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Extra Care Housing in the United Kingdom: A Systematic Scoping Review

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ABSTRACT

Extra care housing (ECH) is a model of housing for older people where residents live in self-contained accommodation with flexible care and support available 24/7. Whilst ECH may help people live independently for longer, its provision also poses challenges. This scoping review aimed to summarise empirical research relating to ECH in the United Kingdom to inform commissioning of further research. Primary research on ECH published after 2010 was included. ASSIA, CINAHL, Medline and four further databases were searched in June 2024, along with relevant websites and citation-chasing. Two reviewers independently selected studies for inclusion. One reviewer conducted and a second reviewer verified data extraction. Data were tabulated and summarised narratively. Critical appraisal was conducted using the mixed-methods appraisal tool. Ninety-eight publications were included in the review. Qualitative studies had fewer methodological limitations than quantitative and mixed-methods studies. Many studies provided limited information on the characteristics of participants and the included ECH schemes. Studies reported effectiveness, costs, resident or staff experiences or other aspects (e.g., accessibility) of living in ECH. Most studies focused on moving into or living in ECH, with few examining whether and how older people leave ECH. There is a growing body of evidence supporting the provision of ECH 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 ECH. Specific research gaps include guidance on choosing the most appropriate housing option, best practice for supporting people with high care needs and helping them transition from ECH to another care setting, coordination between housing and care providers, managing diverse and evolving communities and including older people from social minority groups. Future studies should follow best practice guidelines and reporting standards.

1 | Introduction

As people get older, their health and social care needs tend to increase; higher rates of noncommunicable diseases are seen in older age groups [1], and older people are more likely to have multiple long-term health conditions [2, 3]. At the same time, most older people prefer not to move home as their care needs change.

A long-standing policy objective, in the United Kingdom and internationally, has been to enable 'ageing in place', allowing people to live independently for as long as possible without moving home [4]. 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. 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 United Kingdom [2]. However, only 9% of homes in the United Kingdom had four key accessibility features (e.g., step-

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free access) in 2018 [4] and half of homes that failed to meet basic decency criteria, as defined by the government, had a head of household who was aged over 55 years [5].

Even with adaptations, mainstream housing may not meet people's care needs as they age. Service-integrated housing covers a range of different housing types, such as supported living complexes and sheltered housing, 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 person households currently live in these types of specialist retirement housing in the United Kingdom but, with the ageing population, provision needs to expand to ensure a supply of housing suitable to meet future needs [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]. The provision of ECH in the United Kingdom has been increasing—the number of schemes in England was around 711 in 2005 [10] compared to 1729 in 2025 [11]. However, it is still far lower in the United Kingdom than in similar countries, with market research from 2015 finding that at least 5% of over 65 years live in housing with care settings in Australia and the United States compared to 0.6% of over 65 years in the United Kingdom [12]. The potential of ECH to enable healthy ageing has been recognised by the UK Government, which has supported its development through initiatives such as the Department of Health Extra Care Housing Fund, which ran between 2004 and 2010 [13] and the Department of Health 2013–2017 Care and Support Specialised Housing Fund [14].

1.1 | Defining ECH

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' ([15], 10) with key features including the following:

- 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 and lounge).
- Flexible and individualised 24-h care provided onsite including emergency assistance [16].

In addition to the absence of a single definition, there is uncertainty over the purpose of ECH, including whether it is intended for people anticipating future care needs, those with low levels of need or as an alternative to care homes [17, 18]. Whilst having residents with a mix of care needs is thought to be necessary to allow schemes to function effectively [19], this can be difficult to achieve [20]. 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 [17, 21].

Beyond the core features that characterise most ECH schemes, schemes differ in size, whether they are purpose-built or remodelled [22], the facilities provided and whether these facilities are accessible to the wider community and their geographical organisation (single-site, 'core and cluster' or geographically dispersed models) [17].

Provision of ECH is divided mainly between housing associations (i.e., government-regulated nonprofit organisations that provide social housing), local authorities and the private sector [23]. Over time, there has been a change in the balance of provision, with public sector development constrained by budget reductions, leading to some local authorities to encourage private sector investment [16].

In ECH, accommodation and care are contracted and paid for separately. As a result, residents may own, partly own or rent their accommodation, unlike people living in residential care homes [23]. Although housing and care may be provided by the same organisation within a scheme, this is not always the case. In some schemes, care is delivered by a separate care provider [14]. Residents may also arrange their own care as, regardless of whether their social care is publicly funded or self-funded, they are not obliged to use a specified provider.

1.2 | Existing Evidence on ECH

There has been research into the benefits of ECH. Recently, Atkinson et al. [21] 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.

A review published in 2006 that focused on general populations in ECH found that schemes in the United Kingdom can promote independence and provide social support, although these benefits are not experienced by all residents, and ECH does not necessarily offer a home for life [24]. Recent primary research, including the ECHO [19] and PSSRU evaluations [13], has further examined ECH and found evidence of benefits such as improved quality of life for residents and potential reductions in costs to the NHS [4].

Knowledge is needed to inform future research and policy on housing that meets the care and support needs of the United Kingdom's rapidly ageing population. This scoping review was commissioned by the NIHR HSDR Strategic Commissioning Group. Its aim was to identify, appraise and describe the available empirical evidence relating to ECH in the United Kingdom, in order to inform the commissioning of future research.

2 | Methods

In conducting the review, we followed best practice guidelines [25–27]. A protocol detailing inclusion criteria and methods for the review was developed and registered on Zenodo [28]. We report the results below according to the PRISMA Extension for Scoping Reviews [29]. The full report, to be published in the NIHR Journals Library, has a slightly wider scope and includes both primary studies and systematic reviews. In this paper, we exclude the two systematic reviews included in the full report and focus on primary studies to provide greater detail and granularity in the reporting and analysis of the empirical evidence. In addition, a separate paper drawing on this review and focussing

specifically on the definition and conceptualisation of ECH has been published elsewhere [30].

The eligibility criteria for inclusion in the review are detailed in Table 1.

2.1 | Search Methods and Sources

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 after 2010 (see justification in Table 1).

ASSIA, CINAHL, HMIC, Medline, PQDT, SPP and Web of Science (Supporting file 1) were searched on the 25th or 26th June 2024. We also searched relevant websites (e.g., Housing LIN) (Supporting file 2), for grey literature and, where possible, carried out forward and backward citation searching for all publications that met our inclusion criteria.

2.2 | Study Selection and Data Management

The inclusion criteria were piloted on a random sample of 100 citations. All citations identified by the searches were screened independently by two reviewers (SDB and ZZ), first at title and abstract level and then, if selected, at full text. Any disagreements were resolved through discussion and, if necessary, adjudication (by RA). The data extraction form was piloted in a small sample of studies. Data were extracted on type of publication, study characteristics, definition of ECH, description of participating ECH schemes, participant characteristics (including PROGRESS+ [31]) and findings and recommendations (Supporting file 3). For each study, one reviewer extracted the data with a second checking accuracy. EndNote 20 (Clarivate) and Microsoft Excel (Microsoft Corporation 2024) were used for screening, data extraction and analysis.

2.3 | Charting, Collating and Summarising the Data

We grouped and tabulated data according to study, participant and ECH characteristics. We then classified studies by focus, with categories developed thematically from study aims. We produced a narrative summary of the data, organised inductively based on the reported findings. Specifically, the structure reflects a recurring structure within the data, mapping the study findings onto the journey an older person may follow from (i) considering a move into ECH, to (ii) living in ECH and potentially (iii) moving on from ECH.

2.4 | Critical Appraisal

The methodological quality of the primary studies was assessed using the mixed-methods appraisal tool (MMAT) [32], a validated tool designed to appraise qualitative, quantitative and mixed-methods studies within a single review. The MMAT was selected due to the likely diversity of study designs among included studies indicated by the initial scoping searches. Although qualitative appraisal is not routinely undertaken in scoping reviews, we considered it necessary in this review to support the interpretation of research gaps, which were of particular interest to stakeholders and relate to both the quantity and quality of existing evidence [33]. The tool was piloted before use, and all primary studies were critically appraised independently by two reviewers (SDB and ZZ), with disagreements resolved through discussion.

2.5 | External Engagement

To ensure the review met the needs of a wide range of stakeholders [34], we consulted organisations involved in commissioning or providing ECH and ECH residents and staff (see Supporting file 4 for details).

3 | Results: Characteristics of Included Studies

An overview of the search and screening process is shown in Figure 1. Of the 96 primary studies included in the review, 86 were unique publications in terms of aims and methods and 70 reported on unique datasets. Further details on linked publications are provided in Supporting file 5, and a list of publications excluded at full text is provided in Supporting file 6.

3.1 | Summary of the Included Studies

Twenty-eight of the included studies were quantitative, 37 qualitative, 19 mixed methods and two were modelling studies (Table 2). Twenty-one quantitative and 24 qualitative studies were cross-sectional, and six quantitative and 13 qualitative studies were longitudinal. The length of follow-up in most qualitative longitudinal studies was between 1 and 2 years, with the DICE study taking place over 3 years [35–37] and the LARC study over 4 years [38]. The length of follow-up in quantitative studies ranged from immediately after residents move into ECH [39] to 60 months in the FOCUS study [40, 41] and 12 years in Kneale 2011 and 2013 [18, 42].

Most publications ($n = 45$) focused on the general experiences of older people living in ECH; 18 investigated the impact of ECH on residents' health and wellbeing (referred to thereafter as effectiveness studies) and 12 focused on costs. Twenty-seven studies had more than one focus (e.g., effectiveness and costs). Forty-four publications focused on other aspects of ECH (e.g., design and accessibility) (Figure 2).

Fifty-seven studies included older people as participants (32 of these as the only participants). Most of them were residents of ECH, although some studies focused on older people living in the community who might consider living in ECH. Of the 57 studies, one was an RCT [46] and nine quantitative and three mixed-methods studies had a comparative design. Five of the comparative studies compared residents of ECH to older people living in the community [18, 39, 42, 48, 101, 105]; two of these studies also included care home residents as an additional comparison group [48, 101]. Two studies included only care home residents as comparators [54, 125], one compared ECH residents to those living in retirement housing [95] and in one the residence of the comparison group was unclear [78] (Table 2). Other participants included staff ($n = 24$), external stakeholders ($n = 21$) such as housing providers, local authorities and architects and family members or informal carers ($n = 10$).

TABLE 1 | Inclusion and exclusion criteria.

	Include	Exclude
Focus/setting	Extra care housing is 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, are 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.	
Country	Studies conducted in the United Kingdom. Where studies include multiple countries, e.g., a systematic review, are included if they report the results from the United Kingdom separately.	Studies that are not conducted in the United Kingdom, or that do not report results from the United Kingdom separately.
Outcomes	Any outcome—effectiveness, cost-effectiveness and experience.	
Language	English.	
Study design	Primary research or evaluations if they had: • Clearly formulated research or evaluation question(s) • Used established research methods • Reported the methods and results in sufficient detail. All study designs—quantitative, qualitative and mixed-methods.	
Publication status	Peer-reviewed papers and grey literature.	

(Continues)

TABLE 1 | (Continued)

	Include	Exclude
Date	Studies published since 2010. This prespecified date was agreed with stakeholders and based on changes to the funding, demographic, housing design and policy landscape for ECH over time. It captures, for example, a policy change following the formation of the coalition government in 2010, and the resulting shift in the Department of Health funding from the Extra Care Housing Fund to the Care and Support Specialised Housing Fund, which had a greater private sector focus [13, 14]. Relevant conference abstracts published in 2022 or later if no full text publication is identified.	Studies published before 2010.

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.

3.2 | Characteristics of ECH

The characteristics of the included ECH schemes are provided in Table 3. Thirty studies did not report details on the location of participating scheme(s); of those that did, most included both urban and rural ECH schemes ($n = 20$), or urban ($n = 9$). The majority of the included ECH schemes were in England ($n = 30$), with fewer studies including schemes from Wales ($n = 7$), Scotland ($n = 4$) and Northern Ireland ($n = 2$); some studies included schemes from more than one country.

In studies that reported details on the ECH provider ($n = 40$), the majority ($n = 26$) focused on schemes run by nonprofit organisations. 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 per study ranged from 1 to 449, with a median of 8 (IQR 3–23). Whilst the number of 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 were mainly for people with dementia, with one study including a scheme specifically for people with sight loss [64]. Further description of participating schemes, such as whether they were adapted or purpose-built, and their communal facilities (e.g., café and hairdresser) were not reported consistently.

Most studies did not provide details of the tenure of residents ($n = 37$). Of those that did, most included schemes where residents could both rent or own their accommodation ($n = 27$), with only one study focussing solely on a private ownership scheme [87], and one on a rental only scheme [57].

3.3 | Characteristics of Study Participants and the Residents of the Included ECH

Few studies gave information on the characteristics of residents of the included ECH schemes ($n = 12$). Instead, most studies reported sociodemographic characteristics for study participants (residents or otherwise) ($n = 45$) (Table 4).

Age and gender of study participants were the characteristics most often reported by included studies, and 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 [44, 45, 47, 96, 97, 123, 127].

3.4 | Methodological Quality and Reporting of Included Evidence

The results from the quality appraisal are summarised in Table 5. Seventeen of the 37 qualitative studies met all methodological

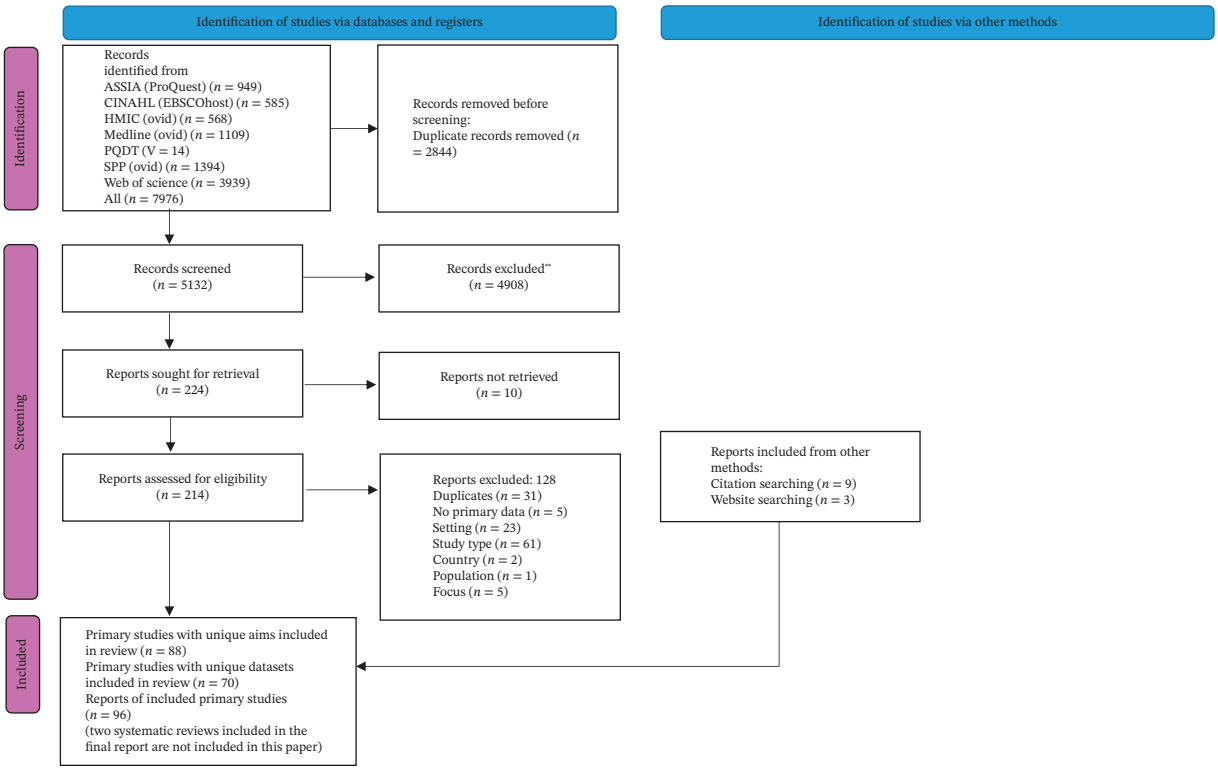

FIGURE 1 | PRISMA flow diagram of the screening process.

criteria; the most common limitations were providing insufficient detail on the analytical approach and a failure to demonstrate coherence between data sources, collection, analysis and interpretation of the findings. The single included RCT [46] met all but one criterion—blinding of outcome assessors—and additionally changed its primary outcome measure half-way through the study.

The remaining quantitative studies ($n = 26$) failed to meet two or more of the five MMAT methodological criteria; common limitations included a lack of evidence that samples were representative of the target population and inadequate consideration of confounders. Most of the 20 mixed-methods studies did not justify the use of a mixed-methods design and failed to demonstrate that their quantitative and/or qualitative components met appropriate quality criteria. Fifty-two of the included studies reported their source of funding.

4 | Results: Summary of Findings of the Included Studies

In the following sections, we provide brief summaries of the characteristics and findings of studies with a similar focus (Figure 2), and by stage of a resident's 'journey' through the ECH. Some studies are included in more than one section as they have more than one focus (e.g., effectiveness and experience).

4.1 | Moving Into ECH

4.1.1 | 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 face when developing ECH schemes [60, 63, 70, 74, 79, 82, 88, 93, 125]. Within this broader theme, studies had different foci (e.g., current use of ECH and projection for future demands) and scope (e.g., geographic areas and single schemes).

Analyses indicated that demand for ECH typically outstripped supply, and this gap was predicted to widen further given the range of challenges ECH developers and providers were facing without adequate state intervention. Some of these challenges were at scheme level (e.g., balancing the expectations and needs of diverse groups of residents) [74]; others related to the wider context of ECH schemes (e.g., the need for 'cultural' change in the way commissioners, providers and developers/contractors work together) [82]. Studies made recommendations including increasing stock, meeting the distinctly different needs and aspirations of older people by providing alternatives, managing complex communities, working closely with local communities, early involvement of all relevant stakeholders and more effective marketing and accurate information.

4.1.2 | Decision-Focused Studies

Nine studies focused on older people's decisions to move into ECH. These studies explored a range of topics, such as motivation, relative attractiveness and importance of different ECH features [43, 47, 56, 71, 124], the process through which such decisions are made [62, 100, 104] and the use of a 'moving on' service [55].

Although motivation for choosing ECH varied across participants reflecting different circumstances and preferences, some features such as safety and security were considered important by the majority. The process of deciding whether to move into ECH also varied in terms of knowledge and ways of identifying different options, degree of engagement (e.g., from deliberate to

TABLE 2 | Characteristics of the included studies.

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Papers						
Aitken et al. [43]	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 and Oatley [44], Oatley and Atkinson [45]	Qualitative cross-sectional	To explore the benefits and challenges of living in ECH for people with dementia and those that support them (professionals and family carers), including the advantages and disadvantages of different models of ECH.	Experiences	Schemes: 8 100 total 49 older people 5 family/carers 34 staff 12 external stakeholders	Understanding, experiences, advantages and disadvantages of participants' ECH scheme	There are a range of benefits for those with dementia living in ECH including owning their own home, having a safe, age friendly location with flexible support, social interaction and continuing to live as a couple. Challenges included availability of staff, flexible resourcing, loneliness and the advancing symptoms of dementia. Models differ in terms of their potential benefits and challenges within each model, but the limited diversity of stock limits choice. Multiple variables beyond the model of provision affect the lived experience, meaning that there is no universal model of optimal support. Rather, the approach and resources of each site is more important than the model of provision.
Brooker et al. [46]	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 and 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 the control group) but higher 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 and Tinker [47]	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.

(Continues)

TABLE 2 | (Continued)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Callaghan and Towers [48]	Quantitative, cross-sectional, comparative	To examine the association between control over daily life and the setting in which older people receive care and support (ECH, care homes or at home).	Effectiveness	Schemes: 15 618 older people (102 from ECH, 215 from care homes, 301 receiving care at home)	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 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 and Robinson [49]	Qualitative cross-sectional	To explore how experiences of living in a retirement village within the United Kingdom 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.
Chester-Evans et al. [50]	Mixed, cross-sectional, comparative	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 United Kingdom.	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 such as 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.
Evans et al. [51]	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 challenges to successful implementation of the approach and make recommendations for housing providers planning to develop this model.	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 and use of scheme facilities by the wider community	Most HWC schemes have a restaurant or café, communal lounge, garden, hairdresser, activity room and laundrette, while many also have 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 the integration of older people's housing, reduced isolation and increased cost effectiveness of local services through economies of scale and by maximising preventative approaches to health and wellbeing. Successful implementation of the model depends on a range of criteria including being located within or close to a residential area and having on-site facilities that are accessible to the public.
Grimshaw et al. [52]	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 the 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.

(Continues)

TABLE 2 | (Continued)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Gupta et al. [53]	Mixed, cross-sectional, comparative	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 United Kingdom.	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	Overheating is a current and prevalent risk in the case study schemes, yet currently little awareness or preparedness exists to implement suitable and long-term adaptation strategies (e.g., external shading). There was a perception, from designers to managers, that cold represents a bigger threat to older occupants' health than excessive heat. A lack of effective heat management was found across the case studies, including unwanted heat gains from the heating system, confusion in terms of responsibilities for managing indoor temperatures and conflicts between window opening and occupant safety.
Halloran [54]	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 relationship which supports it: social leveraging (observational study).	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 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 and focussing on pendants)	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 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 organisational priorities.
Hillcoat-Nallétamby and Sardani [55]	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 premove, decision/action and postdecision. 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.
Holland et al. [56]	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.
Lewis [57]	Qualitative cross-sectional	To consider how ideas about ageing inform those aspects of ECH design that relate to thermal comfort, using a sociotechnical 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	Imagined users were thought to be vulnerable to cold, at risk of fuel poverty and at risk of burns from hot surfaces and falls from high windows. Stereotypical user representations of older people are inscribed into the design of ECH schemes through the inclusion of building features such as communal heating, underfloor heating, restricted window opening and heated corridors. This raises questions about the suitability of ECH design for thermal comfort given that older people's thermal comfort needs can be highly diverse.

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TABLE 2 | (Continued)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Mansfield and Burton [58]	Qualitative cross-sectional	To explore individuals' day-today experiences of quality of life within an assisted living environment using photo-elicitation and interpretative phenomenological analysis.	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 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 et al. [59]	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	Benefits of extra care were identified as the opportunity for couples to remain living together for longer, the creation of supportive, dementia-friendly communities and a reduction in the strain experienced by care partners. Barriers centred on a sense of loss, stress and uncertainty. Living and caring at home was perceived as preferable to shared care. These findings cast doubt on the viability of extra care facilities designed for couples living with dementia, if extra care continues to be conceptualised and marketed as a preventative lifestyle choice.
Robinson and Wilson [60]	Modelling	To map the landscape of specialist housing provision for older people, the extent to which provision maps onto need and how this is situated within wider debates about the reimagining of housing systems driven by the neoliberal transformation in housing politics.	Other	n/a	Supply, demand, factors affecting supply 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)	The findings chart the uneven landscape of specialist housing provision in England and the extent to which this maps onto need, showing a national shortfall associated with variable local geography with the situation likely to deteriorate further without state intervention. Specialist housing is situated within wider debates about the reimagining of housing systems driven by the neoliberal transformation of housing politics and recognising that these processes can have uneven effects embedded in the nature of places.
Sattar et al. [61]	Qualitative cross-sectional	To explore residents' perceptions of a refurbishment programme of their homes (including perceptions of safety and their sense of belonging) and explore the extent to which this met the needs of different groups of residents.	Other	Schemes: 9 45 older people	(i) Lived experiences of refurbishment and (ii) included questions on their length of stay, why they chose to live in an ECH scheme, their involvement during the refurbishment proposal and whether they felt in control of the changes that were taking place to their homes	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 issues were reliant on staff to access them. Conservatories and sensory gardens were the most popular new areas.
Verbeek et al. [62]	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.

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TABLE 2 | (Continued)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Wild et al. [63]	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 community-oriented approach, with a wide range of embedded noncare 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 multigenerational.
Reports						
Barrett [64]	Quantitative cross-sectional	To determine 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, including comparing these among case study schemes and identifying how and how well the schemes have met the objectives for residents with dementia of person-centred care, developing staff knowledge and expertise in dementia, partnership working and joint working.	Other	Schemes: 7 14 staff	Policies, procedures and provisions for residents with dementia	Among the six schemes visited, there was little specialist provision for people with dementia in schemes with an integrated model of dementia care, apart from one scheme which had adopted the EOP. In contrast, the dementia specialist scheme provided good support for people with dementia of various forms and severity. A further important finding was the existence of negative attitudes and a prejudice against those with dementia, exhibited by other residents, which management were aware of and showed a desire to reduce.
Barrett et al. [65]	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.
Barrett et al. [66], Barrett et al. [67]	Mixed, cross-sectional, comparative	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 ($n = 14$) 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	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 a purpose was distraction or redirection; ECH were more likely to use design features and assistive technology than retirement homes. Knowing 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.

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Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Barrett et al. [68], Barrett et al. [69]	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	Policies, procedures and provisions for people living with dementia: entry and exit criteria, suitability of scheme for people living with dementia including physical environment, use of assistive technology and other aids, staff skills and training, challenges and successes and desired changes	Reports on the characteristics of housing-with-care schemes supporting residents with dementia. Providers reported that the main reasons for moving into housing-with-care were safety and security, while the principal benefits were increased social inclusion, social interaction and reduced loneliness. Key challenges included resident safety, high support needs, and limited dementia-specific provision, activities and services.
Batty et al. [70]	Mixed	To evaluate the ECH sector in Wales, (i) exploring where ECH fits in local authority strategies for meeting the future 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.	Costs; experiences; other	Schemes: Administrative data: 47 Survey: 35 Case studies: 6 Focus groups: 9 Surveys: 51 external stakeholders (surveys) Case studies (interviews): External stakeholders and staff, numbers not reported Focus groups: Over 80 older people	Motivations for, barriers to and experiences of developing ECH, future plans and demand. In ECH schemes, accommodation and services provided profile of residents and delivery costs. Cost efficiency. Opinions and experiences of ECH.	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 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 [71]	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-Realisation 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 community suggested that residents in retirement villages have a higher sense of control and quality of life and lower levels of loneliness.
Chakkalackal [72], Chakkalackal and Kalathil [73]	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 Wellbeing 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.
Croucher and Bevan [74]	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.

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Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Croucher and Bevan [75]	Qualitative cross-sectional	To (i) explore current approaches that promote supportive communities and help to minimise 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.	Other	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	Wider learning and transferability of organisational level approaches for developing supportive communities which minimise or manage frictions and tensions in housing with care	Fifteen approaches were investigated and grouped into three categories: organisationally driven, resident-led and approaches taken forward by external 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.
Dutton [76], Dutton [77]	Quantitative cross-sectional	To (i) understand how retirement village/extra care housing scheme operators and their residents have experienced and responded to the COVID-19 pandemic, (ii) identify measures taken to preserve staff and resident wellbeing 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.	Effectiveness; experiences; other	Schemes: 62 retirement villages, 387 ECH schemes 38 external stakeholders (ECH providers who completed the survey)	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), responses and barriers and facilitators	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 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.
Goswell and Macbeth [78]	Quantitative, longitudinal, 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 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.	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. Healthcare 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% 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 et al. [79]	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 5000 units of housing with care are needed: 3500 units of ECH for social rent and 1500 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 7000 nursing care beds.

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Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Healthwatch Salford [80]	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 the capacity of ECH to reduce indicators of loneliness and social isolation, (ii) capture and share areas of good practice and examples of where things are working and rated more highly by tenant, family and care staff, (iv) determine whether communication is being conducted effectively and (v) recommend areas for improvement.	Experiences; other	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, allowing flexibility to increase or decrease hours to meet the needs of each tenant, as assessed by social services. Relationships between care providers and ECH landlords were largely cooperative and supportive, with some areas for improvement (e.g., shared communication to tenants and shared working around elements such as activities and mealtimes). All care providers and landlords were going above and beyond contractual specification and funding, providing additional services, activities and support to tenants, as well as encouraging and supporting independence and choice appropriate to this model of independent living.
Healthwatch Wokingham [81]	Qualitative cross-sectional	To investigate whether ECH enables people to have a good quality of life—focussing specifically on 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.	Experiences; other	Not reported	Residents' experience of services both within and beyond the scheme, the social opportunities on offer and levels of resident engagement in the running of the scheme	The following themes were identified: the importance of good design, managing expectations of what ECH schemes can and cannot provide, the tension that exists 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 South East and Housing Learning Improvement Network [82]	Mixed	To undertake a review of ECH in the southeast of England and consider how the next phases of development are likely to be achieved.	Costs; other	Schemes: 2 (focus groups) 2 focus groups with older people (number not reported) External stakeholders (number not clearly reported)	Surveys/interviews: number and location of ECH, success factors and challenges, assessment processes for making business cases to develop schemes and views on 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	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. 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 the proposed ECH developments.
Kneale [18], Kneale and Smith [42]	Quantitative, longitudinal, comparative	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 residential care and change in healthcare status.	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 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.	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 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.

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Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Lipman and Manthorpe [83], Lipman and Manthorpe [84]	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 (focussing 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.
Mental Health Foundation [85]	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; other	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 Questions for 65+ of the Big Lottery Fund Wellbeing Evaluation), SWEMWBS, meaningful activity and focus groups addressing the aims of the evaluation	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 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 et al. [86]	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 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 [87]	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 a source of employment in the local area) and service use (e.g. hospital admissions and 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 wellbeing of owners in a variety of ways, with directly attributed total estimated savings in health and social care costs per development £1419 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 £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 £5000 per year for both types of scheme.

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Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Promatura [88]	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 and 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 et al. [89]	Qualitative cross-sectional	To evaluate a bereavement support service, examining: (i) how the service was organised and 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.	Experiences; other	Schemes: 4 Phase 1: 58 older people Phase 2: 43 older people (some participants may be the same across phases, not clearly reported)	Experiences	The new 'Community Model' approach trained 49 Bereavement Supporter volunteers and 18 residents, whilst over 390 staff received Cruse Loss and Bereavement 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. The 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 [90]	Mixed	To explore existing, emerging and changing job roles with the overlap between housing and social care, including an assessment of workforce development needs and the potential role of apprenticeships in meeting them.	Other	Schemes: n/a (i) not reported (ii) 108 ECH respondents to survey (iii) 24 managers in learning and development or human resources in ECH interviewed; 13 other stakeholders interviewed	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 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 [91]	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 (GDS), experiences and perspectives of the intervention	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 multisensory stimulation, meaningful activity and being outdoors. Collaborative working was important in offering the interventions.
Burns [92]	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.

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TABLE 2 | (Continued)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Carterwood [93]	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 long leasehold schemes, with the shorter moving distances to affordable schemes likely to be due to local authority allocations.
Craddock [94]	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 [95]	Quantitative cross-sectional	To provide insights into the interdependence of the micropreferences, mesopositions and macropriorities of older people living in affordable retirement housing and ECH in England.	Experiences	Schemes: 5 (ECH) and 11 (retirement housing) 68 older people (ECH) 157 older people (retirement housing)	Representations and descriptions of what ECH and retirement housing offer within nine domains: reassurance, autonomy, togetherness, accessibility, personal space, features and amenities, modernity, setting and shared facilities	Participant's preferences and perspectives were complex, personal and contextual. There were three groupings of ECH micropreferences: (i) engaged, independent and in control; (ii) care, companionship and peace of mind and (iii) security, mobility and amenity in own home. In terms of mesopositions, 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 macrolevel, 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 [96], Wales et al. [97]	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 Diaries: records of online social contacts for 2 weeks	Participants found that social internet use supported their offline social relationships, enabling them to maintain their familial roles and long-term friendships, after a transition to ECH. Additionally, dormant friendships were rekindled online and some new friendships developed. Participants found that their social internet use enabled them to re-establish a continuous sense of their own biography and regain some skills from their earlier years.
Linked publications						
Reference [98–100]						
Blood et al. [98], Blood [99]	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. 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.

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TABLE 2 | (Continued)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Pannell et al. [23]	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 a good value for money but not all.
Burholt and associated publications						
Burholt et al. [101], Phillips et al. [102]	Mixed, cross-sectional, comparative	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 and 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 ($n = 5$) and 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	The 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 comparison with costs from other care settings.
Hillcoat-Nalletamby [103]	Qualitative cross-sectional	To elaborate an interpretive framework of the concept of independence in relation to three residential settings (ECH, residential care and private home)	Experiences	Subsample of Burholt 2011 [101] 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 [104]	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 [101] 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 an individualised, linear and logical process.

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TABLE 2 | (Continued)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
DICE						
Beach et al. [105]	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 et al. [35]	Qualitative longitudinal	To develop a better understanding of how the availability, the absence and use of communal spaces impacts social connections with other residents within HWC schemes.	Experiences	Schemes: Interviews (cross-sectional): 9 Interviews (longitudinal): not clearly reported 72 older people 51 (cross-sectional) 21 (longitudinal)	Experience of how living environments and housing providers facilitate the inclusion and social connections of residents	Whilst the presence of communal shared spaces helps facilitate social connections and the development of friendships, full and equal access to these spaces remains challenging for residents with minority characteristics and/or physical impairments. Building designers need to ensure that they are complying with building regulations and the Equalities Act. The presence of on-site staff may also help to manage the impact of discriminatory attitudes.
Vickery et al. [36]	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.
Willis et al. [106]	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.

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TABLE 2 | (Continued)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Willis et al. [37]	Qualitative longitudinal	To explore how LGBT residents experience social and communal life in HWC schemes for older people where they occupy a minority status.	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 core themes were identified: (i) how LGBT residents navigate their outsider status in scheme life and how the intersection of disability and minority status amplifies this social location; (ii) the exclusionary practices exercised by other residents that reinforce boundaries of sexual and gender normalcy and (iii) the heightened importance of maintaining external social connections among LGBT residents.
ECHO						
Cameron et al. [107]	Qualitative longitudinal	To examine how the care and support needs of residents and their expectations of services developed over time and how these were influenced by changes in the organisation of their housing as well as in the make-up of the resident population, with a specific focus on exploring the use of longitudinal qualitative research as a research method.	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 and changes in needs/experiences over time	The findings highlight the complex ways in which some participants proactively managed the care and support they received. 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. Methodological challenges related to the inclusion of people living with dementia, as well as in terms of the management of boundaries in the relationships built up with individual participants.
Cameron et al. [108]	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 model to support residents to live independently.
Cameron et al. [109]	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 and with residents having higher needs and favours, with staff doing tasks for residents, often in their own time.
Evans et al. [110]	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, focussing on the views of residents and staff at a specialist dementia scheme.	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 reduced public spending is acknowledged.

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TABLE 2 | (Continued)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Johnson et al. [111]	Qualitative longitudinal	To explore the perspectives of older people living in four different ECH schemes in England, focussing on how ageing is experienced, negotiated and managed by these individuals within the context of the environments where they live.	Experiences	See [107, 108]	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 et al. [112]	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 cognitive changes that many people experience in old age (subthemes: accessibility and mobility, physical support, living units, service areas and external areas).
Lewis and Torrington [113]	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 [114]) 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 [115]	Mixed	To identify barriers to compliance with current UK guidance on daylighting in the design of ECH	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 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.

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Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Orrell et al. [114]	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 people living in these schemes.	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 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 et al. [116]	Mixed, longitudinal, comparative	Quantitative: to evaluate whether the ECH approach gives positive outcomes for healthy ageing which results in measurable health and social care cost savings. Qualitative: to understand residents' perspectives and experiences of daily life in ECH.	Effectiveness, costs and 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-month) 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	Survey: health (chronic conditions, Rockwood style frailty profile), well-being (depression and 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, 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 et al. [39]	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 changes in communication limitations and cognitive change predicted changes in recreational limitations. Change in anxiety and memory predicted change in depression.
Holland et al. [41]	Quantitative, longitudinal, comparative	Follow-up of Holland [116], with some changes to the methodology and including new cohort of participants.	Effectiveness; costs		See [116]	There were overall positive results with respect to personal health, psychological and social well-being and cost savings, in line with the findings of the original study.
Holland et al. [40]	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.

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Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Shaw et al. [117]	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 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 et al. [118]	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 and 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 poststructuralist discourse theoretic/Lacanian framework in relation to the third/fourth age.
LARC						
Bernard et al. [38]	Mixed	To investigate residents' attitudes to living and ageing in a mixed-tenure, purpose-built, age-segregated community (Denham Garden Village, DGV), focussing 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 et al. [119]	Mixed	To analyse the age-friendliness of a retirement community in England	Experiences	Schemes: 1 Surveys: 122 older people (2007), 156 older people (2009) 12 staff and external stakeholders Interviews: 16 external stakeholders Focus groups: 10 staff	Not clearly reported	Purpose-built retirement communities such as DGV have the potential to be age-friendly settings but this could be better facilitated by involving residents in a regular cycle of 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.

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TABLE 2 | (Continued)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Reference [120, 121]						
Matlabi et al. [120]	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) and 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 et al. [121]		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 towards home-based technological devices, the use of household technologies and 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 assessed in the designing, planning and supplying process.
Reference [20, 122]						
Mayagoitia et al. [122]	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 '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: a care-negative situation.
Wright et al. [20]	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	Senior staff involved in the development discussed the reasons for developing ECH in their areas, why they had chosen to remodel rather than build new and complexities of remodelling given that some tenants often remained on site during the process. Themes identified from the housing and care managers interviewed included the aims of ECH, the difficulties of encouraging a scheme social life and the pros and cons of a remodelled scheme. Schemes were idiosyncratic. Only a minority provided an optional communal cooked lunch. A common problem was high care staff turnover, with temporary staff often having little idea of what ECH should provide. Although the tenants interviewed were largely satisfied with the care, some were distressed by carers' attitudes. Assessment for an ECH place was based on the amount of paid care an older person had at home but this was unsound as care needs commonly declined in a scheme's improved physical environment. Building design, however, did not always take account of declining strength and poor mobility. Main scheme entrances were often difficult for some tenants to operate and were a barrier to going outside.
PSSRU						
Bäumker et al. [123]	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: healthcare costs, social care costs, accommodation costs, living expenses and personal expenses	The main finding of the study was that the overall cost per person increased after a move to extra care housing, but this increase was associated with improved social care outcomes and improvements in quality of life.

(Continues)

TABLE 2 | (Continued)

Study	Study design	Aim (as per paper)	Focus	Schemes and participants	Outcomes	Findings
Bäumker et al. [22]	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 et al. [124]	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 accommodation and services in ECH, expectations for ECH	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.
Darton et al. [125]	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.
Reference [126, 127]						
Twyford [126]	Quantitative cross-sectional	To establish a national picture of the variety and types of ECH schemes and how they support individuals with dementia.	Other	Schemes: 64	Background information about the ECH scheme, information about the model of ECH provided by the scheme and a self-reported rating of design features of the scheme that could support an individual living with dementia.	Most schemes were purpose built with varying numbers of individual properties or apartments. All reported that provision for people living with dementia was integrated throughout the whole scheme, but a theme that emerged throughout the study was the perceived tension of 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. There was a strong commitment from individual managers and schemes to do their best for people with dementia; majority reported that individuals with dementia were not explicitly excluded from taking up residence, but there was little conclusive evidence about what may cause someone with dementia to move out of ECH. Further research could focus on nonintegrated models of ECH for individuals with dementia, identify barriers to entry and the extent to which inappropriate triggers for leaving might be avoided through policy, practice and individual person-centred assessment and planning processes.
Twyford [127]	Qualitative cross-sectional	To explore the appropriateness of ECH provision for people with dementia, including the opportunities it offers, the barriers it creates and whether there is an affordable model of ECH which can be inclusive of people with dementia.	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 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.

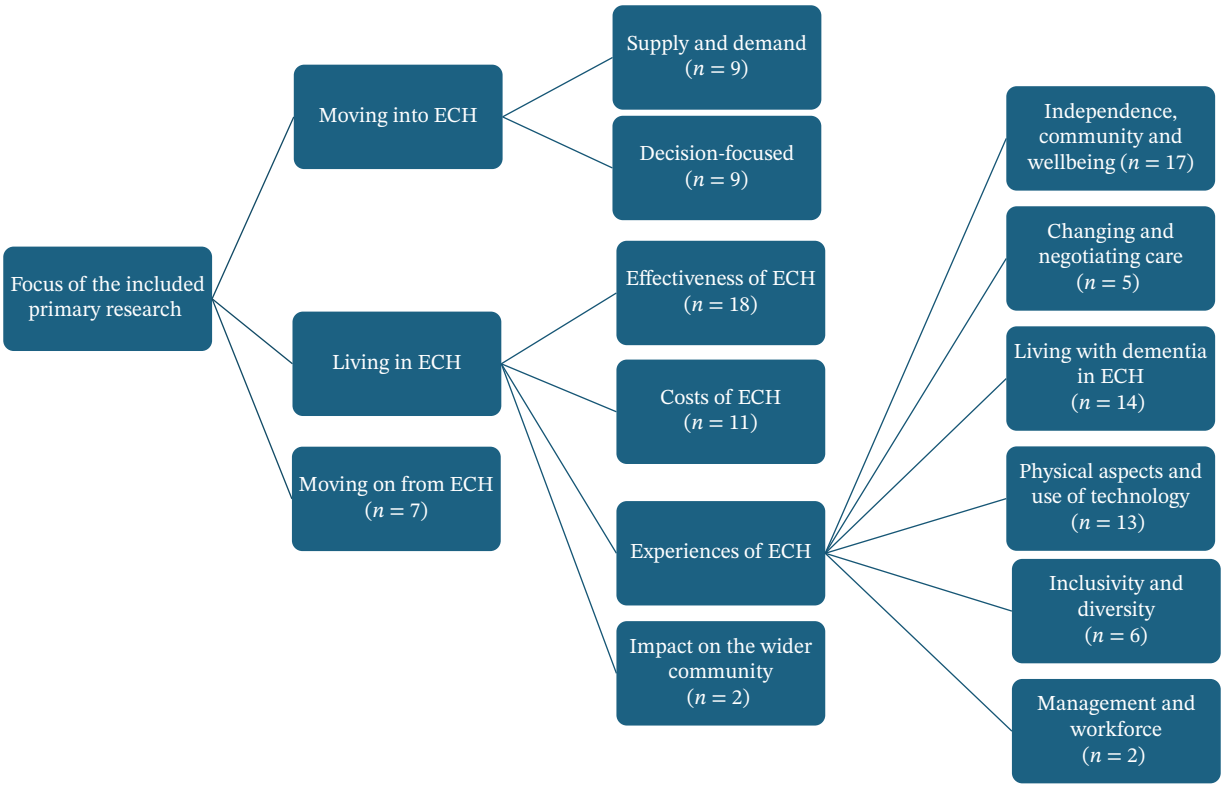

FIGURE 2 | Focus of included studies with number of studies in each category, organised according to older people's typical journey through ECH.

passive) and temporality (e.g., planning for the future or responding to a crisis).

4.2 | Living in ECH

4.2.1 | Impact of ECH on Residents' Health and Wellbeing

Seventeen publications aimed to quantify the impact of ECH, or specific interventions within ECH, on different aspects of residents' health and wellbeing (studies evaluating the impact of different interventions without measuring their effectiveness are included in the other sections). An RCT evaluated the effectiveness of the Enriched Opportunities Programme [46]; five other studies compared the effectiveness of ECH to another residential setting—of those, only the FOCUS study recruited controls prospectively [39–41, 116], while the rest used secondary (i.e., existing) data for comparison [18, 48, 101, 105].

Studies reported improvement in 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. However, comparing these outcomes to those in other settings or the general population produced mixed results. Studies investigating the effect of specific features of ECH (e.g., design of buildings and use of home-based technology) or specific interventions within the ECH (e.g., peer-support groups and the EOP) found a positive perceived impact on residents and staff, but the quantitative results were inconclusive.

4.2.2 | Cost Implications

Eleven studies investigated the cost implications of moving into or living in ECH. Some reported the development and operational costs of ECH [22, 70, 82], while others focused on health and social care costs and residents' living and personal expenses.

None of the studies conducted an incremental cost-effectiveness analysis (the standard method for comparing alternative care/residential arrangements). Some studies reported that health service costs decreased after moving into ECH [123] or when comparing ECH to controls living in the community [41, 78, 116]. However, social care costs for ECH residents increased in one study relative to their costs prior to moving into ECH [123], although according to another study, the increase was smaller for ECH residents than for the control group living in the community (76% vs. 90%, statistical significance not reported) [78].

A study in Wales comparing the costs of care delivery between residents living in their own homes, residential care and ECH found that the least expensive environment was people's own homes and the most expensive was residential care. But they also noted that residential care supports adults with higher care needs and includes housing costs which is different from ECH and community care [86].

The RCT reported a 42% decrease in hospital inpatient days in the Enriched Opportunities Programme (intervention) sites compared to 52% increase in the active control sites. However, the number of GP home visits increased in the intervention group and decreased in the control group, while the number of visits that residents made to their GP remained similar at baseline and 18 months for both groups [46].

4.2.3 | Experiences of Residents, Staff and Other Stakeholders

Seventeen publications discussed residents' experiences of living in ECH schemes highlighting two overarching topics:

TABLE 3 | Characteristics of the ECH schemes included in the studies.

Study	No. of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Papers						
Aitken et al. [43]	n/a	n/a	n/a	n/a	n/a	n/a
Atkinson and Oatley [44], Oatley and Atkinson [45]	8	Locations: Central England (4), Southeast England (1) and Northeast England (3) Rurality: town (2), metropolitan (2), city (2), large village (1), rural (1)	Not reported	All schemes included social housing units	33–260	Dementia care was integrated (3), specialist (3) and separated (3) Between them the included schemes had communal lounge, dining, laundry, shop, hobby room, garden, hairdresser, large hall, gym.
Brooker et al. [46]	10 Not reported	Not reported Not reported	Nonprofit 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 and Tinker [47]	5 Not reported	Warwickshire (1 scheme); Tower Hamlets, London (4 schemes) Not reported	Both 1 private provider (1 scheme); 3 housing associations (4 schemes)	Leaseholder (1 scheme); rental (4 schemes)	Not reported	Not summarised but commented on in terms of residents' perceptions
Callaghan and Towers [48]	15 Not reported	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 and Robinson [49]	2 Not reported	Southeast England Not reported	Not reported	Not reported	Not reported	Not reported
Chester-Evans et al. [50]	144 (50% ECH, surveys) 3 (interviews)	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
Evans et al. [51]	99 (surveys, majority ECH), 4 (case studies)	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 Both	Not reported	Both All schemes had mixed tenure, with 11 schemes offering units for rent at market rates, 62 units for social rent, 27 leasehold, 24 shared ownership and 8 assured tenancies.	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, computer access and a shop. In most these were open to the wider community.
Grimshaw et al. [52]	n/a	n/a	n/a	n/a	n/a	n/a

(Continues)

TABLE 3 | (Continued)

Study	No. of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Gupta et al. [53]	2	Southeast England (1 scheme), Southwest England (1 scheme) Suburban	Nonprofit	Not reported	Site 1: 50 Site 2: 60	Kitchen, lounge, sanitary areas
Halloran [54]	7	Not reported Not reported	Nonprofit Horizon Independent living (social landlord)	Not reported	25–50	Not reported
Hillcoat-Nallétamby and Sardani [55]	n/a	Wales Not reported	Nonprofit Housing Association	Not reported	Not reported	Not reported
Holland et al. [56]	n/a	Not reported Not reported	n/a	n/a	n/a	n/a
Lewis [57]	4	Not reported Not reported	Nonprofit Social housing providers	Rental	Not reported	Not reported
Mansfield and Burton [58]	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)
Poyner et al. [59]	1	South of England Not reported	Not reported	Not reported	52	Hairdressers, local shops, library and coffee shop
Robinson and Wilson [60]	n/a	England Both	Both	Both	n/a	n/a
Sattar et al. [61]	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 et al. [62]	n/a	England Urban	Not reported	Not reported	Not reported	Not reported

(Continues)

TABLE 3 | (Continued)

Study	No. of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Wild et al. [63]	1	Scotland Rural	Not reported	Not reported	Not reported	Not reported
Reports						
Barrett [64]	7	St Neots, Northampton, Rushden, Hammersmith London, Coventry, Birmingham, Moreton Merseyside Urban and suburban	Nonprofit 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, a computer/IT room with IT classes and green house for the gardening club.
Barrett et al. [65]	5	Not reported Both	Nonprofit Housing 21, Monmouthshire Housing Association, Belong and the ExtraCare Charitable Trust	Not reported	Not reported	Not reported
Barrett et al. [66], Barrett et al. [67]	Not clearly reported	Not reported Not reported	Survey: not reported Case studies: nonprofit, Housing 21	Not reported	Not reported	Not reported
Barrett [68], Barrett [69]	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
Batty et al. [70]	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 [71]	7	Yorkshire, Midlands, Kent and Denham Garden Village in Buckinghamshire Not reported	Both Audley (private), Anchor Trust (nonprofit)	Not reported	Not reported	Not reported

(Continues)

TABLE 3 | (Continued)

Study	No. of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Chakkalackal [72] Chakkalackal and Kalathil [73]	3	London Urban	Nonprofit Housing 21 (Sites A and C), organisation not specified (Site B)	Not reported	Not reported	Not reported
Croucher and Bevan [74]	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 and Bevan [75]	Stage 2–9 (7 ECH, 2 sheltered housing) Stage 3 - 3	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
Dutton [76], Dutton [77]	62 retirement villages, 387 ECH schemes	All main regions of England Not reported	Both Nonprofit (68%)	Both	Not reported	Not reported systematically
Goswell and Macbeth [78]	1	Blandford Forum, Dorset Suburban	Nonprofit Aster Group	Not reported	40	Not reported
Hastings et al. [79]	n/a	All 22 local authorities in Wales Not reported	Both	Both	Not reported	Not reported
Healthwatch Salford [80]	6	Salford Urban	Nonprofit City West Housing Trust (4), Retail Trust (1), St Vicent's Housing Association (Mosscare) (1)	Not reported	Not reported	Not reported
Healthwatch Wokingham [81]	3	Wokingham Borough Suburban	Nonprofit 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 South East and Housing Learning Improvement Network [82]	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.

(Continues)

TABLE 3 | (Continued)

Study	No. of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Kneale [18], Kneale and Smith [42]	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 (nonprofit), 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 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
Lipman and Manthorpe [83], Lipman and Manthorpe [84]	Not reported	Not reported Not reported	Nonprofit Housing Associations	Both Some housing associations offer both private (owner occupied or leasehold) and social housing (rented)	Not reported	Not reported
Mental Health Foundation [85]	Not clearly reported (19 implemented peer support groups)	Not reported Not reported	Nonprofit Housing 21 and Notting Hill Housing Trust	Not reported	Not reported	Not reported
Nash et al. [86]	Not reported	Swansea Not reported	Not reported	Not reported	Not reported	Not reported

(Continues)

TABLE 3 | (Continued)

Study	No. of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Oxford Brookes University Institute of Public Care [87]	10	The five English regions, Scotland and Wales Both	Profit McCarthy and Stone	Ownership	Not reported	Not reported
ProMatura [88]	Not reported	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
Roleston et al. [89]	4	Birmingham Urban	Nonprofit ExtraCare Charitable Trust	Not reported	Not reported	Not reported
Sitra [90]	n/a	n/a	n/a	n/a	n/a	n/a
Other						
Browne [91]	1	Bournville Gardens, Birmingham Urban	Nonprofit ExtraCare Charitable Trust	Not reported	Not reported	Not summarised, but facilities were open to the wider community
Burns [92]	1	Fleet, Hampshire Urban	Non-profit Sentinel Housing Association	Not reported	74	Range of communal facilities, including a 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 [93]	87	Schemes: East Midlands (7); East (11); London (7); Northwest (14); Southeast (13); Southwest (14); Wales (1); West Midlands (13); Yorkshire and Humber (7) Both	Not reported ARCO members	Both Affordable rent (27 schemes), leasehold (57 schemes) and mixed (3 schemes)	Not reported	Not reported
Craddock [94]	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, guest facilities, restaurant, community centre and laundry.

(Continues)

TABLE 3 | (Continued)

Study	No. of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Moore [95]	5	Suffolk, Cotswolds, a naval city, East Midlands, urban Northeast Both	Nonprofit 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 [96], Wales [97]	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						
Reference [98–100]						
Blood et al. [98], Blood [99]	19/20*	All 4 nations, most English regions Both	Both	Both Social rent (85%), leaseholders (15%)	Not reported	Not reported
Pannell et al. [23]	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 et al. [101], Phillips et al. [102]	Not reported	North Wales (Conwy, rural), South Wales (Cardiff, urban)	Not clearly reported (2 schemes were operated as joint ventures between a county council and a housing association)	Not reported	Not reported	Not reported
Hillcoat-Nalletamby [103], Hillcoat-Nalletamby [104]		Both				
DICE						
Beach et al. [105]	94	Not reported Not reported	Not reported	Both Rental (75.3%) rent, own (22.2%), shared ownership (2.5%)	Not reported	Not reported

(Continues)

TABLE 3 | (Continued)

Study	No. of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Powell et al. [35]	26	Not reported Both: urban (18 schemes), semirural (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) and 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 et al. [36]	24	Not reported Both	As above	Not reported	Not reported	Not reported
Willis et al. [106]	Survey: 95 Interviews (older people) - 26 Interviews (staff): 6	England and Wales Both	As above	Not reported	Not reported	Not reported
Willis et al. [37]	Not reported	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
ECHO Cameron et al. [107] Cameron et al. [108] Cameron et al. [109] Evans et al. [110] Johnson et al. [111]	4	England, a unitary authority (urban) and a county council two-tier authority (rural) Both	Nonprofit Sites A and B: social landlord Sites C and D: nonasset holding noncharitable 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						

(Continues)

TABLE 3 | (Continued)

Study	No. of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Barnes et al. [112]	5	England Not reported	Both Non-profit (4 schemes), private (1 scheme)	Both Participants: social rent (17), leasehold (7), joint ownership (7), intermediate care (1) Rent (4 schemes), leasehold and shared ownership (1 scheme)	4 small schemes (32–54 units) and one village (258 units)	Not reported in detail, but communal spaces available
Lewis and Torrington [113]	Survey: 11 Building survey: 23	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
Lewis [115]	23	Not reported Not reported	Not reported	Not reported	Not reported	Not reported
Orrell et al. [114]	23	North of England (11), Midlands (5), south of England (7) Both: urban (4), suburban (12), rural (7)	Both Nonprofit (20 schemes), private (3 schemes)	Both Social rent (128, 79%), leasehold/joint ownership (35, 21%)	30–246	Not reported
FOCUS						
Holland et al. [116] Holland et al. [39] Holland et al. [41] Holland et al. [40]	13 or 14 (at baseline), 19 (additional schemes added in Holland 2019 follow-up	Midlands Urban and suburban	Nonprofit 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 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.
Shaw et al. [117]	Not reported					
West et al. [118]	14					
LARC						
Bernard et al. [38]	1	Denham Garden Village, Buckinghamshire	Nonprofit 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 et al. [119]	1	Rural				
Reference [120, 121]						

(Continues)

TABLE 3 | (Continued)

Study	No. of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Matlabi et al. [120]		England				
Matlabi et al. [121]	23	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.
Reference [20, 122]						
Mayagoitia et al. [122]	10	England, northeast (1 scheme), northwest (1 scheme), southwest (1 scheme), southeast (3 schemes), London (1 scheme), east of England (3 schemes)	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.
Wright et al. [20]		Not reported				
PSSRU						
Bäumker et al. [123]	1	Bradford Urban		Both Rental (32 units), ownership (8 units), shared ownership (6 units)	46	Scheme had a range of communal facilities
Bäumker et al. [22]	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)	Nonprofit Local authorities with social services responsibility to worked with housing association partners to develop schemes through the Department of Health Extra Care Housing Funding Initiative (2004-06)	Both Rent only (7 schemes), rent along with leasehold and/or shared 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%	Total: 1468 Villages: 770, around ~250 per village Smaller schemes: 716, 35–75 per village	Schemes provided facilities for members of the community living outside the scheme as well as residents. Not reported in detail except in terms of proportion of space and costs (on average 42% of the floor area, ranging from 30% to 55%)
Bäumker et al. [124]	19					
Darton et al. [125]	19	Both				Not reported
Reference [126, 127]						
Twyford [126]	64	Birmingham (6), West Midlands (10), East Sussex (4), Kent (4), Northamptonshire (5), Staffordshire (6), other areas (29) Not reported	Not reported A number of small housing providers, one regional provider and three large national providers	Not reported	Ranged from small (40–50) to more than 150	Not reported

(Continues)

TABLE 3 | (Continued)

Study	No. of ECH	Location and rurality	Type of housing provider	Tenure	Capacity (units)	Facilities
Twyford [127]	2	East Midlands Not reported	Nonprofit 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 are reported in different publications.

independence, community and wellbeing in ECH and changing and negotiating care [36, 38, 47, 49, 58, 89, 92, 95, 100, 103, 108–111, 116–119].

Overall, the residents' and other stakeholders' experience of ECH and of specific interventions within ECH, such as bereavement support and dementia-focused interventions, was positive. They appreciated the opportunities provided by ECH (e.g., being able to live and make decisions, independently whilst having help at hand if needed). Residents also appreciated being part of a collective environment which provided opportunities for socialising, thus helping them to deal with isolation and loneliness. However, experiences were not universally positive, and studies identified a range of challenges. For instance, studies reported that residents sometimes had difficulties negotiating the care they needed in response to changing needs [98, 99, 107–110]; some experienced social exclusion and loneliness [38], sometimes linked to loss of connection with external social groups [117], others had concerns about the future, as they were getting older and needed more care and support which they might not be able to afford [100], or due to the changing nature of their own ECH scheme, with more residents with higher care needs moving in [108].

4.2.4 | Living With Dementia in ECH

The likelihood of developing dementia increases with age, and the onset of dementia is a common reason for older people to consider alternative housing and care options. The importance of this topic, together with the fact that most of the included studies focused on social care, is reflected in the relatively high number of studies ($n = 14$) identified as focussing on dementia, including the only RCT [46].

Three of the studies evaluated the effectiveness of, and experience with, specific interventions, such as the Enriched Opportunities Programme [46], peer-support groups [73] and nature-based activities [91]; one focused on residents with dementia from Black and ethnic minority communities [84] and one focused on 'walking with purpose' [67]. There was no conclusive evidence about the effectiveness of the three interventions, 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 found that none of the included schemes had fully integrated the three strands of housing services, dementia care and cultural or ethnicity-related needs and preferences.

The rest of the studies had a broader scope including decision makers' views regarding appropriate housing options for older people with dementia, exploring different 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 [45, 50, 62, 64, 65, 69, 110, 126, 127].

4.2.5 | Physical Aspects of and Use of Technology Within ECH Dwellings

Thirteen studies investigated the physical aspects of ECH dwellings and/or the use of technology within ECH schemes. They found that building not specifically designed for people with sight loss were not very good at supporting their needs.

Architects designing such schemes rarely undertook daylight factor calculations and lacked awareness of how their housing schemes measured up to current standards [113, 115]. Thermal comfort in ECH dwellings was also unsatisfactory and informed by stereotypes about ageing [53, 57].

Studies investigating the impact of ECH design on residents' quality of life reported that while making ECH buildings more accessible and comfortable was appreciated by all residents, access to specific areas (e.g., outdoor communal areas) was sometimes limited for people with impairments and older frail adults who depended on staff's support [122]. Positive association was found between use of home-based technology and quality of life [120], including internet use [96, 97], but ECH schemes often lacked modern home-based technology, such as telehealth facilities, electric window openers and property exit sensors [121]. The acceptance and use of assisted living technology was mediated by staff-resident relationships, highlighting the importance of human resource as part of the independent living services, and the risk that this might be overlooked in a time of transition to new technological models in the context of limited funding [54].

4.2.6 | Inclusivity and Diversity

Six papers reported on topics related to inclusivity and diversity. The DICE study ($n = 4$ papers) found 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." [106]. The study reported the experiences of residents from social minority groups, such as people with disabilities, LGBTQ+ people and those from Black and ethnic minority groups, identifying a range of interpersonal, organisational, physical and environmental factors that could help promote social inclusion in ECH schemes. The remaining two studies reported on current approaches to promote supportive communities focussing on tensions between individuals with and without high support needs [75] and on older people with dementia from Black and ethnic minority communities [84].

4.2.7 | Management and Workforce

Three studies examined workforce management in ECH schemes. Organising staff time around task-focused 'care runs' was experienced as frustrating and inefficient, failing to help staff meet scheduled times and limiting the provision of person-centred care [108]. A broader study examined existing and emerging job roles, including overlap between housing and social care, and identified workforce development needs [90]. The third study explored ECH operators' responses to the COVID-19 pandemic [76, 77].

4.2.8 | Impact on Wider Community

Two studies investigated ECH's impact beyond the scheme itself: one focused on schemes functioning as community hubs [51], while the other explored a scheme's broader community impact across its lifecycle [87].

4.3 | Moving on From ECH

Only one study explicitly examined whether and how residents leave ECH [18, 42], while six others considered ECH as a potential home for life within broader research questions [46, 100–102, 108, 119, 126]. Using event history models and propensity score matching to compare ECH residents with those receiving domiciliary care, Kneale [18] and Kneale and Smith [42] found a median length of stay in ECH was 6.5 years, varying by resident characteristics: men, older people and those with higher care needs were more likely to have shorter stays. After five years, 8.2% were expected to have moved to nursing or care homes, a lower rate than for the matched community sample, with ECH residents ≥ 80 years of age approximately half as likely to enter institutional care. The authors concluded that ECH can offer a home for life, but this depends on improved management of escalating care needs [18]. Other studies examined internal ECH factors affecting its capacity to provide a home for life and residents' concerns about moving to residential care as health deteriorated.

5 | Discussion

5.1 | Summary of Findings

This scoping review aimed to identify and characterise empirical research on ECH in the United Kingdom. Ninety-six publications were included: 37 qualitative, 28 quantitative, 19 mixed-methods and two modelling studies. Methodological quality and reporting was variable, with inconsistent detail on ECH scheme characteristics and resident and/or participant demographics.

In terms of focus, some studies investigated 'moving into ECH', focussing on supply and demand or the decision-making process leading to a move. The largest group focused on 'living in ECH', including impact on residents' health and wellbeing, lived experiences, costs for different stakeholders, impacts on the wider community and physical, technical and managerial aspects of ECH schemes. Only one study explicitly investigated 'moving on from ECH', although several others considered whether ECH could offer a home for life within a broader piece of research.

5.2 | Interpretation of the Evidence Base

This review identified a substantial and growing evidence base on ECH for older people from the United Kingdom, with studies addressing residents' experiences, health and wellbeing outcomes, costs and wider organisational and environmental factors. Taken together, the evidence suggests that ECH can play an important role as one of a range of housing with care options available to older people. However, the findings also highlight some limitations in the current research and caution against over-reliance on claims of effectiveness that are not supported by robust comparative data.

Qualitative studies consistently report perceived benefits of ECH, including greater independence, safety, social connection and reassurance arising from having care available on site. These findings align with the emphasis in recent national policy on housing that supports wellbeing, autonomy and community connection in later life [128]. By contrast, quantitative studies assessing outcomes or costs—particularly those comparing ECH with living in the community—produced mixed findings and were often limited by methodological weaknesses or incomplete reporting. As a result, while the review provides important insight into how ECH is experienced, it offers more limited

TABLE 4 | Characteristics of participants* and ECH residents** in the included studies.

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Papers							
Aitken [43]	Participants	Range: 53–89	Female: 28 Male: 17	Not reported	Not reported	Not reported	Live alone: 19 Live with spouse/ partner: 22
Atkinson and Oatley [44], Oatley and Atkinson [45]	Participants	Not reported	Female: 34 Male: 15	Not reported	Not reported	Dementia: 34	Not reported
Brooker et al. [46]	Participants (at baseline)	Mean (SD): EOP 81 (8.2) Control 82 (7.9)	Female: EOP 111 (77%), control 110 (74%) Male: EOP 33 (23%), control 39 (26%)	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%)
Buckland and Tinker [47]	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 and Towers [48]	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 and Robinson [49]	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
Chester-Evans et al. [50]	Residents	Not reported	Not reported	Not reported	Not reported	Average: 40.6% had diagnosed or suspected dementia	Not reported
Evans et al. [51]	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Grimshaw et al. [52]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Gupta et al. [53]	Residents	Residents over 85: Site 1: 83% Site 2: 80%	Not reported	Not reported	Not reported	Not reported	Not reported
Halloran [54]	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Hillcoat-Nallétamby and Sardani [55]	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 et al. [56]	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
Lewis [57]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mansfield and Burton [58]	Participants	Range: 64–82	Female: 6 Male: 1	Not reported	Not reported	No specific health conditions: 5 Osteoarthritis, angina and cellulitis: 1 Ischaemic heart disease, underactive thyroid, depression and arthritis: 1	Not reported
Poyner et al. [59]	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 and Wilson [60]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sattar et al. [61]	Participants (2 activities: (i) participatory appraisals and (ii) interviews, 5 residents took part in both activities)	Range: 50–99 years	(i) Female: 19, male 9; (ii) Female: 16, male: 3	Not reported	Not reported	Most residents had comorbidities and some had physical mobility issues	(i) All lived alone (ii) Not reported

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Verbeek et al. [62]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Wild et al. [63]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Reports							
Barrett [64]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Barrett et al. [65]	Residents	Not reported	Not reported	Not reported	Not reported	Some residents had diagnosed or undiagnosed dementia	Not reported
Barrett et al. [66], Barrett et al. [67]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Barrett [68], Barrett [69]	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.
Batty et al. [70]	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 [71]	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 Receiving health-related care: 4 Had ever received health-related care: 12	Single: 7 Married/cohabiting: 109 Separated/divorced: 7 Widowed: 76

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Chakkalackal [72] Chakkalackal and Kalathil [73]	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 and Site C 83%	Couples: 3 Widow(er)s: 11 Single: 1
Croucher and Bevan [74]	n/a	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Croucher and Bevan [75]	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 have been identified as being marginalised on the basis of ethnicity, sexuality, or cognitive, physical and sensory impairment'		
Dutton [76], Dutton [77]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Goswell and Macbeth [78]	Participants	Mean age 82 (range 54–96)	32 F/22 M	Not reported	Not reported	Not reported	Not reported
Hastings et al. [79]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Healthwatch Salford [80]	Participants	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Healthwatch Wokingham [81]	Residents	Not reported	Not reported	Not reported	Not reported	No summary but health problems implied in the results	Not reported
Joint Improvement Partnership South East and Housing Learning Improvement Network [82]	Residents	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Kneale [18], Kneale and Smith [42]	Residents	Mean: Retirement Security 79.2 ExtraCare Charitable Trust 75.8 Audley Retirement 79.9	Retirement Security Female: 71% Male: 29% ExtraCare Charitable Trust Female: 65.9% Male: 34.1% Audley Retirement Female: 72.5% Male: 27.5%	Not reported	Not reported	Retirement Security 2.5% received Disability Living Allowance (mobility), 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	Couple household Retirement Security 27.9% ExtraCare Charitable Trust 36.1% Audley Retirement 28.7%
Lipman and Manthorpe [83], Lipman and Manthorpe [84]	Residents	Not reported	Not reported	Not reported	Not reported	Not reported	Three housing associations provided specifically for BME tenants (e.g., Chinese, Somali, Afro-Caribbean)

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Mental Health Foundation [85]	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 African Caribbean Other 3%, Asian Indian 3%, Asian Chinese 1%, Other 2%	Appendix 1: Depression at baseline: 25% suspected, 14% diagnosed, anxiety 19% suspected and 15% diagnosed, rest not available, number of care hours (baseline): < 5 h 41%; 5–15 h 34%; 15–26 h 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 19%, widowed 35%, prefers not to say 1%
Nash et al. [86]	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 [87]	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% Two needed help climbing stairs and others had used a stair-lift, they did not need this after the move but 3 needed help with dressing.	Alone: 65% With spouse/partner: 35%
ProMatura [88]	Participants	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Roleston et al. [89]	Residents	Not reported	Not reported	Not reported	Villages were in communities with predominantly White residents, with one village in a community of predominantly Black and Minority Ethnic residents	Not reported	Not reported
Sitra [90]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other							
Browne [91]	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 [92]	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
Caterwood [93]	Residents	Mean: 80 (affordable rent) 82 (leasehold)	Not reported	Not reported	Not reported	Not reported	Not reported
Craddock [94]	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 [95]	Participants	Median: 75	Female:83 Male: 48	Not reported	Not reported	Not reported	Not reported

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Wales [96], Wales et al. [97]	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 *Reference* [98–100]							
Blood et al. [98], Blood [99]	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
Pannell et al. [23]	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 [101], Phillips [102] Hillcoat-Nalletamby [103] Hillcoat-Nalletamby [104]	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%

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
DICE							
Beach et al. [105]	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 et al. [35]	Participants	50–60: 8 61–70: 27 71–80: 24 81+: 13	Female: 48 Male: 24	Heterosexual 57, Lesbian, gay, bisexual, transgender 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 and Australasia): 5	Disability/chronic illness: 41	Lived alone: 53
Vickery et al. [36]	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 and Australasia): 5	Declared disability and/ or chronic illness: 41	Not reported
Willis et al. [106]	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%

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Willis et al. [37]	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 et al. [107] Cameron et al. [108] Cameron et al. [109] Evans et al. [110]	Participants	Range: 54–97	Female: 41 Male: 10	Not reported	Not reported	All reported illness or chronic condition, 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	Widowed: 22 (44%); divorced or separated: 14 (28%); single: 7 (14%) Married (living together): 8 (16%)
Johnson et al. [111]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
EVOLVE							
Barnes et al. [112]	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 and Torrington [113]	Participants	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Lewis [115]	n/a	n/a	n/a	n/a	n/a	n/a	n/a

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Orrell et al. [114]	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							
Holland et al. [116] Holland et al. [39] Holland et al. [41] Holland et al. [40]	Participants	At follow-up [41] Mean: Overall 75.06 ECH 75.89 Control 71.89	At follow-up [41] 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 et al. [117]	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, andchronic obstructive pulmonary disorder)	Married: 2 Divorced: 2 Widowed: 2
West [118]	Participants (focus groups)	Range: 58–98	Female: 87 Male: 44	Not reported	Not reported	Not reported	Not reported

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
LARC							
Bernard et al. [38]	Participants	Range: 55–94 Distribution provided at the level of data collection method	Interviews Female: 3 Male: 2 Diaries: Female: 8 Male: 3 Directives: Female: 31 Male: 10	Not reported	Interviews 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	Not reported	Reported at the level of data collection method, most participants lived alone or with one other person
Liddle et al. [119]	Residents	Not reported	Not reported	Not reported	Not reported	Some residents had mobility problems	Not reported
Reference [120, 121]							
Matlabi et al. [120] Matlabi et al. [121]	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, poor 56, very poor 3, not stated 2	Marital status Widowed: 87 Married/cohabiting: 41 Divorced/separated: 17 Single: 15 Living arrangement Living alone: 118 With spouse: 35 With another person: 5 With spouse and other person: 2
Reference [20, 122]							
Mayagoitia et al. [122]	Participants	Not reported	Not reported	Not reported	Not reported	Range of health conditions, not reported systematically	Shared with partner: 4

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Wright et al. [20]	Participants	Not reported	Female: 76 Male: 20	Not reported	Not reported	Not reported	Not reported
PSSRU							
Bäumker et al. [123]	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 et al. [22]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Bäumker et al. [124]	Residents	Mean: Villages with assessment 76.9 Villages without assessment 75.5 Schemes: 77.5	Male (%): Villages with assessment 35.2% Villages without assessment 35.7% Schemes 33.8%	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 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

(Continues)

TABLE 4 | (Continued)

Study	Participants/ residents	Age	Sex	LGBTQ+	Ethnicity	Health and disability	Marital status
Darton et al. [125]	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
Reference [126, 127]							
Twyford [126]	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 responders included as no specific dementia-focused register available
Twyford [127]	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.

TABLE 5 | Results from the methodological quality appraisal using the mixed-methods appraisal tool (MMAT).

Study	Design-specific criteria*				
	Criterion 1*	Criterion 2	Criterion 3	Criterion 4	Criterion 5
Qualitative					
Atkinson and Oatley [44], Oatley and Atkinson [45]	Yes	Yes	Yes	Yes	Yes
Barnes et al. [112]	Yes	Yes	Yes	Yes	Yes
Barrett et al. [65]	Yes	Yes	Unclear	Yes	Unclear
Bernard et al. [38]	Yes	Unclear	Yes	Yes	Yes
Blood et al. [98], Blood [99]	Yes	Yes	Unclear	Yes	Yes
Buckland and Tinker [47]	Yes	Yes	Unclear	Yes	Yes
Burns [92]	Yes	Yes	Unclear	Yes	Yes
Cameron et al. [108]	Yes	Yes	Unclear	Yes	Yes
Cameron et al. [109]	Yes	Yes	Unclear	Yes	Yes
Cameron [107]	Yes	Yes	Yes	Yes	Yes
Chandler and Robinson [49]	Yes	Yes	Yes	Yes	Yes
Croucher and Bevan [74]	Yes	Yes	Unclear	Yes	Unclear
Croucher and Bevan [75]	Yes	Unclear	Unclear	Unclear	Unclear
Evans et al. [110]	Yes	Yes	Yes	Yes	Yes
Healthwatch Salford [80]	No	Unclear	Unclear	Unclear	Unclear
Healthwatch Wokingham [81]	Yes	No	Unclear	Unclear	Unclear
Hillcoat-Nalletamby [103]	Yes	Yes	Yes	Yes	Yes
Hillcoat-Nalletamby [104]	Yes	Yes	Yes	Yes	Yes
Hillcoat-Nallétamby & Sardani [55]	Yes	Yes	Yes	Yes	Yes
Holland et al. [56]	Yes	Yes	Yes	No	Yes
Johnson et al. [111]	Yes	Yes	Yes	Yes	Yes
Lewis [57]	Yes	Yes	No	Yes	Yes
Lipman and Manthorpe [83], Lipman and Manthorpe [84]	Yes	Unclear	No	Yes	Yes
Mansfield and Burton [58]	Yes	Yes	Yes	Yes	Yes
Pannell et al. [23]	Yes	Yes	Unclear	Yes	Yes
Powell et al. [35]	Yes	Yes	Unclear	Yes	Yes
Poyner et al. [59]	Yes	Yes	Yes	Yes	Yes
Roleston et al. [89]	No	Unclear	Unclear	Yes	Unclear
Sattar et al. [61]	Yes	Yes	Unclear	Yes	Unclear
Shaw et al. [117]	Yes	Yes	Yes	Yes	Yes
Twyford [127]	Yes	Yes	Yes	Yes	Yes
Vickery et al. [36]	Yes	Yes	Yes	Yes	Yes
Wales [96], Wales et al. [97]	Yes	Yes	Yes	Yes	Yes
West et al. [118]	Yes	Yes	Yes	Yes	Yes
Wild et al. [63]	Yes	Yes	Unclear	Yes	Yes
Willis et al. [37]	Yes	Yes	Yes	Yes	Yes
Wright et al. [20]	Yes	Yes	Unclear	Yes	Yes
Randomised controlled trial					
Brooker et al. [46]	Yes	Yes	Yes	No	Yes
Quantitative nonrandomised					
Bäumker et al. [123]	Unclear	No	No	No	Yes
Beach et al. [105]	Unclear	Yes	No	Yes	Yes
Callaghan and Towers [48]	Unclear	Yes	Yes	Yes	Yes
Darton et al. [125]	Unclear	Yes	No	No	Yes
Goswell and Macbeth [78]	No	Yes	Yes	No	Yes
Holland et al. [39]	No	Yes	No	No	Yes
Holland et al. [41]	Unclear	Unclear	No	No	Yes

(Continues)

TABLE 5 | (Continued)

Study	Design-specific criteria*				
	Criterion 1*	Criterion 2	Criterion 3	Criterion 4	Criterion 5
Holland et al. [40]	No	Yes	No	No	Yes
Kneale [18], Kneale and Smith [42]	Unclear	Yes	Yes	Yes	Yes
Nash et al. [86]	No	Yes	No	No	Yes
Oxford Brookes University IPC [87]	No	Unclear	Unclear	No	Yes
Quantitative descriptive					
Aitken et al. [43]	Yes	No	Yes	N/a	Yes
Barrett [64]	Yes	No	Unclear	Unclear	Yes
Barrett [68], Barrett [69]	Yes	Unclear	Yes	No	Yes
Bäumker et al. [22], Bäumker et al. [124]	Unclear	Unclear	Yes	Unclear	Yes
Beach [71]	No	No	Yes	No	Yes
Caterwood [93]	Unclear	Unclear	Unclear	Unclear	Unclear
Craddock [94]	No	No	Yes	No	Yes
Dutton [76], Dutton [77]	Yes	No	No	No	No
Lewis and Torrington [113]	Unclear	Unclear	Unclear	Unclear	Unclear
Matlabi et al. [120]	Yes	Unclear	Yes	No	Yes
Matlabi et al. [121]	Yes	Unclear	Yes	No	Yes
Moore [95]	Yes	Unclear	Yes	N/a	Yes
Orrell et al. [114]	Yes	Unclear	Yes	No	Yes
ProMatura [88]	Unclear	Unclear	Unclear	Unclear	Unclear
Twyford [126]	Yes	No	Yes	No	Yes
Mixed methods					
Barrett [66], Barrett [67]	No	Unclear	Yes	No	Unclear
Batty et al. [70]	No	Yes	Yes	Yes	Unclear
Browne [91]	Yes	No	No	Yes	No
Burholt et al. [101], Phillips et al. [102]	No	Yes	Unclear	Yes	No
Chakkalackal [72], Chakkalackal and Kalathi [73]	No	No	No	Yes	No
Chester-Evans et al. [50]	No	No	No	No	Unclear
Evans et al. [51]	Yes	No	No	Yes	No
Grimshaw et al. [52]	No	No	Yes	Yes	No
Gupta et al. [53]	No	No	Yes	Yes	No
Halloran [54]	Yes	Yes	Yes	Yes	Unclear
Holland et al. [116]	No	No	No	Yes	No
Joint Improvement Partnership [82]	No	Yes	Yes	Yes	No
Lewis [115]	No	Yes	Yes	Yes	Unclear
Liddle et al. [119]	Yes	Yes	Yes	Yes	Yes
Mayagoitia et al. [122]	No	Yes	Yes	Yes	No
Mental Health Foundation [85]	No	No	No	Yes	No
Sitra [90]	Yes	Yes	Unclear	No	Unclear
Verbeek et al. [62]	No	No	No	Unclear	Yes
Willis et al. [106]	No	Yes	Yes	Yes	No

Note: 1. 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? 2. Quantitative randomised controlled trials. 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? 2.5Did the participants adhere to the assigned intervention? 3.Quantitative nonrandomized. 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? 4.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? 5. 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?

*MMAT design-specific criteria [32].

evidence on its effectiveness or cost-effectiveness relative to other settings.

The review findings should be interpreted in the context of a rapidly evolving housing and care environment. National policy now places growing emphasis on ensuring that housing for older people supports independence, wellbeing and community belonging, while also recognising the diversity of needs and preferences in later life. The Our Future Homes report reinforces the view that there is no single 'best' housing model for older age and calls instead for a wider range of age appropriate housing options, better information and planning and closer integration between housing, health and social care [128].

5.3 | Definitions, Expectations and Transparency

Variation in how ECH is defined, described and operationalised remains a persistent challenge. The heterogeneity observed across ECH schemes in the reviewed studies—including differences in size, facilities, staffing models, resident mix and housing and care arrangements—has important implications for both residents' experiences and the generalisability of research findings. The absence of consistently applied definitions or minimum standards in the literature—as discussed in detail in [30]—mirrors broader sector level issues identified in national policy. This has consequences both for research and for decision-making by older people, families, commissioners and professionals [4]. Studies included in the review highlight gaps in understanding what ECH does and does not offer, particularly regarding future care needs, costs and the extent to which schemes can support residents as needs increase.

These findings resonate with recent policy emphasis on improving clarity, transparency and consumer confidence within supported and specialist housing [129]. Clearer articulation of what ECH schemes provide—and their limitations—appears especially important in contexts where ECH is promoted as an alternative to residential care or as a long-term housing solution [79].

5.4 | Integration, Regulation and Future Development

The review also underlines the importance of organisational and governance factors in shaping how ECH operates in practice. Whilst there was little research focussing specifically on the management of ECH, studies did describe boundary issues between housing and care providers, workforce pressures and challenges in responding to increasing levels of need, indicating that effective integration cannot be assumed and requires active coordination. The Our Future Homes report highlights the need for more explicit articulation of roles, responsibilities and service offers within housing with care models, alongside improved local planning and oversight to support informed decisions and sustainable provision [128].

5.5 | Recommendations for Future Research

Although multiple studies reported positive impacts of living in ECH, the strengths of the evidence underpinning these claims is uneven. Quantitative studies, including those comparing outcomes for ECH residents with those living in other settings (e.g., community or care homes), were judged to be at high risk of bias or were insufficiently reported to allow full assessment. In contrast, much of the evidence supporting positive impacts derived from qualitative studies focussing on residents' and stakeholders' perceptions and experiences. While this qualitative evidence provides a valuable insight into how ECH is experienced, it cannot on its own establish the effectiveness or comparative advantages of ECH. Future research therefore needs to prioritise more robust study designs, improved reporting and greater transparency regarding methods, comparators, confounders and outcomes alongside continued qualitative enquiry and should be conducted in line with established best practice methodological and reporting guidelines.

Beyond this overarching methodological issue, several specific research gaps were identified:

- Moving on from ECH remains a major gap. Only one study explicitly examined whether and how residents leave ECH, despite the central policy assumption that ECH can offer a 'home for life'. Further research is needed to understand the circumstances in which residents move on, examining how transition decisions are made, whether exit criteria exist in practice and how transitions are planned and supported [126].
- Supporting residents with high and changing care needs is another research priority. Evidence suggests that more people are entering ECH with higher levels of need and that care needs often increase over time. However, there is limited research on how ECH schemes are organised and managed to support this shift, including models of care delivery, coordination between housing and care providers and the implications for workforce roles and skills. Comparative research examining different organisational and commissioning arrangements would be particularly valuable.
- Effectiveness, cost-effectiveness and implementation of interventions within ECH also requires further investigation. A range of interventions have been proposed or evaluated (e.g., dementia-specific programmes, peer support and inclusive community initiatives) but high-quality evidence on their effectiveness, sustainability and cost-effectiveness is sparse. Future studies should adopt rigorous designs and explicitly consider implementation and scalability.
- Inclusivity, diversity and community impact are also underresearched. Existing studies indicate that some residents, particularly those from social minority groups, may experience exclusion despite the overall benefits of ECH. More research is needed on how ECH schemes support diverse and inclusive communities, and on the broader role of ECH within local neighbourhoods, including potential benefits beyond scheme boundaries.

Finally, future research should consistently report key characteristics of ECH schemes and residents, including features relevant to equality, diversity and inclusion. Clearer and more consistent reporting would support interpretation, synthesis and assessment of transferability and help ensure that the findings are meaningful for policy and practice.

5.6 | Strengths and Limitations

By mapping and appraising the post-2010 UK evidence on ECH, this review provides a structured overview of what is known,

where evidence is strongest and where important gaps remain. While the breadth of included studies reflects the diversity of research interests in ECH, it also exposes weaknesses in study design, reporting and comparability. The discussion therefore highlights the need to interpret positive claims about ECH carefully and in context, recognising both the value of experiential evidence and the current limits of quantitative comparative research.

As noted above, there is variation in the terms used to describe ECH, which may include assisted living and (continuing care) retirement communities [4, 14]. We conducted comprehensive searches and where it was difficult to decide whether the scheme in 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 most ECH, their findings will still be relevant to the provision of ECH. An additional strength of the review is that the quality of included studies was systematically assessed, which is not a requirement for scoping reviews; an exception was the two modelling studies for which the MMAT tool was not suitable.

6 | Conclusions

This scoping review identifies a substantial and growing body of research on ECH for older people in the United Kingdom, addressing residents' experiences and outcomes, and the costs of schemes. Qualitative studies consistently report perceived benefits of ECH, including enhanced independence, safety and social connection. In contrast, quantitative and comparative studies provide more mixed findings, with variations in methodological quality and incomplete reporting, constraining conclusions about the effectiveness and cost-effectiveness of ECH relative to other housing and care options. Studies also document diversity among ECH schemes, with important implications for residents' experiences and the generalisability of research findings. A key finding from the review is the need for clarity around what ECH offers, both to enable older people to make informed decisions about their housing and care in later life and to ensure consistent provision of ECH.

The review highlights significant gaps in the evidence base. Despite policy expectations that ECH can provide a 'home for life', there is little empirical research on transitions out of ECH, how escalating care needs are managed over time or the circumstances under which ECH may no longer be appropriate. Evidence on supporting residents with high and changing care needs, including people living with dementia, remains limited, as does research into different organisational and management arrangements in ECH. Issues of inclusivity and equity are addressed unevenly, with some evidence that residents from social minority groups may experience exclusion despite the broader benefits of ECH.

Overall, this review suggests that ECH has the potential to play an important role within the spectrum of housing with care options for older people in the United Kingdom, but its effectiveness depends on scheme design, the organisation of housing and care services and local context. Future research should prioritise more robust and transparent study designs, improved reporting of scheme and resident characteristics and greater attention to longitudinal change, transitions and inclusion, to better inform policy, commissioning and practice.

Author Contributions

All authors have made a substantial contribution to the conception and design of the study. Jo Thompson Coon and Rob Anderson acquired the funding and contributed equally to the management of the project. Alison Bethel developed the search strategies and conducted the searches. Zhivko Zhelev and Siân de Bell conducted the screening, data extraction, quality appraisal, formal analysis and drafted the manuscript. The whole team contributed to the reviewing and editing of the manuscript.

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Ethics Statement

This project did not collect empirical data so no ethical approval was required.

Conflicts of Interest

Jo Thompson Coon was a member of the Member of the NIHR HTA General Board (2019–2024) and NIHR PRU Commissioning Panel (2022) and is currently a member of the NIHR RPSC Committee (2024 -). The other authors declare no conflicts of interest.

Data Availability Statement

No primary datasets were generated for this study. All data analysed were extracted from publicly available studies included in the review. All extracted data and data extraction tables are provided within the article and its supporting information.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Supporting Information.** Supporting File 1: Search strategy and databases: This file outlines the detailed search strategies and specific queries employed across various databases, including ASSIA via ProQuest, CINAHL via EBSCOhost, HMIC and SPP via Ovid, Medline via Ovid, PQDT Global via ProQuest and Web of Science databases. Supporting File 2: Website searches. This file lists the organisations, URLs, search dates and search terms/locations used for identifying relevant materials through website searches, noting the number of hits and included items. Supporting File 3: Data extraction form: This document details the specific categories and options utilised in the data extraction process for publications included in the review.

Supporting File 4: External engagement: This file describes the stakeholder engagement and Public and Patient Involvement and Engagement (PPIE) activities undertaken to inform the review. Supporting File 5: Linked publications: This file contains a table summarising the linked publications identified during the review, grouped by study name (where applicable) and listing the associated references. It provides a breakdown of the total count of 98 publications, 88 studies and 72 unique datasets identified. The file also includes the full reference list for the 56 publications cited within the linked publications table. Supporting File 6: Publications excluded at full-text screening: This file lists the publications excluded from the review after full-text screening, categorised by the reason for exclusion.