number not reported)	Surveys/interviews: number and location of ECH, success factors and challenges, assessment processes for making business cases to develop schemes and views on	ECH development in the southeast of England has been successful over recent years, boosted by DH and HCA funding. The current economic climate has 'changed the landscape' and may inhibit future development of ECH.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		likely to be achieved.		External stakeholders (number not clearly reported)	future development programmes. Focus groups/interviews with residents: views about their housing choices. Don't think this is an outcome measure: A Market Assessment and Cost Matrix to assist stakeholders in assessing the business viability of proposed extra care developments and assessment of the next phase of evolution of ECH in the southeast of England	However, the key challenge is to change ways of working (i.e. create 'cultural' change among commissioners, providers and developers/contractors within the sector). Factors and recommendations to move the ECH agenda forward are identified, and a Market Assessment and Cost Matrix are detailed to assist stakeholders in assessing the business viability of proposed ECH developments.
Mental Health Foundation 2018[119]	Mixed	To understand whether Standing Together peer support groups in ECH impacted on outcomes related to: loneliness and social isolation; emotional wellbeing; and meaningful activity, sense of purpose and community engagement.	Effectiveness; experiences	Schemes: not clearly reported (19 implemented peer support groups) 13 older people (quantitative) 45 older people (qualitative, 57 at follow up)	Loneliness (De Jong Gierveld Loneliness Scale), social connectedness (short questions relating to contact with friends and family taken from the Mirrored Core Questions for 65+ of the Big Lottery Fund Wellbeing Evaluation), emotional wellbeing (7-item scale taken from the Mirrored Core	Findings from the qualitative element of the study indicated that the groups helped to: combat loneliness by strengthening a feeling of social connectedness and belonging; improve wellbeing through discussion among peers and the presence of a kind, caring facilitator; and provide meaningful, stimulating activities around people with whom they felt comfortable. Residents also expressed

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
					Questions for 65+ of the Big Lottery Fund Wellbeing Evaluation), SWEMWBS, meaningful activity, and focus groups addressing the aims of the evaluation	desire for the groups to continue. The groups had no impact on life satisfaction, loneliness, wellbeing and social connectedness measured quantitatively. The time at which follow-up outcome data were collected may reflect the participants' disappointment that the groups were coming to an end, explaining these discrepant results.
Nash 2013[92]	Quantitative, cross-sectional, comparative	To investigate (i) the costs of receiving care and support in ECH in Wales, (ii) the comparable cost differences between receiving care in residential care, ECH and in the community, and (iii) whether NHS service utilisation is different for those living in different care environments.	Costs	Schemes: not reported 7071 older people (94 in ECH)	Cost of care, equipment and modifications, and resource utilisation (inpatient costs, outpatient visits, emergency admissions and GP service utilisation and costs)	The least expensive environment for delivery of care was in service users' own homes with the most expensive being residential care. However, residential care supported adults with higher care needs and included housing costs which were not included in costs for ECH or care in the community. The lowest equipment / modification costs were incurred by ECH, the highest by those receiving care in community, reflecting the age of housing stock and support infrastructure. Inpatient costs were higher in residential care

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						compared to ECH, reflective of different care needs. Outpatient admissions and A&E costs were relatively stable across care environments; residential care appeared to be the most expensive for all costs relating to GP activity.
Oxford Brookes University Institute of Public Care 2014[103]	Quantitative comparative	To understand, for retirement living and assisted living schemes, (i) the likely benefit in terms of health and social care, (ii) what is likely to be gained in terms of social capital, (iii) what is likely to be gained from the capital investment in the area, including planning gain and employment, and (iv) what additional expenditure is likely to be generated in the local area.	Effectiveness; costs; other	Schemes: 10 100 older people	Reasons for moving, perceived benefits of living in a scheme (e.g. design-related), costs and economic impacts (e.g. as source of employment in the local area), service use (e.g. hospital admissions, GP visits)	Both retirement living and assisted living (ECH) schemes bring substantial benefits to their local economies and their residents. Both types of scheme facilitate the health and well-being of owners in a variety of ways, with directly attributed total estimated savings in health and social care costs per development £1,419 per year for retirement living and £1.04 million per year for assisted living. Community benefits per development (including council tax) were estimated to be £87,900 per year for retirement living and £249,000 per year for assisted living. Total additional expenditure in the local economy per development was found to be

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						£670,000 per year for retirement living and £1,234,000 per year for assisted living, whilst total estimated social capital value per development was £5,000 per year for both types of scheme.
Promatura 2022[99]	Quantitative cross-sectional	To investigate (i) the proportion of households who would consider moving to an integrated retirement community (IRC), (ii) demographic, economic, and psychographic profiles of potential residents, and (iii) the estimated timeframe within which respondents would considering moving an IRC.	Other	Schemes: n/a 966 older people	Likelihood of moving to IRC and variation according to various factors (e.g. age, household income)	Of those who completed the survey, 13% considered it probable they would move to an IRC, 36% thought it possible, and 51% improbable. Age was not a significant factor in the likelihood of moving to an IRC, with households headed by someone in their fifties as likely to move as those in their eighties or older. Similarly, marital status did not have an impact on likelihood of moving to an IRC.
Roleston 2021[117]	Qualitative cross-sectional	To evaluate a bereavement support service, examining: (i) how the service was organised and	Experiences; other	Schemes: 4 Phase 1: 58 older people	Experiences	The new 'Community Model' approach trained 49 Bereavement Supporter volunteers and 18 residents, whilst over 390 staff received Cruse Loss and Bereavement

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		delivered, (ii) the quality of training and information delivered, (iii) outcomes for individuals (e.g. resident Bereavement Supporter Volunteers, staff, and residents who have received support), and (iv) wider impacts, particularly in terms of how the project has facilitated conversations about death, dying and bereavement and developed general grief literacy among staff and residents in the villages.		Phase 2: 43 older people (some participants may be the same across phases, not clearly reported)		Awareness training and over 210 staff attended Loss and Bereavement information sessions. Over 1290 individuals accessed bereavement support and more than 1500 residents and members of wider community engaged with Loss and Bereavement info sessions, with 3975 copies of bereavement and dementia resources distributed. Findings from interviews and focus groups were organised in four themes: organisation and delivery of the service; quality of training and information; outcomes for individuals; and wider impacts.
Sitra 2014[127]	Mixed	To explore existing, emerging and changing job roles with the overlap between housing and social care, including an	Other	Schemes: n/a (i) not reported (ii) 108 ECH respondents to survey	External factors influencing change; existing, new and emerging roles; workplace development approaches; apprenticeships	All respondents had moving from working in residential care to ECH. There are increasing numbers of integrated job roles across housing and care, and new roles relating to support, health

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		assessment of workforce development needs and the potential role of apprenticeships in meeting them.		(iii) 24 managers in learning & development or human resources in ECH interviewed; 13 other stakeholders interviewed		and wellbeing and community engagement, all with broad skills sets. Apprenticeships are being used but tend to be focused on areas such as customer service, maintenance and business. There are concerns regarding attracting new workforce, but providers are looking to recruit new apprentices. Priorities appear to be ensuring a suitably skilled workforce and upskilling of the existing workforce.
Other						
Browne 2021[118]	Mixed	To develop, test and implement a 12-week outdoor and nature-based activity intervention for people living with dementia and/or cognitive impairment at an ExtraCare retirement village and explore the benefits for those taking part.	Effectiveness; experiences	Schemes: 1 18 older people	Wellbeing and quality of life (Greater Cincinnati Chapter Well-being Observational Tool), symptoms of dementia (Gottfries-Bråne-Steen Scale), physical function (Short Physical Performance Battery) and handgrip strength), quality of life (Dementia Quality of Life measure) and depressive symptoms	Wellbeing and quality of life benefits of the interventions for people living with dementia and cognitive impairment included connection to others and increased social interaction, high levels of enjoyment, a sense of purpose and opportunities to spend time outdoors. These benefits may due to the opportunities the interventions offered for multi-sensory stimulation,

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
					(GDS), experiences and perspectives of the intervention	meaningful activity, and being outdoors. Collaborative working was important in offering the interventions.
Burns 2014[120]	Qualitative cross-sectional	To understand (i) the outcomes residents perceive they have experienced as a result of moving to and residing in ECH, and (ii) the difference, if any, that moving to ECH has made to their health, confidence, happiness, general well-being and relationship with their families.	Experiences	Schemes: 1 17 older people	Moving to ECH, expectations, views of the building, services and activities, outcomes (health, happiness, confidence, social life, relationships with families and general well-being).	Residents were positive about moving to Campbell Place and reported better or the same outcomes for health, happiness, confidence, social life, relationships with families and general well-being after moving. Five themes were identified in relation to these improved outcomes: social interaction, the restaurant and catering services, design of the building and accommodation, security/knowing someone is always there and relationship with families. Of these, social interaction was felt to be the most important.
Carterwood 2014[104]	Quantitative cross-sectional	To identify the catchments of current ECH schemes.	Other	Schemes: 87 3823 older people	Distance between previous and current postcode for ECH residents	Local geography is important, with 39% of residents coming from within 3 miles. Residents tend to have travelled further in rural areas, with road access only an influence for leasehold schemes. Tenure is also a factor in how far residents have travelled; residents move greater distances to private

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						long leasehold schemes, with the shorter moving distances to affordable schemes likely to be due to local authority allocations.
Craddock 2014[130]	Quantitative cross-sectional	To explore the impact of care and support services on ECH residents' quality of life, specifically (i) reporting on social care-related quality of life, (ii) comparing scores for the different domains of quality of life, and (iii) assessing the influence of other variables on quality of life such as amount of care received, age, and ability to perform activities of daily living	Effectiveness	Schemes: 7 83 older people	Current, expected and gain in social care-related quality of life (ASCOT)	Scores for current social care-related quality of life (mean 0.91, maximum score 1.00), reflected the positive impact of care and support services, and the environment of extra care housing, for residents. A lower estimated quality of life was recorded when residents considered their lives without care and support services. Health did not show a significant interaction with quality of life.
Moore 2021[123]	Quantitative cross-sectional	To provide insights into the interdependence of the micro-preferences, meso-	Experiences	Schemes: 5 (ECH) and 11 (retirement housing)	Representations and descriptions of what ECH and retirement housing offer within nine domains:	Participant's preferences and perspectives were complex, personal and contextual. There were three groupings of ECH micro-preferences: (i)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		positions and macro-priorities of older people living in affordable retirement housing and ECH in England.		68 older people (ECH) 157 older people (retirement housing)	reassurance, autonomy, togetherness, accessibility, personal space, features and amenities, modernity, setting, and shared facilities	engaged, independent, and in control, (ii) care, companionship and peace of mind, and (iii) security, mobility and amenity in own home. In terms of meso-positions, there was consensus around ECH being seen as a form of care home, the behaviour of other residents, flat size, and tidiness of the buildings and gardens, and contention around pets, security of tenure, independence, and controlling residents. At the macro-level, two perspectives were identified: (i) independent, secure and connected, and (ii) care for, helped, and included. There was a high degree of consistency between the preferences of ECH and retirement housing participants.
Wales 2020,[87] Wales 2023[88]	Qualitative longitudinal	To explore the meanings that ECH tenants attribute to using the internet for social contact.	Experiences	Schemes: 2 10 older people	Interviews: recollections of prior experience of online social contact and visualisations of future contact	Using the internet supported participants in maintaining their offline social relationships (both familial and long-term friendships) after a transition to ECH. Participants also renewed dormant friendships and began new ones. They

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
					Diaries: records of online social contacts for two weeks	found that their internet use led them to re-establish a continuous sense of their own biography and regain some skills from their earlier years.
Linked publications						
Blood 2012, Blood 2013, Pannell 2012						
Blood 2012,[51] Blood 2013*[52]	Qualitative cross-sectional	To explore the way in which different services, providers and other key players work together in HWC schemes (specifically considering boundary issues) and the impact of this on the quality of life of the older people living in them, especially those with high support needs.	Experiences; other	Schemes: 19 47 older people (3 also carers) 5 family/carers 52 staff and external stakeholders	Roles and responsibilities of key stakeholders; experience/perceptions related to the research questions	Older people's rights were promoted relatively well, and the majority of residents were positive about their quality of life. Contested rights (e.g. involvement in decision-making) could be a problem. Grey areas and gaps occurred in situations where it was not clear how far a frontline worker's role should stretch and impacted people with high support needs more. The complexity of commissioning and delivering HWC is caused by a range of factors, including local authority policies, funding, regulating and monitoring, different models, different expectations, and differences between the four nations.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Pannell 2012*[53]	Qualitative cross-sectional	To examine how affordability affects choice (and decisions on whether or not to purchase care and other services) and the consequences for quality of life, with a focus on those with high (or increasing) support needs.	Costs; experiences	Schemes: 21 78 older people 4 family/carers 7 staff 40 external stakeholders	Experience/perceptions (including in relation to costs)	Findings were summarised under the following headings: (i) Deciding to move in, with various groups identified among HWC residents (e.g. planners, crisis movers and tenure-swappers). (ii) Views at the time of the interview, with most reporting mainly positive views on different aspects of quality of life in HWC. Respondents with high care needs had various coping strategies and trade-offs to manage increased needs and meet costs. (iii) Hopes and fears for the future, with residents overwhelmingly wanting to stay in HWC to the end of life but also having some worries about this. (iv) Value for money and overall affordability, with over half of the respondents commenting that HWC was good value for money but not all.
Burholt and associated publications						

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Burholt 2011*,[54] Phillips 2015[55]	Mixed, cross-sectional, comparitive	To: (i) examine the quality of life and experience of older people (particularly satisfaction in five domains: financial, personal, social, environmental and access to personal services), (ii) seek views of managers and social workers as to whether complex integrated social and health care be delivered, and (iii) explore the cost effectiveness of extra care compared to residential and home care.	Effectiveness; costs; experiences	Schemes: not reported Survey: 183 older people ECH (n=58), residential care (n= 66), people receiving care in the community (n= 59) Interviews: 91 older people ECH (n=30), residential care (n=31), receiving care in the community (n=30) 14 staff ECH scheme managers (n=4), residential care home managers (n=5), community care team managers (n=5)	SF-36 (36-Item Short Form Survey, measure of health status), perceived social support from friends and family (Lubben Social Network Scale), satisfaction with life (Satisfaction with Life Scale, SWLS), social satisfaction, environmental satisfaction, satisfaction with financial control, satisfaction with access to personal services, and costs of care provision	Findings suggest that ECH does not accommodate the changing needs of both fit and frail older people and that older people with cognitive impairment are frequently excluded from these environments. The quality of life for ECH residents was no better than the quality of life for older people living in the community or in residential care and was lower for one particular domain (access to personal care services). Social interaction was higher but generally superficial and did not necessarily lead to high quality and emotionally satisfying social relationships. Some ECH residents had not been informed adequately about the distinction between support services, personal care services and health services and limitations of the facilities in providing in-house services. The financial information provided did not permit to ascertain the costs for ECH within the study, nor make any reasonable

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						comparison with costs from other care settings.
Hillcoat-Nalletamby 2014[27]	Qualitative cross-sectional	To elaborate an interpretive framework of the concept of independence in relation to three residential settings (ECH, residential care, private home)	Experiences	Subsample of Burholt 2011[54] Schemes: not reported 91 older people	Meanings of independence	Independence has multiple meanings for older people, but certain meanings are common to all settings: accepting help at hand; doing things alone; having family, friends, and money as resources; and preserving physical and mental capacities. Some themes were specific to ECH: having resources, making one's own decisions, being able to help others, companionship, help at hand if needed, living in one's own home and doing things alone.
Hillcoat-Nalletamby 2019[31]	Qualitative cross-sectional	To examine how older people engage in the process of choice-making when selecting a care option through the development of an interpretive framework.	Experiences; other	Subsample of Burholt 2011[54] Schemes: n/a 29 older people (whose choice of care option involved moving to an ECH in Wales)	Typology of 'pathways of choice'	A typology of six different 'pathways to choice' of care setting was identified, based on each participant's degree of engagement (e.g. from deliberated to passive) and temporality. These findings suggest that choosing a care option in later life is a diverse, interactive and time-bound social phenomenon, inadequately captured by the rational choice approach where it is understood more as

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						an individualised, linear and logical process.
DICE						
Beach 2022[29]	Quantitative, cross-sectional, comparative	To examine whether there were better outcomes in terms of loneliness and social isolation for residents living in HWC compared to in the community.	Experiences	Schemes: 94 (HWC) 741 older people	Loneliness and social isolation	People living in HWC had lower levels of loneliness than those in the general community, with an average treatment effect (ATT) of 0.407 (95% CI = −0.601, −0.214). However, social isolation was found to be slightly higher for residents of HWC than if they were in the community (ATT = 0.134 [95% CI = 0.022, 0.247]). This is likely to be due to less frequent contact with friends and reduced organisational membership rather than differences in contact with family and children.
Powell 2024[58]	Qualitative longitudinal	To understand how the availability, absence and use of communal spaces impacts social connections among residents within HWC schemes.	Experiences	Schemes: Interviews (cross-sectional) - 9 Interviews (longitudinal) – not clearly reported 72 older people	Experience of how living environments and housing providers facilitate the inclusion and social connections of residents	The presence of communal shared spaces helps facilitate social connections and the development of friendships among residents of HWC. However, residents with minority characteristics and/or physical impairments encounter challenges in accessing these spaces. Some

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
				51 (cross-sectional) 21 (longitudinal)		are physical, requiring building designers to comply with building regulations and the Equalities Act to overcome them. The presence of on-site staff may also help, particularly to manage the impact of discriminatory attitudes.
Vickery 2023[59]	Qualitative longitudinal	To explore older adults' experiences of COVID-19 lockdown measures whilst living HWC schemes and examine specifically the impact of the lockdown measures on scheme life including social connections amongst residents and their general everyday wellbeing.	Experiences	Schemes: 24 56 older people	Experience of COVID-19 lockdown measures	The findings highlight that COVID-19 restrictions had a detrimental impact on the social connections and interactions of older residents living in HWC schemes, as well as on their feelings of autonomy and independence. Despite this, residents adapted and coped with self-isolation restrictions and sought out positive ways to maintain social contact with others inside and outside to the scheme. Providers of housing for older adults faced tensions between promoting residents' autonomy and connectedness whilst also trying to provide a safe living environment and protect residents from risk of COVID-19 infection.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Willis 2022*[60]	Mixed	To examine the social inclusion of older people from social minorities living in HWC schemes in England and Wales and how these schemes work to ensure that all residents feel equally valued and included.	Experiences; other	Schemes: (all HWC) Survey - 95 Interviews (older people) - 26 Interviews (staff) - 6 Survey: 741 older people Interviews: 72 older people (21 from social minority groups) 21 staff 23 external stakeholders	Experience of transition to housing with care and daily life once there	HWC schemes work well in counteracting social isolation and preventing loneliness among older residents, but pockets of isolation still exist, particularly among people from social minorities. Interpersonal, organisational, physical and environmental factors that help promote social inclusion were identified, including supportive neighbour relations; on-site staff presence, inclusion with the local area, listening to the views of residents, inclusive and age-friendly design, adequate digital infrastructure, and a supportive policy environment.
Willis 2023[61]	Qualitative longitudinal	To explore how LGBT residents experience social and communal life in HWC schemes for older people.	Experiences	Schemes: not reported 15 older people 4 (cross-sectional) 10 (longitudinal) 1 (unknown)	Experience of living in housing with care as an LGBT resident	Three main themes were identified: (i) the 'outsider' status of LGBT residents in scheme life, how they navigate this, and how this status intersects with, and is amplified by, disability and other minority characteristics; (ii) the actions of other residents and how these reinforce boundaries of sexual and gender normalcy and cause exclusion; and, (iii) the

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						importance of maintaining external social connections to LGBT residents.
ECHO						
Cameron 2019[64]	Qualitative longitudinal	To explore the use of longitudinal qualitative research methods to examine: (i) the development of the care and support needs of residents and their expectations of services over time, and (ii) how these were influenced by organisational changes and the make-up of the resident population.	Experiences	Schemes: 4 51 older people (in first round; 164 complete interviews and 40 missing overall after 4 rounds)	Reasons for moving into ECH, participation in social activities, social contacts, health status, care plans, experiences of care, changes in needs/experiences over time	The longitudinal methods presented challenges, related to the inclusion of people living with dementia and the management of boundaries in the relationships built up with individual participants. Three key themes were identified: changing care needs; residents' perspectives on the mix of residents in the ECH schemes where they lived, and organisational changes. There was complexity in the ways in which some participants proactively managed the care and support they received.
Cameron et al. 2020[28]	Qualitative longitudinal	To explore residents' perceptions and experiences of ECH as an integrated model of housing with care.	Experiences		Experiences of how integration of HWC works in practice	The integration of housing with care enabled many older people to manage their care proactively. However, the increasing number of residents with complex health and care needs, including chronic illness, led some residents to question the ability of the

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						model to support residents to live independently.
Cameron, Johnson & Evans 2020[25]	Qualitative longitudinal	To explore how care is delivered in four ECH schemes from the perspective of care workers and managers	Experiences	Schemes: 4 27 staff	Experiences of care workers and managers	Five themes were identified: the care worker role, where the aim of ECH in supporting people to live independently was evident, though some described the role as a series of tasks; the organisation of care, where daily routines and the frustrations of task-focused care were discussed; planning and flexibility, identifying and responding to changing care needs of residents; changes in resident mix, with a sense that there was change, with residents having higher needs; and favours, with staff doing tasks for residents, often in their own time.
Evans 2018[65]	Qualitative longitudinal	To investigate how residents in ECH schemes make decisions about the changing nature of their care needs and how they negotiate these with care providers, focusing on the views of residents	Experiences	Schemes: 4 80 51 older people 27 staff 2 external stakeholders	Experiences and perspectives	Key factors identified by the study included person-centred care and support, flexible commissioning and staffing, appropriate design of the environment and suitable location of the scheme within the wider community. The challenge of providing schemes that deliver these services during a period of

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		and staff at a specialist dementia scheme.				reduced public spending is acknowledged.
Johnson 2020[66]	Qualitative longitudinal	To explore the perspectives of older people living in four different ECH schemes in England, focusing on how ageing is experienced, negotiated and managed by these individuals within the context of the environments where they live.	Experiences	See Cameron et al. 2019 and Cameron et al. 2020	Experience of ageing in ECH	Transitions across the boundary between the third and fourth age are not always straightforward or irreversible and, moreover, can sometimes be resisted, planned-for and managed by older people. Operational practices within ECH schemes can function to facilitate or impede residents' attempts to manage this boundary.
EVOLVE						
Barnes 2012[40]	Qualitative cross-sectional	To explore the views of residents and relatives concerning the physical design of ECH.	Experiences	Schemes: 5 32 older people 3 family/carers	Residents and family members' perceptions of use of the buildings and related aspirational and practical issues	Two over-arching themes emerged: aspects of design that supported the affective needs of residents for a good quality of life (subthemes: 'social support and participation in activities' and 'amenities'); and the detailed design issues that impacted the usability of the building in terms of supporting the physical, sensory and

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						cognitive changes that many people experience in old age (subthemes: accessibility and mobility; physical support; living units; service areas and external areas).
Lewis 2013*[67]	Quantitative cross-sectional	To assess whether existing ECH schemes comply with design guidance for people with sight loss, meet their needs of people with sight loss, recommend changes or additions to design guidance, and produce a specialist version of the EVOLVE tool that can be used to assess the homes of people with sight loss.	Experiences; other	Schemes: Survey - 11 Building survey – 23 (see Orrell 2013) 44 older people	Experiences of the buildings, EVOLVE-for-vision tool	The design of ECH does not meet the needs of people with sight loss as well as it could and does not take into account specialist design guidance (e.g. on lighting levels, including daylight levels). Most participants placed a high value on having a view from their window and appreciated sunlight (though glare was a problem for some). Some participants had withdrawn from activities outside their home.
Lewis 2015b[41]	Mixed	To identify barriers to compliance with current UK guidance on	Other	Schemes: 23 20 external stakeholders	Barriers to compliance with building standards	Of the dwellings surveyed, 45% (74 of 165) of living rooms, 44% (69 of 158) of bedrooms and no kitchens complied with

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		daylighting in the design of ECH				recommendations on minimum average daylight factor of 1.5%, 1% and 2%, respectively. Financial constraints limit the feasibility of providing dual aspect dwellings and windows for every room. Architects' reluctance to undertake daylight factor calculations, and the need to reduce window size to prevent solar gain, meet planning requirements and minimise construction costs, could explain why some surveyed schemes did not comply with daylight factor recommendations.
Orrell 2013[68]	Quantitative cross-sectional	To produce an evidence-based building evaluation tool suitable for assessing housing developments designed for older people, and investigate the relationship between the design of ECH and quality of life of older	Effectiveness	Schemes: 23 163 older people	SEIQoL-Adapted (Schedule for the Evaluation of Individual Quality of Life), CASP-19, EVOLVE tool (which includes 13 "building user-related domains of interest"), dependency (5-item Barthel Index of ADL)	Significant associations were found between several aspects of building design and quality of life. Accessibility, safety and working care (the extent to which the environment allows staff to deliver the highest level of care) were negatively associated with quality of life, whilst security was positively associated. There was also evidence that the relationships were partly mediated by the

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		people living in these schemes.				dependency of participants and scheme size, with the needs of highly dependent (e.g. frail) users not currently supported as well as they could be.
FOCUS						
Holland 2015*[69]	Mixed, longitudinal, comparative	Quantitative: to evaluate whether the ECH approach gives positive outcomes for healthy ageing which result in measurable health and social care cost savings. Qualitative: to understand residents' perspectives and experiences of daily life in ECH.	Effectiveness; costs; experiences	Schemes: 13/14 (as baseline) 19 (additional schemes added in Holland 2019 follow up)* Quantitative: Baseline (2012) 193 older people 162 ECH 33 controls Follow-up (18-months) 108 ECH 29 controls Follow-up (2017, 60 months) 22 ECH 2 controls	Survey: health (chronic conditions, Rockwood style frailty profile), well-being (depression, anxiety), cognitive ability (autobiographical memory function, ACE-R, MMSE), IADL also ADL, mobility (walking speed), health and social care usage and costs Diaries: activities Qualitative: experiences	There were significant improvements for ECH residents compared to the control group for depression, perceived health, memory and autobiographical memory. There were also positive changes for anxiety, communication limitations and fluency (executive function) but this was not limited to ECH residents. IADL and social function varied with age in the control group but not ECH residents. On average, based on baseline figures, and across the care levels, ECH cost £427.98 less per annum for the study participants than it would have done in the wider community. Average ECH NHS costs reduced by 47% over 12 months (there also a decrease among the controls

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
				Diaries: 79 older people 57 ECH 22 controls Qualitative 144 older people 2 staff		but the decrease in ECH costs remained significant when this was taken into account). Qualitative data collection identified three themes: connectivity in and beyond ECH; perceptions of change in ECH; negotiating transitions and increasing needs.
Holland 2017[70]	Quantitative, longitudinal, comparative	To examine the [immediate] impact of moving from the wider community into an active, socially accessible and supported retirement village.	Effectiveness		Cognitive functioning (ACE-R, MMSE), autobiographical memory test (AMT), Hospital Anxiety and Depression Scale, IADL and ADL as measures of independence, functional limitations profile (FLP investigating ambulatory, mobility, household management, recreation, social, alertness, sleep and communication), self-perceived health.	Residents showed improvement in depression, perceived health, aspects of cognitive function and reduced functional limitations, while controls showed increased functional limitations (worsening). Ability to recall specific autobiographical memories, known to be related to social problem solving, depression and functioning in social relationships, predicted change in communication limitations, and cognitive change predicted changes in recreational limitations. Change in anxiety and memory predicted change in depression.
Holland 2019*[71]	Quantitative, longitudinal, comparative	Follow up of Holland 2015, with some changes to	Effectiveness; costs		See Holland 2015	There were overall positive results with respect to personal health, psychological and

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		the methodology and including new cohort of participants.				social well-being, and cost savings, in line with the findings of the original study.
Holland 2021[72]	Quantitative, longitudinal, comparative	To examine the impact of moving to a supported active environment (considering novelty and actual engagement in activities) on autobiographical memory specificity (AMS) over the ensuing 18 months, in a group of older adults with varying function and health.	Effectiveness		Changes in cognitive function and mental health and independence	There were clear improvements across time in AMS for residents but not controls, supporting the role of a socially active environment, and confirmed by correlation with the number of activities reported in diaries, although the impact of diary activities on the effect of time on AMS was not found.
Shaw 2016[73]	Qualitative longitudinal	To understand older adults' experiences of moving into ECH which offers enrichment activities alongside social and healthcare support.	Experiences	Schemes: not reported 6 older people	Experience of moving in, settling in, and follow up of issues previously discussed	Learning to live in ECH and negotiating new relationships was not straightforward; maintaining friendships outside the community became more difficult as capacity declined. Living in ECH provided new opportunities for social engagement and a restored sense of self. Over time horizons began to shrink as incapacities grew. There was

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						reticence to seek care, due to embarrassment and a sense of duty to one's partner. Becoming aged presented an ontological challenge. Nevertheless, some showed a readiness for death, a sense of homecoming. An authentic later life was possible, but residents required emotional and social support to live through the transition and challenges of becoming aged.
West 2017[74]	Qualitative longitudinal	To explore the challenges residents face in negotiating community life and identity within ECH communities	Experiences	Schemes: 14 (7 schemes, 7 villages) Focus groups: 122 older people Interviews and case studies: 13 older people (4 took part in both)	A broad set of themes were explored (e.g. reasons for choosing ECH, satisfaction with care and facilities, participation in activities and volunteering)	The findings report on the challenges residents face in negotiating community life and identity within extra-care communities. ECH was a positive choice for many (e.g. when home maintenance became to much of a burden, due to accessibility needs, due to social isolation) but disappointments were also communicated (e.g. standards of care had slipped, too many frailer residents were being admitted). This was discussed within a post-structuralist discourse theoretic/Lacanian framework in relation to the third/fourth age.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
LARC						
Bernard 2012[75]	Mixed	To investigate residents' attitudes to living and ageing in a mixed-tenure, purpose-built, age-segregated community (Denham Garden Village, DGV), focusing specifically on what DGV was like as a community in the early days, how DGV has evolved as a community since redevelopment began in 2001, and how today's residents perceive and experience the village as a community.	Experiences	Schemes: 1 68 total 52 older people 16 external stakeholders	Residents and staff perceptions of [changes in the] life in DGV and the sense of community	The findings are presented around three main themes which considered both the past and present (then and now): DGV as a 'community of place'; DGV as a 'community of interest '; and DGV and 'community identity '. The themes illustrate not only the complexity of articulating 'community', but also the dynamic and evolving nature of those meanings over time.
Liddle 2014[76]	Mixed	To analyse the age-friendliness of a retirement community in England	Experiences	Schemes: 1 Surveys: 122 older people (2007), 156 older people (2009)	Not clearly reported	Purpose-built retirement communities like DGV have the potential to be age-friendly settings but this could be better facilitated by involving residents in a regular cycle of

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
				12 staff and external stakeholders Interviews: 16 external stakeholders Focus groups: 10 staff		planning, implementation, evaluation and continual improvement. The philosophy behind the redevelopment of DGV clearly accords with the idea of optimising the environment and services to facilitate active ageing, and residents in general are highly satisfied with the village. However, fewer residents perceived that DGV could support them in ageing in place in 2009 than in 2007, with many expressing a lack of confidence in the ability of care services to support them in the future. More clarity is needed on how such developments can better fit with the age-friendly agenda, particularly in terms of their capacity to support ageing in place, the accessibility of the wider neighbourhood, opportunities for intergenerational interactions, and the training of staff to work with older people.
Matlabi 2011, Matlabi 2012						

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Matlabi 2011[79]	Quantitative cross-sectional	To examine the use of home-based technology devices and the correlation between use of such devices and quality of life among older people living in ECH.	Effectiveness, other	Schemes: 23 160 older people	Quality of life (SEIQoL-Adapted), well-being (CASP-19), use of home-based technological devices	Most basic appliances and emergency call systems were used in the living units, but communally provided facilities such as personal computers, washing machines, and assisted bathing equipment in the schemes were not well utilised. Health status, gender, and marital status were not significantly associated with the use of multiple home-based technological devices. The use of multiple home-based technological devices was associated with better quality of life of among the residents of ECH schemes.
Matlabi 2012[80]		To explore awareness of, access to, attitudes towards availability, and use of home-based technological devices, and factors that influence the use of devices.	Other	As above	Attitudes toward home-based technological devices, the use of household technologies, factors affecting their use	The majority of new home-based technology devices were not available in living units or schemes (e.g. assistive technologies such as electric window openers). Most basic appliances and emergency call systems were used in the living units. We found that in order to increase the use of technological devices among the elderly, their perceptions, capabilities, attitudes, and needs should be

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						assessed in the designing, planning, and supplying process.
Mayagoita 2015, Wright 2010						
Mayagoitia 2015[81]	Mixed	To examine the impact that some of the successes and failures in improving accessibility during remodelling had on care provision.	Experiences; other	Schemes: 10 40 older people	Access and assistive technology inventory Older people: assistive technology acquisition and use, amount and type of care, general health, participation in communal activities	Most of the assistive technology found was of general use in supporting independence (e.g. grabbers), some was specific to care provision (e.g. hoists). Even after remodelling, the design and layout of most buildings did not fully comply with accessibility standards, meaning some tenants needed increased provision of care.
Wright 2010[21]	Qualitative longitudinal	To explore what ten remodelled ECH schemes offered and alert older people, their relatives and professionals advising older people to key social care issues that can emerge in this new model for providing support and care.	Experiences	Schemes: 10 183 96 older people 56 staff 31 external stakeholders	Older people: experiences and perspectives around moving to and living in ECH Staff and external stakeholders: the redevelopment of schemes, what they aimed to provide, and their pros and cons	For each scheme, senior staff involved in development discussed the reasons for remodelling rather than building new, and complexities of the process (e.g. as tenants often remained on site). Themes identified included the aims of ECH, the difficulties of encouraging social life on the scheme and the pros and cons of a remodelled scheme. Schemes varied, though there were some common problems, such as high care staff

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
						turnover, with temporary staff often having little idea of what ECH should provide, and building design failing to take account of declining strength and poor mobility. The tenants interviewed were largely satisfied with their care, though some were distressed by carers' attitudes. It was also common for a person's care needs to decline in the scheme compared to their previous home due to the improved physical environment.
PSSRU						
Bäumker 2010[82]	Quantitative longitudinal	To assess the comparative cost before and after residents moved into a new ECH scheme in Bradford, England, and to place these costs in context by considering the achieved outcomes for residents.	Effectiveness; costs	Schemes: 1 Baseline: 40 older people Follow-up: 22 older people	Outcomes: ADL, IADL; Barthel Index of ADL; Minimum Data Set Cognitive Performance Scale (MDS CPS); perception of quality of life, ASCOT, CASP-19, perceived general health. Costs: health care costs, social care costs, accommodation costs, living expenses, personal expenses	The main finding of the study was that the overall cost per person increased after a move to extra care housing, but that this increase was associated with improved social care outcomes and improvements in quality of life.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Bäumker 2011[23]	Quantitative cross-sectional	To estimate and analyse the capital costs and funding implications of a range of schemes developed by several housing associations.	Costs	Schemes: 19	Costs of scheme development and operation	The analysis provides a benchmark range of costs which may be acceptable in new-build extra care schemes funded by the public sector. The results also show that the decision to remodel or build new ECH is not a straight-forward development cost question and necessarily depends on other factors. Several factors may influence unit costs, such as providing extensive communal facilities, site complications, planning difficulties, scale economies, consideration for target rent levels, and the institutional capacity of the housing associations.
Bäumker 2012[83]	Quantitative cross-sectional	To explore the factors motivating older people to move to ECH, their expectations of living in this new environment, and whether these differ for residents moving to smaller schemes or larger retirement villages.	Other	Schemes: 19 949 older people (493 in villages, 456 in smaller schemes)	Previous accommodation and living arrangements, reasons for moving, receipt of informal care and formal care services, medical history, ADL, IADL, cognitive impairment, financial circumstances, and planned	The factors attracting most residents (both with and without care needs) to ECH were: tenancy rights, flexible onsite care and support, the security offered by the scheme and accessible living arrangements. In villages, those without care needs identified type of tenure and social/leisure facilities as important most often.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
					accommodation and services in ECH, expectations for ECH	
Darton 2012[84]	Quantitative, longitudinal, comparative	To present detailed results on the characteristics of residents of ECH and compare these residents with individuals who moved into care homes.	Other	Schemes: 19 609 older people in ECH (132 in villages, 477 in smaller schemes) 494 older people in care homes	Previous accommodation and living arrangements, the receipt of informal care and formal care services, medical history, ADL, IADL, cognitive impairment, financial circumstances, planned accommodation and services in extra care, physical functioning (Barthel Index of ADL cognitive functioning (MDS CPS)	People who moved into extra care were younger and much less physically and cognitively impaired than those who moved into care homes. However, the prevalence of the medical conditions examined was more similar for the two groups, and several of the schemes had a significant minority of residents with high levels of dependence on the Barthel Index of ADL. In contrast, levels of severe cognitive impairment were much lower in all schemes than the overall figure for residents of care homes, even among schemes designed specifically to provide for residents with dementia.
Twyford 2016, Twyford 2018						
Twyford 2016*[85]	Quantitative cross-sectional	To establish the variety and types of ECH schemes available nationally and how they	Other	Schemes: 64	Background information about the ECH scheme; information about the model of ECH provided by the scheme; and a self-	Most schemes were purpose built, though they varied in size. All had integrated provision for people living with dementia (rather than a separate unit), but there was

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		support individuals with dementia.			reported rating of design features of the scheme that could support an individual living with dementia.	perceived to be tension between designing space that is accessible and attractive to both people with and without dementia. Models of care and support varied: some schemes had the same care and housing provider whilst others had different providers. Whilst there was a strong commitment from individual managers and schemes to do their best for people with dementia, there was little conclusive evidence about what may cause someone with dementia to move out of ECH. Further research is needed on non-integrated models of ECH for individuals with dementia, to identify barriers to entry, and policy, practice and person-centred assessment and planning processes to enable people with dementia to continue living in schemes.
Twyford 2018*[86]	Qualitative cross-sectional	To explore the appropriateness of ECH provision for people with dementia, including its opportunities	Experiences; other	Schemes: 2 11 older people 15 staff	Knowledge, experiences and views of ECH and its appropriateness for people with dementia	Four themes were identified in relation to living well with dementia in ECH: a clear understanding of what ECH is and is not; a physical environment that helps people

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
		and barriers, and whether there is an affordable model of ECH which can be inclusive of people with dementia.				feel safe and find their way easily; a friendly, skilled and competent support team; and a well-developed community where residents can take part, develop friendships, and reduce unwanted isolation.

*different numbers given within the report

Note: Participants are categorised as older people (ECH residents or considering ECH), family/carers (friends and relatives living outside of ECH, who may provide informal care), staff (staff employed at a scheme, such as carers and scheme managers), and external stakeholders (professionals associated with, but external to, ECH schemes, who might include commissioners, housing providers, and local authorities)

Table 7 Characteristics of ECH schemes in the included studies.

Single publications are arranged alphabetically in three categories: papers, which are peer reviewed journal articles; reports; and other types of publication (e.g. theses). Single studies reported in multiple publications are listed with the single publications, whilst linked publications are separate but also arranged alphabetically; for both * indicates those that are reports or other publication types.

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Papers						
Aitken 2019[32]	n/a	n/a	n/a	n/a	n/a	n/a
Atkinson 2023[45], Oatley 2024[46]	8	Locations: Central England (4), southeast England	Not reported	All schemes included social housing units	33-260	Dementia care was integrated (3), specialist (3), and separated (3)

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
		(1) and northeast England (3) Rurality: town (2), metropolitan (2), city (2), large village (1), rural (1)				Between them the included schemes had: communal lounge, dining, laundry, shop, hobby room, garden, hairdresser, large hall, gym.
Barrett 2020a,[47] Barrett 2020b[48]	Not clearly reported	Not reported Not reported	Survey: not reported Case studies: non-profit, Housing 21	Not reported	Not reported	Not reported
Barret 2021,[49] Barrett 2023[50]	71	Not reported Urban (46%) and suburban (38%)	Not reported	Both Rental (75% units)	2 - 260	Wide range of facilities, most were shared with the local community
Brooker 2011[90]	10	Not reported Not reported	Non-profit ExtraCare Charitable Trust (medium sized, specialist in ECH provision)	Not reported	Not reported	Details not reported but availability implied from the description of activities
Buckland 2020[107]	5	Warwickshire (1 scheme); Tower Hamlets, London (4 schemes) Not reported	Both 1 private provider (1 scheme); 3 housing	Leaseholder (1 scheme); rental (4 schemes)	Not reported	Not summarised but commented on in terms of residents' perceptions

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
			associations (4 schemes)			
Callaghan 2014[91]	15	Multiple locations (15 of the first 19 schemes funded by the Department of Health Extra Care Housing Funding Initiative (2004-06)) Not reported	Not reported	Not reported	Not reported	Not reported
Chandler 2014[121]	2	Southeast England Not reported	Not reported	Not reported	Not reported	Not reported
Chester-Evans 2019[93]	144 (50% ECH, surveys) 3 (interviews)	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
Dutton 2021a,[62] Dutton 2021b*[63]	62 retirement villages, 387 ECH schemes	All main regions of England Not reported	Both Non-profit (68%)	Both	Not reported	Not reported systematically
Evans 2017[128]	99 (surveys, majority ECH), 4 (case studies)	Survey: not reported Case studies: large Midlands town, large town in Southwest England; village in	Not reported	Both All schemes had mixed tenure, with 11 schemes offering units for rent at market rates, 62 units for social rent,	17 - 270 units (survey) 32 - 67 (case studies)	Most reported having a restaurant or café, communal lounge, garden, hairdresser, activity room and laundrette, while several also provided a library, gym,

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
		Southwest England; suburbs of a large city in Southeast England Both		27 leasehold, 24 shared ownership and 8 assured tenancies.		computer access and a shop. In most these were open to the wider community.
Grimshaw 2017[124]	n/a	n/a	n/a	n/a	n/a	n/a
Gupta 2017[94]	2	Southeast England (1 scheme), southwest England (1 scheme) Suburban	Non-profit	Not reported	Site 1: 50 Site 2: 60	Kitchen, lounge, sanitary areas
Halloran 2017[95]	7	Not reported Not reported	Non-profit Horizon Independent Living (social landlord)	Not reported	25-50	Not reported
Hillcoat-Nallétamby & Sardani 2019[96]	n/a	Wales Not reported	Non-profit Housing association	Not reported	Not reported	Not reported
Holland 2010[97]	n/a	Not reported Not reported	n/a	n/a	n/a	n/a

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Kneale 2011*,[19] Kneale 2013[30]	32	Audley: Willicombe Park, Tunbridge Wells, also Derbyshire, Yorkshire and Kent ExtraCare Charitable Trust: Staffordshire (2), Wolverhampton (2), Cheshire (1), Merseyside (1), Nottinghamshire (1) and Worcestershire (2) Retirement Security: London, East, and the Southeast (8), the Southwest (2), the Northwest (8), the Midlands (5), West Midlands (6) and North Wales (1) Not reported	Both Audley (private), ExtraCare Charitable Trust (non-profit), Retirement Security (private)	Both Audley: majority leaseholders (less than 3% rent) ExtraCare Charitable Trust: rental or leasehold with shared ownership also available Retirement Security: majority leasehold.	Audley and Retirement Security: 40-90 ExtraCare Charitable Trust: not specified	Audley: hairdressing, chiropody, physiotherapy, a lounge, restaurant and meal service, bar, library, salon, swimming pool, and gym, with some of these facilities are open to the public Extra Care Charitable Trust: lounge, community restaurant/cafe, community/day centre, laundry, guest suite, gym, arts and craft space, library; hairdressers, computer/IT room, assisted bathroom, chiropody, sensors (personal/detectors) and monitors, resident activities, and meals, with a number of facilities open to the public Retirement Security: sensors (personal

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
						and detectors) and monitors, lounges, dining room, community/day centre, laundry, guest suite, conservatory, hobby room, library, activities, and a function/games room, which are sometimes but not usually open to the public
Lewis 2015a[125]	4	Not reported Not reported	Non-profit Social housing providers	Rental	Not reported	Not reported
Lipman 2015*,[77] Lipman 2017[78]	Not reported	Not reported Not reported	Non-profit Housing associations	Both Some housing associations offer both private (owner occupied or leasehold) and social housing (rented)	Not reported	Not reported
Mansfield 2020[122]	1	West Midlands Urban	Not reported	Both Rental (87 units) Leasehold (25 units)	112	No summary provided, though some information in results (e.g. communal garden)

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Poyner 2017[98]	1	South of England Not reported	Not reported	Not reported	52	Hairdressers, local shops, library and coffee shop
Robinson 2023[113]	n/a	England Both	Both	Both	n/a	n/a
Sattar 2021[126]	9	Not reported Not reported	Not reported	Not reported	Not reported	Wi-Fi, conservatories (6/9), landscaped gardens (5/9), and sensory rooms (2/9).
Verbeek 2019[116]	n/a	England Urban	Not reported	Not reported	Not reported	Not reported
Wild 2018[105]	1	Scotland Rural	Not reported	Not reported	Not reported	Not reported
Report						
Barrett 2012[106]	7	St Neots, Northampton, Rushden, Hammersmith London, Coventry, Birmingham, Moreton Merseyside Urban and suburban	Non-profit Hanover (2), Housing 21 (1), Anchor (1), Spire Homes (1), Midland Heart (1), Thomas Pocklington Trust (1)	Both Rental (5); to buy, part buy or rent (2)	10 - 270	All integrated model schemes provided a restaurant/dining room, assisted bathing, laundry, guest suite, lounge, hairdresser, gym, garden and a room for activities/hobbies/arts and crafts. Most schemes provided a second smaller lounge or quiet room,

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
						a computer/IT room with IT classes and green house for the gardening club.
Barrett 2016[101]	5	Not reported Both	Non-profit Housing 21, Monmouthshire Housing Association, Belong and the ExtraCare Charitable Trust	Not reported	Not reported	Not reported
Batty 2017[102]	47 (administrative data), 35 (survey), 6 (case studies), 9 (focus groups)	All local authority areas in Wales, with the exception of Rhondda Cynon Taf Both	Both Administrative data: social provider (45 schemes); private (2 schemes)	Both Survey: all units were rental (33 schemes); mixed tenure (2 schemes)	Data source unclear: average 44 per scheme; majority have 35 to 54 units	Communal lounge (35), a laundry (34 schemes), hairdressing room (33), guest suite (32), communal dining area/restaurant (31). Other facilities, such as a shop, conservatory, bar or gym were much less common.
Beach 2015[115]	7	Yorkshire, Midlands, Kent, and Denham Garden Village in Buckinghamshire Not reported	Both Audley (private), Anchor Trust (non-profit)	Not reported	Not reported	Not reported

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Chakkalackal 13,[56] Chakkalackal 14[57]	3	London Urban	Non-profit Housing 21 (Sites A and C), organisation not specified (Site B)	Not reported	Not reported	Not reported
Croucher 2010[114]	1	Hartlepool Urban	Non-profit Joseph Rowntree Foundation Trust	Both Ownership, shared ownership, or rental (to those nominated by Hartlepool Borough Council)	242	Extensive communal facilities, including a restaurant, health living suite, arts and crafts room, convenience store, bar, library, IT room and hair salon
Croucher 2012[100]	Stage 2 - 9 (7 ECH, 2 sheltered housing) Stage 3 - 3	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
Goswell 2014[89]	1	Blandford Forum, Dorset Suburban	Non-profit Aster Group	Not reported	40	Not reported
Hastings 2020[112]	n/a	All 22 local authorities in Wales Not reported	Both	Both	Not reported	Not reported

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Healthwatch Salford 2018[108]	6	Salford Urban	Non-profit City West Housing Trust (4), Retail Trust (1), St Vicent's Housing Association (Mosscare) (1)	Not reported	Not reported	Not reported
Healthwatch Wokingham 2017[129]	3	Wokingham Borough Suburban	Non-profit Central & Cecil Housing (1 scheme), Housing 21 (1 scheme), Wokingham Borough Council (1 scheme)	Not reported	Not reported	Communal spaces reported but varied across schemes in terms of quality and usage
Joint Improvement Partnership 2011[109]	2	Not reported Not reported	Both Private development, development for social rent	Both Rented and leasehold	Not reported	The 'for rent' scheme had a good range of facilities including a gym while the facilities on the much larger village development included a health spa (swimming pool, gym, sauna) which was also open to the public and a bowling green.

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Mental Health Foundation 2018[119]	Not clearly reported (19 implemented peer support groups)	Not reported Not reported	Non-profit Housing 21 and Notting Hill Housing Trust	Not reported	Not reported	Not reported
Nash 2013[92]	Not reported	Swansea Not reported	Not reported	Not reported	Not reported	Not reported
Oxford Brookes University Institute of Public Care 2014[103]	10	The five English regions, Scotland and Wales Both	Profit McCarthy and Stone	Ownership	Not reported	Not reported
Promatura 2022[99]	Not reported	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
Roleston 2021[117]	4	Birmingham Urban	Non-profit ExtraCare Charitable Trust	Not reported	Not reported	Not reported
Sitra 2014[127]	n/a	n/a	n/a	n/a	n/a	n/a
Other						
Browne 2021[118]	1	Bournville Gardens, Birmingham Urban	Non-profit ExtraCare Charitable Trust	Not reported	Not reported	Not summarised, but facilities were open to the wider community
Burns 2014[120]	1	Fleet, Hampshire	Non-profit	Not reported	74	Range of communal facilities, including a

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
		Urban	Sentinel Housing Association			restaurant, laundry, library, hairdressing room, communal bathroom and guest room. Facilities were also intended to be 'hub' for older people from the local area.
Carterwood 2014[104]	87	Schemes: East Midlands (7); East (11); London (7); Northwest (14); Southeast (13); Southwest (14); Wales (1); West Midlands (13); Yorkshire & Humber (7) Both	Not reported ARCO members	Both Affordable rent (27 schemes); leasehold (57 schemes); mixed (3 schemes)	Not reported	Not reported
Craddock 2014[130]	7	5 local authority areas: Midlands, Northeast, Southwest and a borough of London. Both: urban (6), rural (1)	Not reported, but schemes chosen to represent a range of providers	Not reported	Range: 41 - 135	All sites had a lift, lounge, garden, shop, hairdressing salon and dining room. Other facilities available at some schemes were: jacuzzi, swimming pool, bar/pub, library, assisted bathing facility, hobby room, activities room, café,

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
						guest facilities, restaurant, community centre, and laundry.
Moore 2021[123]	5	Suffolk, Cotswolds, a naval city, East Midlands, urban Northeast Both	Non-profit Housing 21	Both Affordable rent (3 schemes); social rent (1 scheme); 45% shared ownership, 55% affordable rent (1 scheme)	Site 1: 38 Site 2: 80 Site 3: 60 Site 4: 70 Site 5: 130	Not reported
Wales 2020,[87] Wales 2023[88]	2	Northeast England Both	Not reported A national provider of older people's housing whose portfolio includes approx. 2500 ECH units	Not reported	Site 1: 36 Site 2: 40	On-site restaurant, hairdressing salon and corner shop, shared lounge, hobby room
Linked publications						
Blood 2012, Blood 2013, Pannell 2012						
Blood 2012*,[51] Blood 2013[52]	19/20*	All 4 nations, most English regions Both	Both	Both Social rent (85%), leaseholders (15%)	Not reported	Not reported

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Pannell 2012[53]	21	Most regions of England (14 schemes), Northern Ireland (2 schemes), Scotland (2 schemes), Wales (3, schemes) Both	Both Private, housing associations, charitable	Both Social renting (68%), leaseholders (31%)	Not reported	Not reported
Burholt and associated publications						
Burholt 2011*,[54] Phillips 2015[55] Hillcoat-Nalletamby 2014[27] Hillcoat-Nalletamby 2019[31]	Not reported	North Wales (Conwy, rural), South Wales (Cardiff, urban) Both	Not clearly reported (2 schemes were operated as joint ventures between a county council and a housing association)	Not reported	Not reported	Not reported
DICE						
Beach 2022[29]	94	Not reported Not reported	Not reported	Both Rental (75.3%) rent, own (22.2%), shared ownership (2.5%)	Not reported	Not reported

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Powell 2024[58]	26	Not reported Both: urban (18 schemes), semi-rural (6 schemes), rural (2 schemes)	Not reported 3 providers	Both Rental (58), ownership (14)	Not reported	Indoor spaces: communal lounges (20), a seating area with a communal kitchen (1), libraries (8 schemes), activity/hobby rooms (9 schemes), hair salons (9 schemes), therapy/treatment rooms (4 schemes), internet café (1 scheme), a computer room (1 scheme), a shop (2 schemes), a cinema rooms (2 schemes), laundry room (2 schemes). Four schemes had no communal indoor social spaces. Outside space: communal gardens (22 schemes), and private gardens and patio areas with seating (4 schemes).
Vickery 2023[59]	24	Not reported Both	As above	Not reported	Not reported	Not reported

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Willis 2022*[60]	Survey - 95 Interviews (older people) - 26 Interviews (staff) - 6	England and Wales Both	As above	Not reported	Not reported	Not reported
Willis 2023[61]	Not reported	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
ECHO						
Cameron 2019[64] Cameron et al. 2020[28] Cameron, Johnson & Evans 2020[25] Evans 2018[65] Johnson 2020[66]	4	England, a unitary authority (urban) and a county council two-tier authority (rural) Both	Non-profit Sites A and B: social landlord Sites C and D: non-asset holding non-charitable registered societies	Both Sites A, B and C: rent (residents primarily publicly funded) Site D: rent, social rent, leasehold and shared ownership (residents mostly owner-occupiers)	Site A: 54 Site B: 49 Site C: 42 Site D: 95	Communal spaces such as lounges and restaurants were available, but schemes differed in terms of activities programmes and available facilities.
EVOLVE						
Barnes 2012[40]	5	England Not reported	Both Non-profit (4 schemes), private (1 scheme)	Both Participants: social rent (17), leasehold (7), joint ownership	4 small schemes (32 - 54 units) and one village (258 units)	Not reported in detail, but communal spaces available

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
				(7), intermediate care (1) Rent (4 schemes), leasehold and shared ownership (1 scheme)		
Lewis 2013*[67]	Survey - 11 Building survey – 23	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
Lewis 2015b[41]	23	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
Orrell 2013[68]	23	North of England (11), Midlands (5), south of England (7) Both: urban (4), suburban (12), rural (7)	Both Non-profit (20 schemes), private (3 schemes)	Both Social rent (128, 79%), leasehold/joint ownership (35, 21%)	30-246	Not reported
FOCUS						
Holland 2015*[69] Holland 2017[70] Holland 2019*[71] Holland 2021[72]	13 or 14 (at baseline), 19 (additional schemes added in Holland 2019 follow up	Midlands Urban and suburban	Non-profit ExtraCare Charitable Trust	Not reported	Not reported	Each village or scheme had 5 - 18 social, health and leisure facilities. Smaller schemes could not offer the full range of facilities, but most had gyms, or at least some provision

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Shaw 2016[73]	Not reported					for physical exercise, and all had restaurants. For larger schemes, additional facilities included cafés, hairdressers, shop, hobby rooms, shop/grocery store, and healthcare drop-in clinics.
West 2017[74]	14					
LARC						
Bernard 2012[75]	1	Denham Garden Village, Buckinghamshire Rural	Non-profit Anchor Trust	Both	326	Café bar, shop, village hall, GP surgery, gym, swimming pool, with some facilities open to the public; organised social and other activities (e.g. crafts)
Liddle 2014[76]	1					
Matlabi 2011, Matlabi 2012						
Matlabi 2011[79]	23	England Both, rural (58, 36%), suburban (82, 51%), urban (20, 13%)	Both Public and private schemes	Not reported	Not reported	Lifts, assisted-bathing facilities, laundrettes, computer rooms, and CCTV.
Matlabi 2012[80]						

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Mayagoita 2015, Wright 2010						
Mayagoitia 2015[81] Wright 2010[21]	10	England, northeast (1 scheme), northwest (1 scheme), southwest (1 scheme), southeast (3 schemes), London (1 scheme), east of England (3 schemes) Not reported	Both Local authorities (2/3), housing associations (8/7)*	Not reported	16-52	Included lounges, dining rooms, tea kitchens, commercial kitchens, laundries and assisted bathrooms.
PSSRU						
Bäumker 2010[82]	1	Bradford Urban	Non-profit Local authorities with social services responsibility to worked with housing association partners to develop schemes through the	Both Rental (32 units), ownership (8 units), shared ownership (6 units)	46	Scheme had a range of communal facilities
Bäumker 2011[23] Bäumker 2012[83]	19 19	8 regions in England: Yorkshire and the Humber (5), Southeast (4), London (3), Northeast (2),		Both Rent only (7 schemes), rent along with leasehold and/or shared	Total: 1468 Villages: 770, around ~ 250 per village	Schemes provided facilities for members of the community living outside the scheme as well as residents. Not reported in detail

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
		East Midlands (2), Northwest (1), West Midlands (1), east of England (1) Both	Department of Health Extra Care Housing Funding Initiative (2004-06)	ownership (12 schemes) Rented from LA/HA: (293), privately rented/rent-free (51), owner occupied/mortgaged (173), missing/n/as (92) Villages: social rent 63.2%, market sale/leasehold 16.8%, shared ownership 20.0% Schemes: social rent 89.9%, market sale/leasehold 4.0%, shared ownership 6.1%	Smaller schemes: 716, 35-75 per village	except in terms of proportion of space and costs (on average 42% of the floor area, ranging from 30% to 55%)
Darton 2012[84]	19					Not reported
Twyford 2016, Twyford 2018						
Twyford 2016*[85]	64	Birmingham (6), West Midlands (10), East Sussex (4), Kent (4), Northamptonshire (5), Staffordshire	Not reported A number of small housing providers, one regional	Not reported	Ranged from small (40-50) to more than 150	Not reported

Study	N of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
		(6), other areas (29) Not reported	provider and three large national providers			
Twyford 2018*[86]	2	East Midlands Not reported	Non-profit Housing associations, with the schemes not reliant on public subsidy for ongoing operational viability	Both Rental and leaseholders	Site 1: 55 Site 2: 61	Not reported

* different numbers reported in different publications

Table 8 Characteristics of participants* and ECH residents** in the included studies.

Single publications are arranged alphabetically in three categories: papers, which are peer reviewed journal articles; reports; and other types of publication (e.g. theses). Single studies reported in multiple publications are listed with the single publications, whilst linked publications are separate but also arranged alphabetically; for both * indicates those that are reports or other publication types.

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Papers							
Aitken 2019[32]	Participants	Range: 53 - 89	Female: 28 Male: 17	Not reported	Not reported	Not reported	Live alone: 19

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
							Live with spouse/partner: 22
Atkinson 2023[45], Oatley 2024[46]	Participants	Not reported	Female: 34 Male: 15	Not reported	Not reported	Dementia: 34	Not reported
Barrett 2020a*,[47] Barrett 2020b[48]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Barret 2021*,[49] Barrett 2023[50]	Residents	Not reported	Of those living with dementia Female: 69% Male: 31%	Heterosexual: 61%	White: 92% Around a quarter of schemes had residents whose first language was not English	Living with diagnosed dementia: 16% Suspected but undiagnosed / undeclared dementia: 5% Most common comorbidities among residents living with dementia were physical or mobility impairment, depression or anxiety, hearing loss and diabetes	Schemes supporting at least 1 couple where one already had a diagnosis of dementia on moving in: 69% Average number of such couples was 2 (range 1 - 12, mode 1), constituting an overall average of 2% of the total number of residents.
Brooker 2011[90]	Participants (at baseline)	Mean (SD): EOP 81 (8.2) Control 82 (7.9)	Female: EOP 111 (77%), control 110 (74%) Male:	Not reported	Not reported	Cognitive impairment (MMSE mean score (SD)): EOP 18.8 (7.2) Control 19.5 (8.2)	Sharing flat with family member: EOP 21 (15%) Control 16 (11%)

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
			EOP 33 (23%), control 39 (26%)				
Buckland 2020[107]	Participants	Range: 55 - 93	Female: 5 Male: 3	Not reported	White British: 7 White Irish: 1	No summary reported but low to high care needs and a range of physical and mental health conditions (e.g. in recovery after stroke, reduced cognitive capacity).	Widowed: 4 Single: 1 Divorced: 2 Married: 1
Callaghan 2014[91]	Participants	65-69: 13 70-79: 29 80-89: 44 90 and over: 15	Female: 71 Male: 27	Not reported	Not reported	Self-rated health: Bad or very bad 20% Fair 44% Good or very good 36% Dependency (mean score on help needed with activities of daily living, SD, range): 5.88 (4.57, 0 to 18)	Not reported
Chandler 2014[121]	Participants	Range: 68 - 99 Mean: 79	Female: 14 Male:	Not reported	Not reported	No summary but interviewees mentioned as having declining health and mobility	Couples: 3 Widow(er)s: 11 Single: 1

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Chester-Evans 2019[93]	Residents	Not reported	Not reported	Not reported	Not reported	Average: 40.6% had diagnosed or suspected dementia	Not reported
Dutton 2021a*,[62] Dutton 2021b[63]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Evans 2017[128]	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Grimshaw 2017[124]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Gupta 2017[94]	Residents	Residents over 85: Site 1: 83% Site 2: 80%	Not reported	Not reported	Not reported	Not reported	Not reported
Halloran 2017[95]	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Hillcoat-Nallétamby & Sardani 2019[96]	Participants	Range: 56 – 93 Average: 76.5	Female: 9 Male: 9	Not reported	Not reported	Disabled: 17	In a couple at the time of interview: 5
Holland 2010[97]	Participants	Range: 45-79 (apart from one group, which was all over 80) Average: 60	Female: 72 Male: 33	Not reported	Jewish	Not reported	Not reported
Kneale 2011,*[19] Kneale 2013[30]	Residents	Mean: Retirement Security	Retirement Security Female: 71%	Not reported	Not reported	Retirement Security 2.5% received Disability Living Allowance (mobility),	Couple household Retirement Security 27.9%

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
		79.2 ExtraCare Charitable Trust 75.8 Audley Retirement 79.9	Male: 29% ExtraCare Charitable Trust Female: 65.9% Male: 34.1% Audley Retirement Female: 72.5% Male: 27.5%			2.6% received Disability Living Allowance (care); 46.8% received Attendance Allowance ExtraCare Charitable Trust Support needs on moving in: None 67.2%, very low to moderate 24.8%, high to very high 8.1% Audley Retirement Required care on arrival 27.5%, health conditions included cardiac problems, dementia, stroke, Parkinson's, osteoporosis and mental health problems	ExtraCare Charitable Trust 36.1% Audley Retirement 28.7%
Lewis 2015a[125]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lipman 2015,*[77] Lipman 2017[78]	Residents	Not reported	Not reported	Not reported	Not reported	Not reported	3 housing associations provided specifically for BME tenants

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
							(e.g. Chinese, Somali, Afro-Caribbean)
Mansfield 2020[122]	Participants	Range: 64 - 82	Female: 6 Male: 1	Not reported	Not reported	No specific health conditions: 5 Osteoarthritis, angina and cellulitis: 1 Ischemic heart disease, under-active thyroid, depression and arthritis: 1	Not reported
Poyner 2017[98]	Participants	Not reported	Female: 13 Male: 4	Not reported	Not reported	Not reported	No summary reported (but of 3 paired interviews, 2 were married couples and 1 was cohabiting friends; of the 7 caregiver interviews, 6 were in a relationship and 1 was a friend of the person they cared for)
Robinson 2023[113]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sattar 2021[126]	Participants (2 activities: (i) participatory appraisals	Range: 50 – 99 years	(i) Female: 19, male 9; (ii) Female: 16, male: 3	Not reported	Not reported	Most residents had co-morbidities and some had physical mobility issues	(i) all lived alone (ii) not reported

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
	and (ii) interviews, 5 residents took part in both activities)						
Verbeek 2019[116]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Wild 2018[105]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Report							
Barrett 2012[106]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Barrett 2016[101]	Residents	Not reported	Not reported	Not reported	Not reported	Some residents had diagnosed or undiagnosed dementia	Not reported
Batty 2017[102]	Residents	Under 55: 2% 55-64: 10% 65-74: 21% 75 – 84: 37% 85 or over: 30%	Female: 63% Male: 37%	Not reported	Not reported	54% had support needs, 50% had care needs, 19% had neither	Not reported
Beach 2015[115]	Participants	Under 55: 1 55-64 12 65-74 37 75-84 102 85 or over: 47	Female: 63% Male 37%	Not reported	Not reported	Declining health over time: 28% No change: 68% Improvement: 5% At Audley	Single: 7 Married/cohabiting: 109 Separated/divorced: 7 Widowed: 76

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
						Receiving health-related care: 4 Had ever received health-related care: 12	
Chakkalackal 13,[56] Chakkalackal 14[57]	Participants	Range: 67-97 Mean: 83	Female: 13 Male: 8	Not reported	Non-UK born: 8 Place of origin Caribbean: 5 Ireland: 1 South Africa: 1 Nigeria: 1 France: 1 India: 1	Physical mobility issues: 52% Hearing impairment: 24% Vision impairment: 14% Speech impairment: 10% Diagnosed/suspected dementia: Site A 40%, Site B not available, Site C 75% Medium/high dependency needs: Site A 73%, Site B not available, Site C 83%	Couples: 3 Widow(er)s: 11 Single: 1
Croucher 2010[114]	n/a	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Croucher 2012[100]	n/a	Not reported	Not reported	Not reported	Included in data collection and analysis "approaches that specifically addressed the needs of groups of older people who		

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
					have been identified as being marginalised on the basis of ethnicity, sexuality, or cognitive, physical and sensory impairment"		
Goswell 2014[89]	Participants	mean age 82 (range 54 - 96)	32 F / 22 M	Not reported	Not reported	Not reported	Not reported
Hastings 2020[112]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Healthwatch Salford 2018[108]	Participants	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Healthwatch Wokingham 2017[129]	Residents	Not reported	Not reported	Not reported	Not reported	No summary but health problems implied in the results	Not reported
Joint Improvement Partnership 2011[109]	Residents	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Mental Health Foundation 2018[119]	Participants	Quantitative Mean: 75 Qualitative Range: 50 - 90+ Appendix 1: 50-59 5%, 60-69 17%, 70-79 36%, 80-89 27%, < 90 16%	Quantitative Female: 11 Male: 2 Qualitative (baseline) Female: 24 Male: 21 M	Sexual orientation: straight 76%, homosexual 1%, bisexual 0%, other, 0%, prefer not to say 23%; Appendix 1: straight 80%, homosexual 1%, prefer not to say 18%	Quantitative White British: 77% Black African 15% Irish 8% Appendix 1: White British 54%, White Irish 7%, White Other 5%, Mixed White Black Caribbean 3%, Mixed White Asian 3%, African 5%, Caribbean 13%, Black	Appendix 1: Depression at baseline: 25% suspected, 14% diagnosed; anxiety 19% suspected and 15% diagnosed; rest not available; Number of care hours (baseline): <5 hrs 41%; 5-15 hrs 34%; 15-26 hrs 25%	Quantitative and qualitative Married 13% married at baseline and 3% at follow up Living arrangements: same-sex partnership: current = 0% and separated = 1%, no further details Appendix 1: single 31%, married 13%, separated/divorced

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
					African Caribbean Other 3%, Asian Indian 3%, Asian Chinese 1%, Other 2%		19%, widowed 35%, prefers not to say 1%
Nash 2013[92]	Participants	Not reported	ECH Female: 65 Male: 29 RC Female: 1416 Male: 617 Community Female: 3022 Male: 4944	Not reported	Not reported	Not reported	Not reported
Oxford Brookes University Institute of Public Care 2014[103]	Participants (ECH not reported separately)	<65: 2% 65-74: 31% 75-84: 42% 85-94: 25%	Female: 68 Male: 32	Not reported	Not reported	No help with activities of daily living before moving to the scheme: 98% 2 needed help climbing stairs and others had used a stair-lift, they didn't need this after the move but 3 needed help with dressing.	Alone: 65% With spouse/partner: 35%
Promatura 2022[99]	Participants	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Roleston 2021[117]	Residents	Not reported	Not reported	Not reported	Villages were in communities with	Not reported	Not reported

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
					predominantly White residents, with one village in a community of predominantly Black and Minority Ethnic residents		
Sitra 2014[127]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other							
Browne 2021[118]	Participants	Mean: 86	Female: 8 Male: 10	Not reported	Not reported	Suspected or actual mild cognitive impairment (MCI): 8 Depression and suspected MCI: 1 Alzheimer's disease: 4 Parkinson's with dementia: 1 Suspected dementia: 2 Suspected MCI and depression and blind: 1 Cognitive impairment due to childhood brain tumour: 1	Not reported
Burns 2014[120]	Participants	Up to 74: 5 75-84: 7 85+: 5	Female: 10 Male: 7	Not reported	White British/English: 16 Caribbean: 1	Some residents had physical disabilities or moved because of mobility problems or ill-health	Single: 13 Married or in a partnership: 3

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Carterwood 2014[104]	Residents	Mean: 80 (affordable rent) 82 (leasehold)	Not reported	Not reported	Not reported	Not reported	Not reported
Craddock 2014[130]	Participants	Range: 59 – 99 Mean: 80	Female: 62 Male: 21	Not reported	White 81, declined to answer 2 ('majority White British')	No summary reported but 68 participants were in receipt of care and support	Single: 9, Married/living as married: 18 Divorced/separated: 18 Widowed: 38
Moore 2021[123]	Participants	Median: 75	Female:83 Male: 48	Not reported	Not reported	Not reported	Not reported
Wales 2020,[87] Wales 2023[88]	Participants	Range: 56-98	Female: 9 Male: 1	Not reported	All White British	Most had some loss of mobility, dexterity or sensory losses	Not reported
Linked publications							
Blood 2012, Blood 2013, Pannell 2012							
Blood 2012*,[51] Blood 2013[52]	Participants	Average: 80 22 (47%) were 85+	Female: 2/3 Male: 1/3	Not reported	Black or minority ethnic background: 11%	Participants had an average of 2 health conditions each, 3 had 5 health conditions. Just under half were receiving formal personal care at least once a day.	Not reported

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Pannell 2012*[53]	Participants	Range: 51 – 101 Average: 84 62% were 85+	Female: 64% Male: 36%	Not reported	Black or minority ethnic background: 13%	Participants had an average of 2 health conditions each, and up to 5 health conditions. These included physical, sensory and cognitive impairment and progressive conditions. All needed support, 35 (45%) were receiving personal care at least once a day and/or regular night time assistance.	Not reported
Burholt and associated publications							
Burholt 2011,*[54] Phillips 2015[55] Hillcoat-Nalletamby 2014[27] Hillcoat-Nalletamby 2019[31]	Participants	Mean (SD): Quantitative 79.2 (9.8) Qualitative 81.5 (8.3)	Quantitative Female: 71% Male: 29% Qualitative Female: 79% Male: 21%	Not reported	Not reported	Not reported	Quantitative Single: 12% Married: 12% Divorced: 7% Widowed: 68% Qualitative Married: 17% Single, divorced or widowed: 83%

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
DICE							
Beach 2022[29]	Participants	Median age falls within the 75-79 yrs interval 78.35% were ≥70 yrs old	Female: 63.5% Male: 36.5%	Not reported	White: 96.06% Mixed ethnic group: 1.13% Black African: 0.70% Black Caribbean: 0.70% South Asian: 0.42% East/South-East Asian: 0.56% Other (not specified): 0.42%	85.5% had activity-limiting chronic conditions	Lived alone: 78.72%
Powell 2024[58]	Participants	50–60: 8 61–70: 27 71–80: 24 81+: 13	Female: 48 Male: 24	Heterosexual 57, Lesbian, gay, bi-sexual, trans-gender and other minority sexualities 15	White British: 61, Black/Asian/mixed heritage British: 2 Black or Asian other (e.g. South East/East Asian, African): 4 White other (e.g. Central/Eastern European, African, Australasia, etc.): 5	Disability/chronic illness: 41	Lived alone: 53

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Vickery 2023[59]	Participants	Range: 54 - 93	Female: 48 Male: 24	Heterosexual: 60 LGBTQ+: 12	White British: 61, Black/Asian/mixed heritage British: 2 Black or Asian other (e.g. South East/East Asian, African): 4 White other (e.g. Central/Eastern European, African, Australasia, etc.): 5	Declared disability and / or chronic illness: 41	Not reported
Willis 2022*[60]	Participants	Range 54 – 95 Mean: 72	Female: 64% Male: 36%	Heterosexual: 98%	White: 96%	Health: excellent/very good 18%, poor health 19% Chronic illness or disability: 78%	Lived alone (females): 69% Widowed: 43%
Willis 2023[61]	Participants	Range: 55-79	Female: 8 Male: 7	Gay: 10, Lesbian: 1, Bisexual: 1, Other: 3	White British: 5 White English: 4 Euro-African: 1 Mixed Ethnic: 1 White Australian: 1 White Welsh: 2 White South African: 1	Over half had disabilities	Cohabiting: 1
ECHO							
Cameron 2019[64]	Participants	Range: 54 – 97	Female: 41 Male: 10	Not reported	Not reported	All reported illness or chronic condition,	Widowed: 22 (44%) Divorced or

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Cameron et al. 2020[28] Cameron, Johnson & Evans 2020[25] Evans 2018[65]						including poor mobility and/or arthritis, mental illness, dementia, stroke, cancer, and/or heart problems. Did not receive care provision at time of first interview: 19	separated: 14 (28%) Single: 7 (14%) Married (living together): 8 (16%)
Johnson 2020[66]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
EVOLVE							
Barnes 2012[40]	Participants	Range: 60 – 96 Median: 75.5	Female: 17 Male: 15	Not reported	Not reported	No disability: 10 Wheelchair user: 12 Visually impaired: 2 Other medical conditions: 8	Single: 3 (9.4%) Married: 17 (53.1%) Divorced: 2 (6.3%) Widowed: 10 (31.2%)
Lewis 2013*[67]	Participants	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Lewis 2015b[41]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Orrell 2013[68]	Participants	Median Female: 80 Male: 79	Female: 106 (65%) Male: 57 (35%)	Not reported	Not reported	Wheelchair user: 67 (41%)	Single: 15 (9%) Married/cohabiting: 42 (26%) Divorced: 19 (12%) Widowed: 87 (53%)
FOCUS							

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Holland 2015*[69] Holland 2017[70] Holland 2019*[71] Holland 2021[72]	Participants	At follow-up (Holland 2019) Mean: Overall 75.06 ECH 75.89 Control 71.89	At follow-up (Holland 2019) Overall Female: 215 Male: 134 ECH Female: 159 Male: 103 Control Female: 56 Male: 31	Not reported	Not reported	At baseline: the control group had fewer chronic conditions, care needs and functional limitations and their self-perceived health was better. Cognitive function and emotional well-being (anxiety and depression) also differed between the groups.	Not reported
Shaw 2016[73]	Participants	Range: approx. 66 - 85 (not clearly reported)	Female: 3 Male: 3	Not reported	All White British	Various conditions (e.g. arthritis, macular degeneration, stroke, chronic pain, hypertension, chronic obstructive pulmonary disorder)	Married: 2 Divorced: 2 Widowed: 2
West 2017[74]	Participants (focus groups)	Range: 58-98	Female: 87 Male: 44	Not reported	Not reported	Not reported	Not reported
LARC							
Bernard 2012[75]	Participants	Range: 55 - 94	Interviews Female: 3	Not reported	Interviews	Not reported	Reported at the level of data

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
		Distribution provided at the level of data collection method	Male: 2 Diaries: Female: 8 Male: 3 Directives: Female: 31 Male: 10		English: 4 Other British: 1 Diaries English: 8 Irish: 1 Other white: 1 Unknown: 1 Directives English: 25 Other British: 6 Irish: 1 Other White: 1 Indian: 1 Unknown: 7		collection method, most participants lived alone or with one other person
Liddle 2014[76]	Residents	Not reported	Not reported	Not reported	Not reported	Some residents had mobility problems	Not reported
Matlabi 2011, Matlabi 2012							
Matlabi 2011[79] Matlabi 2012[80]	Participants	55-64: 14 65-74: 31 75-84: 69 85 and over 43 not stated: 3	Female: 105 Male: 55	Not reported	White (UK or other): 159, Asian or Asian British: 1	Wheelchair: 18 (11%) Wheelchair and other mobility aids: 48 (30%) Other mobility aids: 55 (34%) No mobility aids: 39 (25%) Health: Excellent 8, very good 27, good 64,	Marital status Widowed: 87 Married/cohabiting: 41 Divorced/separated: 17 Single: 15 Living arrangement Living alone: 118 With spouse: 35

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
						poor 56, very poor 3, not stated 2	With another person: 5 With spouse and other person: 2
Mayagoita 2015, Wright 2010							
Mayagoitia 2015[81]	Participants	Not reported	Not reported	Not reported	Not reported	Range of health conditions, not reported systematically	Shared with partner: 4
Wright 2010[21]	Participants	Not reported	Female: 76 Male: 20	Not reported	Not reported	Not reported	Not reported
PSSRU							
Bäumker 2010[82]	Participants	Range: 59 – 90 Mean: 76	Female:15 Male: 6	Not reported	No residents were recorded as being of non-White origin	Severe cognitive impairment: 1 Some cognitive impairment: 5 Barthel Index of ADL (mean): 17.1	Single: 3 Married / lived as married: 6 Widowed: 10 Unknown: 1
Bäumker 2011[23]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Bäumker 2012[83]	Residents	Mean: Villages with assessment 76.9 Villages without	Male (%): Villages with assessment 35.2% Villages without	Not reported	Not reported	Did not receive a care assessment: 368	Villages with assessment, villages without assessment, schemes (%) Single: 13.5, 11.2, 4.9

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
		assessment 75.5 Schemes: 77.5	assessment 35.7% Schemes 33.8%				Married/cohabiting: 27.9, 34.4, 55.9 Divorced/separated: 13.5, 12.0, 8.7 Widowed: 44.9, 42.4, 30.5 Missing: 4, 0, 1
Darton 2012[84]	Residents	Mean: 80.5	Female: 403 Male: 206	Not reported	White: 586 Non-white: 21 Missing: 2	Barthel Index of ADL (mean): 14.8 MDS CPS: intact 384, mild-moderate 86, severe 18, missing 28 Psychiatric conditions (including dementia and depression) and medical conditions (including cardiovascular disease, respiratory disease, and diabetes, sensory impairments)	Single 76; Married/cohabiting: 166 Divorced/separated: 59 Widowed: 268 Missing: 40
Twyford 2016, Twyford 2018							
Twyford 2016*[85]	n/a	n/a	n/a	n/a	n/a	n/a	Focus on dementia but all ECH members of Housing LIN approached, and all

Study	Participants / residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
							responders included as no specific dementia-focused register available
Twyford 2018*[86]	Participants	Range: 59-93 Mean: 78	Female: 6 Male: 5	Not reported	White British: 11	Dementia: 2	Single: 7 Couples: 4

*residents or potential residents of ECH; only other groups of study participants (e.g. those living in residential care or receiving care in the community) are not described.

**where available

Appendix 4: Results of critical appraisal of included studies

Table 9 Details of MMAT scores for each included primary study

Study	Design-specific criteria*				
Qualitative	**Criterion 1**	**Criterion 2**	**Criterion 3**	**Criterion 4**	**Criterion 5**
Atkinson 2023,[45] Oatley 2024[46]	yes	yes	yes	yes	yes
Barnes 2012[40]	yes	yes	yes	yes	yes
Barrett 2016[101]	yes	yes	unclear	yes	unclear
Bernard 2012[75]	yes	unclear	yes	yes	yes
Blood 2012,[51] Blood 2013[52]	yes	yes	unclear	yes	yes
Buckland 2020[107]	yes	yes	unclear	yes	yes
Burns 2014[120]	yes	yes	unclear	yes	yes
Cameron, Johnson & Evans 2020[25]	yes	yes	unclear	yes	yes
Cameron et al. 2020[28]	yes	yes	unclear	yes	yes
Cameron 2019[64]	yes	yes	yes	yes	yes
Chandler 2014[121]	yes	yes	yes	yes	yes
Croucher 2010[114]	yes	yes	unclear	yes	unclear
Croucher 2012[100]	yes	unclear	unclear	unclear	unclear
Evans 2018[65]	yes	yes	yes	yes	yes
Healthwatch Salford 2018[108]	no	unclear	unclear	unclear	unclear
Healthwatch Wokingham 2017[129]	yes	no	unclear	unclear	unclear
Hillcoat-Nalletamby 2014[27]	yes	yes	yes	yes	yes
Hillcoat-Nalletamby 2019[31]	yes	yes	yes	yes	yes
Hillcoat-Nallétamby & Sardani 2019[96]	yes	yes	yes	yes	yes
Holland 2010[97]	yes	yes	yes	no	yes
Johnson 2020[66]	yes	yes	yes	yes	yes
Lewis 2015a[125]	yes	yes	no	yes	yes
Lipman 2015,[77] Lipman 2017[78]	yes	unclear	no	yes	yes
Mansfield 2020[122]	yes	yes	yes	yes	yes
Pannell 2012[53]	yes	yes	unclear	yes	yes

Powell 2024[58]	yes	yes	unclear	yes	yes
Poyner 2017[98]	yes	yes	yes	yes	yes
Roleston 2019[117]	no	unclear	unclear	yes	unclear
Sattar 2021[126]	yes	yes	unclear	yes	unclear
Shaw 2016[73]	yes	yes	yes	yes	yes
Twyford 2018[86]	yes	yes	yes	yes	yes
Vickery 2023[59]	yes	yes	yes	yes	yes
Wales 2020,[87] Wales 2023[88]	yes	yes	yes	yes	yes
West 2017[74]	yes	yes	yes	yes	yes
Wild 2018[105]	yes	yes	unclear	yes	yes
Willis 2023[61]	yes	yes	yes	yes	yes
Wright 2010[21]	yes	yes	unclear	yes	yes
Randomised controlled trial	**Criterion 1**	**Criterion 2**	**Criterion 3**	**Criterion 4**	**Criterion 5**
Brooker 2011[90]	yes	yes	yes	no	yes
Quantitative non-randomised	**Criterion 1**	**Criterion 2**	**Criterion 3**	**Criterion 4**	**Criterion 5**
Bäumker 2010[82]	unclear	no	no	no	yes
Beach 2022[29]	unclear	yes	no	yes	yes
Callaghan 2014[91]	unclear	yes	yes	yes	yes
Darton 2012[84]	unclear	yes	no	no	yes
Goswell 2014[89]	no	yes	yes	no	yes
Holland 2017[70]	no	yes	no	no	yes
Holland 2019[71]	unclear	unclear	no	no	yes
Holland 2021[72]	no	yes	no	no	yes
Kneale 2011,[19] Kneale 2013[30]	unclear	yes	yes	yes	yes
Nash 2013[92]	no	yes	no	no	yes
Oxford Brookes University Institute of Public Care 2014[103]	no	unclear	unclear	no	yes
Quantitative descriptive	**Criterion 1**	**Criterion 2**	**Criterion 3**	**Criterion 4**	**Criterion 5**
Aitken 2019[32]	yes	no	yes	n/a	yes
Barrett 2012[106]	yes	no	unclear	unclear	yes
Barrett 2021,[49] Barrett 2023[50]	yes	unclear	yes	no	yes

Bäumker 2011,[23]Bäumker 2012[83]	unclear	unclear	yes	unclear	yes
Beach 2015[115]	no	no	yes	no	yes
Carterwood 2014[104]	unclear	unclear	unclear	unclear	unclear
Craddock 2014[130]	no	no	yes	no	yes
Dutton 2021a,[62] Dutton 2021b[63]	yes	no	no	no	no
Lewis 2013[67]	unclear	unclear	unclear	unclear	unclear
Matlabi 2011[79]	yes	unclear	yes	no	yes
Matlabi 2012[80]	yes	unclear	yes	no	yes
Moore 2021[123]	yes	unclear	yes	n/a	yes
Orrell 2013[68]	yes	unclear	yes	no	yes
ProMatura 2022[99]	unclear	unclear	unclear	Unclear	unclear
Twyford 2016[85]	yes	no	yes	no	yes
Mixed methods	**Criterion 1**	**Criterion 2**	**Criterion 3**	**Criterion 4**	**Criterion 5**
Barrett 2020a,[47] Barrett 2020b[48]	no	unclear	yes	no	unclear
Batty 2017[102]	no	yes	yes	yes	unclear
Browne 2021[118]	yes	no	no	yes	no
Burholt 2011,[54] Phillips 2015[55]	no	yes	unclear	yes	no
Chakkalackal 2013,[56] Chakkalackal 2014[57]	no	no	no	yes	no
Chester-Evans 2019[93]	no	no	no	no	unclear
Evans 2017[128]	yes	no	no	yes	no
Grimshaw 2017[124]	no	no	yes	yes	no
Gupta 2017[94]	no	no	yes	yes	no
Halloran 2017[95]	yes	yes	yes	yes	unclear
Holland 2015[69]	no	no	no	yes	no
Joint Improvement Partnership 2011[109]	no	yes	yes	yes	no
Lewis 2015b[41]	no	yes	yes	yes	unclear
Liddle 2014[76]	yes	yes	yes	yes	yes
Mayagoitia 2015[81]	no	yes	yes	yes	no
Mental Health Foundation 2018[119]	no	no	no	yes	no
Sitra 2014[127]	yes	yes	unclear	no	unclear

Verbeek 2019[116]	no	no	no	unclear	yes
Willis 2022[60]	no	yes	yes	yes	no

*Criterion for each study type:

Qualitative: 1.1. Is the qualitative approach appropriate to answer the research question? 1.2. Are the qualitative data collection methods adequate to address the research question? 1.3. Are the findings adequately derived from the data? 1.4. Is the interpretation of results sufficiently substantiated by data? 1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?

Randomised controlled trial: 2.1. Is randomisation appropriately performed? 2.2. Are the groups comparable at baseline? 2.3. Are there complete outcome data?2.4. Are outcome assessors blinded to the intervention provided? 2.5. Did the participants adhere to the assigned intervention?

Quantitative non-randomised 3.1. Are the participants representative of the target population? 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? 3.3. Are there complete outcome data? 3.4. Are the confounders accounted for in the design and analysis? 3.5. During the study period, is the intervention administered (or exposure occurred) as intended?

Quantitative descriptive 4.1. Is the sampling strategy relevant to address the research question? 4.2. Is the sample representative of the target population? 4.3. Are the measurements appropriate? 4.4. Is the risk of nonresponse bias low? 4.5. Is the statistical analysis appropriate to answer the research question?

Mixed methods 5.1. Is there an adequate rationale for using a mixed methods design to address the research question? 5.2. Are the different components of the study effectively integrated to answer the research question? 5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted? 5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? 5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?

Table 10 Details of AMSTAR 2 score for each included systematic review

Study	**AMSTAR 2 item***															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Coyle 2021[1] [10]	yes	no	yes	yes	yes	yes	partial yes	partial yes	yes	no	n/a	n/a	no	no	n/a	yes

Smith 2022[1] [11]	yes	yes	yes	yes	yes	yes	partial yes	partial yes	yes	no	n/a	n/a	yes	yes	n/a	yes

*AMSTAR 2 item:

1. Did the research questions and inclusion criteria for the review include the components of PICO?
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?
3. Did the review authors explain their selection of the study designs for inclusion in the review?
4. Did the review authors use a comprehensive literature search strategy?
5. Did the review authors perform study selection in duplicate?
6. Did the review authors perform data extraction in duplicate?
7. Did the review authors provide a list of excluded studies and justify the exclusions?
8. Did the review authors describe the included studies in adequate detail?
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?
10. Did the review authors report on the sources of funding for the studies included in the review?
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?