Title: The role of homecare in addressing food and drink care-related needs and supporting outcomes for older adults: an international scoping review

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Keywords: home care; long-term care; older adults; food; nutrition; quality of life

Abstract

Context: The contribution of homecare services to supporting older adults with their food and drink-related needs and improving outcomes has been relatively underexplored.

Objective: To identify the literature on the role of homecare in addressing older adults' food and drink care-related needs and improving outcomes.

Method: Scoping review. Systematic searches were conducted in four databases. Inclusion criteria were studies (any method) of food and drink-related needs and/or outcomes of older adults accessing homecare. Identified records were screened by title/abstract and, if eligible, full text against eligibility criteria. Selected records (n=22) were charted. Full texts were analysed thematically.

Findings: Three themes were identified: conceptualisation of food and drink outcomes/needs; the role of homecare in supporting older adults, including barriers and facilitators; and innovative service delivery models or interventions. The literature tended to focus on supporting nutrition and avoiding malnutrition. Some studies focussed on the role of person-centred homecare in improving older people's quality of life, by considering the social, personal, and cultural or religious aspects of food and drink. Barriers to delivery of high-quality care by homecare workers included short visits, lack of training, and poor communication with family and healthcare professionals. Innovative interventions or service delivery models did not always consider the actual or potential role of homecare.

Limitations: Diverse definitions of homecare, internationally, were a challenge to identifying literature and drawing conclusions.

Implications: Further research is needed on the role of homecare in supporting older adults with their food and drink needs, especially in designing and implementing innovative interventions and models of service delivery.

Introduction

Long-term care (LTC) services at home play a vital role in supporting older people to live independently and improve their functional status and quality of life (QoL) [1]. A commonly used model of home-based LTC is homecare (also known as domiciliary care or help at home), which refers to non-medical or clinical care and support delivered by paid care workers in people's homes, through regular visits of varying duration and interval, based on the person's needs. This care and support includes personal care (e.g., help to wash, dress), help with daily activities and social or emotional support. Homecare services can provide food and drink-related care, which refers to support with obtaining, selecting, preparing and consuming food or drink, in a way that has regard for the person's basic nutrition and hydration, and their personal, social or cultural preferences, choice, autonomy and dignity. Long-term care systems, internationally, differ by their policy, regulatory and practice frameworks, funding, organisation and delivery, which affects how homecare is organised and delivered. However, homecare is typically a part of LTC systems' response to addressing the food and drink care-related needs of older people, living at home. For example, US state-funded community nutrition services combine homecare with at-home meals delivery services or communal meals, to improve older people's quality of life (QoL) and to prevent malnutrition and associated hospitalisation [2,3], and a combination of in-home help and delivered meals is also offered in Sweden, as part of their public welfare provision [4].

Definitions of care-related *needs* and the *outcomes* of food and drink care can vary, partly influenced by the policy, legislative and practice contexts that affect homecare, internationally. Broadly, these can be defined in terms of the person's *QoL* or their *functional status* (e.g., activities of daily living (ADLs), cognitive status) [1]. When applying a definition based on QoL, *needs* refer to the detrimental effect on a person's QoL. *Outcomes* are understood as the impact of care and support on the person's QoL [5,6]. With specific regard to food and drink *outcomes*, for example, these relate to how social, personal, cultural and religious preferences or dietary requirements are considered during care delivery. It can also refer to whether people enjoy mealtimes and do not feel rushed [7] and the effect of how care is delivered on the person's sense-of-self and dignity [8]. Such a definition of needs and outcomes framed around QoL is found in the English Care Act (2014) and its regulations [5].

In other LTC systems and, at times, in England, however, *needs* can be defined instead in terms of *functional status*, like the ability to prepare and consume food or drink. When applying a definition based on functional status, *outcomes* can be understood in terms of the process of task delivery to address functional deficits, which prevent health deterioration (e.g., assistance with preparing meals and consume food, which reduces the risk of malnutrition and subsequent hospitalisation). An appreciation of this perspective is important, because malnutrition and dehydration are major causes of health deterioration and mortality amongst older adults living at home, even in countries with well-developed welfare and LTC systems [9]. Older adults accessing homecare may be at higher risk of malnutrition and dehydration due to care-related needs (e.g. reduced mobility, loss of dexterity or cognitive issues) that affect their ability to purchase, transport and prepare food, remember or feel motivated to eat or drink, or to eat or drink without help [10,11].

Homecare can provide support and assistance with eating and drinking (functional needs/outcomes), in a way that has regard to personal, social and cultural or religious preferences, autonomy and dignity (QoL needs/outcomes) [4,12,13]. However, the particular contribution of homecare to addressing older adults' food and drink-related needs and improving their outcomes, broadly defined, in terms of QoL or functional status, has been relatively underexplored in applied health and care research. In light of this, this study seeks to identify what is known about this topic in the existing research literature, through a scoping review, to better understand any gaps and directions for future research.

This scoping literature review was conducted as part of a wider project on the role of homecare in addressing the food and drink-related needs and supporting outcomes of older adults living at home, which was identified as a priority topic for research with a community of practice (CoP) in South East England [14]. We undertook a scoping literature review to address the research question: *what is known about the role of homecare in supporting older adults' food and drink care-related needs and improving their care-related outcomes*? As there are different definitions of care-

related needs and outcomes, as briefly outlined above, we also aimed to understand how they were defined in the literature and how this affected the framing of the topic in the literature. We also considered any significant gaps in the evidence base that may inform and guide future research.

Methods

This study applied a scoping review of international research literature. Scoping reviews are suited to 'mapping' literature in a specified area. They apply broad research questions ('what is known about…'), and are able to flexibly consider peer review publications and grey literature together. Scoping reviews typically include studies that apply different designs and methods, and do not apply quality assessment to guide inclusion/exclusion [15–18]. This method aligns with our specific aim of understanding and synthesising the literature on the role of homecare in addressing the food and drink-related needs and supporting outcomes of older adults, which we know is a relatively underexplored topic. In this study, we used the Arksey and O'Malley five-step framework for scoping reviews of (1) identifying the research question; (2) identifying relevant studies; (3) study selection; (4) data extraction (charting); and (5) summarising and reporting [15]. We also applied the PRISMA-SCR reporting checklist (see *supplementary file*).

Identifying the research question

The research question, its rationale and purpose is outlined in the Introduction. The research question was refined iteratively through discussion between the research team, public patient involvement (PPI) advisors and project advisory group (PAG). In this process, we defined the concepts of 'homecare' and 'food and drink-related care', 'needs' and 'outcomes' (as outlined in the Introduction), to inform the search strategy [16,18].

Identifying relevant studies

The research question and purpose guided the development of the search strategy [16]. Pilot searches were conducted to explore different combinations of search terms to best capture relevant literature. The search strategy was developed and refined, iteratively, based on advice and feedback from the research team and project advisory group. Based on the pilot searches and further refinement of the searches, we applied a range of terms to capture homecare services from the international literature, especially given the international variation in terminology, as well as studies related to food or drink needs and/or outcomes, broadly defined (see *supplementary appendix* for the full search terms).

Searches were conducted in four databases, which were selected for their complementary breadth of coverage of published academic research and grey literature. This was important as the scoping review topic was likely to bridge across various academic disciplines and areas. Web of Science (Science Citation Index Expanded database) was selected to broadly cover literature published in the sciences and social sciences, Psycinfo to cover social, behavioural, and health sciences, SCIE Online to capture social care-related (including policy) research briefings, reports, government documents, journal articles and websites, and ProQuest Politics Collection for other grey literature.

Since scoping reviews are designed to be broad and comprehensive, we sought to limit restrictions to our search strategy [16]. No study design restrictions or quality standards were applied, as is typical in scoping reviews to promote comprehensiveness, especially where the purpose is to map and understand the extent of literature [16,18]. However, we applied date restriction to records, only including those published from 2000 onwards. This was to identify material most relevant to the purpose of the scoping review, i.e., to inform future directions in applied research, for which evidence published over the last 25 years is more likely to be relevant to current or emerging contexts. Where it was not possible to restrict the search by date within the database, records published before 2000 were removed manually after the search. We also limited our inclusion criteria to reports of studies that generated novel generalizable knowledge and insights, whether reported in academic papers or grey literature, since our focus was on what is known about the topic of study based on research evidence, rather than to survey, map or analyse policy or practice guidelines related to the topic.

The searches were conducted on 9 and 10 November 2022, with supplementary searches conducted on 30 January 2024 to identify any literature published since these original searches.

Item selection

Item selection applied the following inclusion criteria (see also, Table 1): (1) published articles, reports or grey literature that reported studies that generated new knowledge, based on original research, (2) involving older adults, aged 65 or over, accessing homecare, and that (3) considered their food and drink-related needs or outcomes. Homecare (also known as home support, help-at-home, domiciliary care) was defined as long-term care and support provided by paid care workers visiting the person's own home. This included publicly funded and independent care provision, whether by for-profit or not-for-profit homecare providers. Studies of community healthcare delivered in people's homes or of in-home or community meals (without homecare support) were excluded. We also excluded other forms of non-residential community-based care (e.g., 24/7 live-in care, day centres, supported living) and residential or nursing care.

Table 1. Inclusion/exclusion criteria

Inclusion	**Exclusion**
Published peer review **journal articles** or **grey literature** (e.g., reports, working papers) that reports original research / novel generalizable knowledge or insights from research.	Grey literature that does not report original research / novel generalizable knowledge or insights from research.
Older adults, aged 65 years or over	Children and young people; Adults, aged 18-64 years.
Accessing **homecare services** (also known as e.g., home support, help-at-home, domiciliary care). This is defined as long-term care and support provided by paid care workers visiting the person's own home. This includes publicly funded and independent care provision, whether for-profit or not-for-profit	Informal or unpaid care by family, friends and neighbours; Other forms of home or community-based homecare (e.g., 24/7 live-in care; day centres or activities; supported living; meals services, like lunch clubs or 'meals on wheels'; short term care interventions, like reablement; equipment, adaptations or digital care solutions, including telecare or alarms); Residential or nursing care.
Food and drink-related **care-related needs**, e.g., • ***Functional needs*** that require support with purchasing, preparing and consuming food or drink; • ***Social needs*** that relate to enjoying food or drink socially, with other people, and the social significance of eating/drinking; • ***Personal needs*** that relate to personal choice and preference in terms of how food or drink is selected, prepared and consumed. This includes needs that relate to the person's sense of self and dignity; • ***Cultural needs*** that relate to the meaning and significance of food or drink that relate to place, culture and ethnicity. <u>OR</u> Food and drink-related **outcomes** • The extent to which *functional needs* are met to ensure **nutrition** or **hydration** or to avoid malnutrition or dehydration. • The extent to which *social, personal and cultural needs* are met to promote the person's **quality of life, wellbeing**	Care-related needs that are not related to food or drink (or eating and drinking). These can be defined in terms of *functional needs* (e.g., personal care, help to move around) or *social, personal or cultural needs* (e.g., enabling people to do things they value and enjoy, sustain social relationships). Care-related outcomes that are not related to food or drink (or eating and drinking).

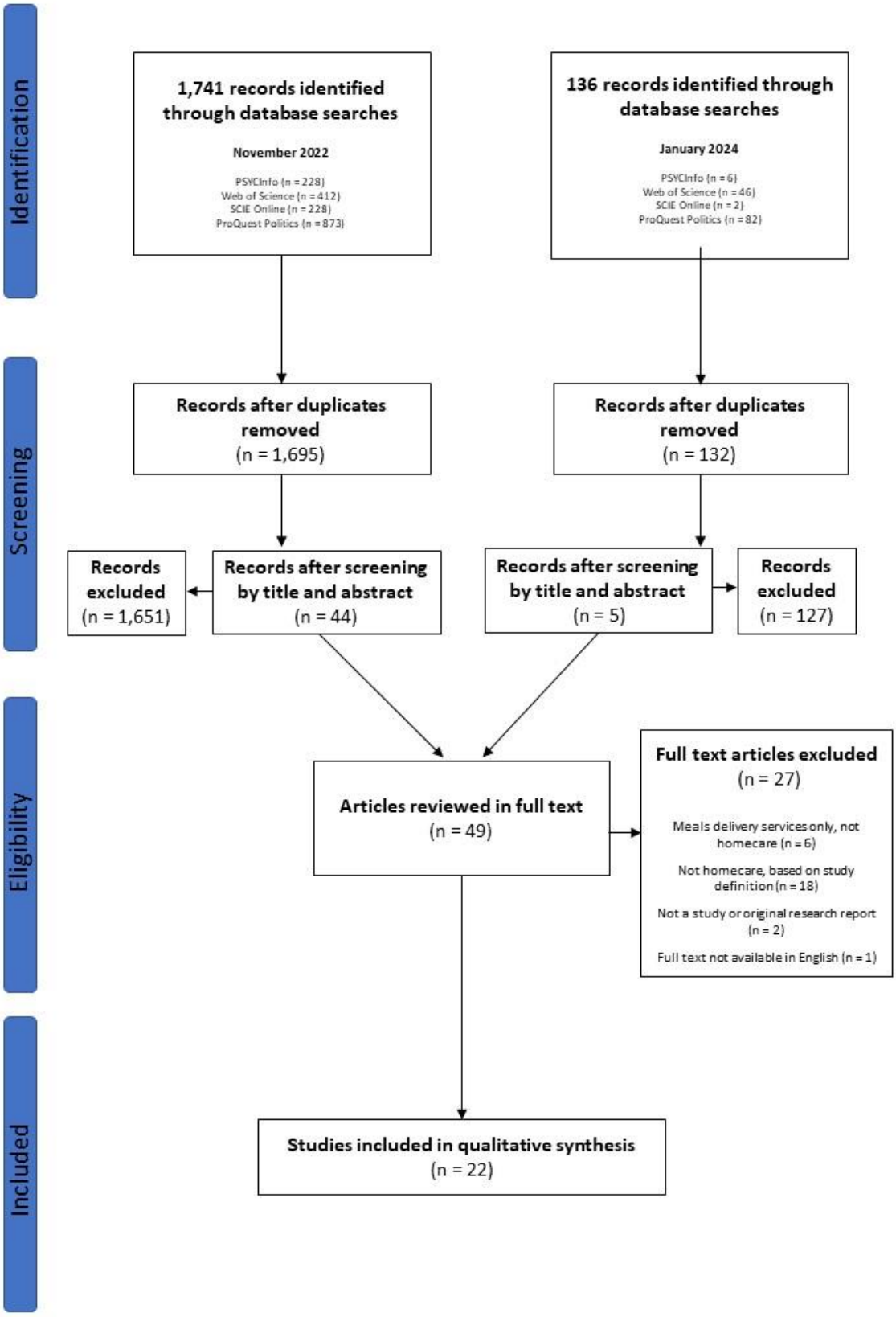
We included all eligible items, regardless of the study design or methodology. This included systematic or scoping literature reviews, where the review generated new insights and knowledge relevant to the research question. Where we included literature reviews, the individual studies reported in the review were also reviewed and considered when data were charted, analysed and interpreted, to avoid duplication.

The original database searches identified 1,741 records. Of these, 46 were removed as duplicates. As recommended by Levac *et al* [16], the abstracts were initially reviewed against the inclusion and exclusion criteria by two researchers, independently. This was conducted as an iterative process. The researchers (SR, LB, AD) met regularly to discuss the selection process and any uncertainties. Having reviewed 20% of the records, we found that we had reached consistent application of criteria in decision-making to exclude records. Therefore, those remaining were screened by a single researcher (AD), followed by review and discussion between researchers (AD, SR, LB) during regular meetings. These

discussions focussed on where there was uncertainty, to ensure accuracy in application of the criteria and consistency in decision-making.

In the searches conducted on 30 January 2024, 132 records were identified. Four duplicates were removed. Abstracts were reviewed for the remaining 128 records by one researcher (SR). Across the original (November 2022) and supplementary searches (January 2024), 49 items were retained for full text review. Of these, 22 articles/reports were retained for full data extraction (charting) and synthesis (see Figure 1).

Figure 1. Flow diagram



Data extraction (charting)

Three researchers (AD, SR, LB) conducted the data extraction (also known as charting). Each item was reviewed and extracted by one researcher, followed by review by the other two researchers to ensure consistency and accuracy. Based on the recommended practice for scoping reviews [16], the chart was developed collectively by the research team, iteratively. We made initial changes after pilot extraction (n=4 items), as recommended by Peters *et al* [18], and continued refine the chart throughout data extraction. The fields included were author(s) and year, country, study design and methods, study aims, sample size and description, outcome measure(s) used, whether the study considered other health or LTC services or family care, and key findings. We also recorded if the study was specific to the needs of older people with specific health conditions (e.g., dementia).

Summarizing and synthesis

Full texts were also analysed thematically in NVivo v12 using the framework approach, which offers a systematic, yet flexible, structured approach to qualitative analysis [19]. This allows the application of both deductive (applying theory, *a priori*) and inductive emergent codes (i.e., descriptive or conceptual labels applied to raw data) to develop themes, which are interpretative concepts to explain aspects of the data [19]. Based on initial review of the background literature, discussion within the research team, with PPI and project advisory group input, four deductive codes were proposed for the initial coding tree, with sub-codes (see Box 1). Three researchers (AD, SR, LB) coded independently, followed by sharing and discussion within the team to develop consensus in coding, as well as interpretation to develop themes. No additional major codes were added, inductively, during the analysis; however, additional sub-codes were added (see Box 1). These informed the interpretation of findings around the three themes that we present in this paper, whereby we combined the codes on 'needs' and 'outcomes' due to conceptual overlaps and parallels between them.

Public Patient Involvement (PPI)

The topic was identified through work with a community of practice (CoP) convened to identify priority topics for applied health and care research, which included PPI members [14]. Two PPI advisors were also involved in developing the study proposal and scooping review protocol. They also gave advice and feedback throughout the study, for example, in shaping the research question, study aims and objectives, and giving advice on how to present and share the findings. The PPI advisors also contributed to the project advisory group (AG), which also included health and social care professionals, and met three times during the study. The AG gave advice and feedback on the scoping review design and methods, interpretation of preliminary findings and our approach to sharing the findings.

Box 1. Coding tree

- Definition of food and drink outcomes
  - Nutrition
  - Hydration
  - Quality of life
- Definition of food and drink needs
  - Malnutrition
    - Impact of care dependency
    - Condition-specific needs
      - Dementia
    - Obesity
    - Oral and dental health
    - Food poverty/insecurity
    - Impact of alcohol consumption/dependency
  - Dehydration
  - Quality of life
    - Psychosocial
    - Cultural
    - Sensorial
    - Social
    - Sensorial
- Role of homecare in supporting food and drink outcomes/needs
  - Barriers
    - Lack of recognition of the role/value of homecare
      - Time constraints, often due to focus on reducing costs of homecare
      - Narrow focus on basic care over QoL impacts (e.g. dignity, choice)
    - Lack of nutritional training or availability of specialist advice
    - Lack of basic food preparation skills or knowledge
    - Food poverty – outside of the remit of traditional homecare services
  - Facilitators
    - Adequate time
    - Nutritional knowledge and skills
      - Condition-specific – dementia
    - Ability to respond flexibly to person's individual needs
      - Knowledge of the person and their environment
      - Working with family carers and/or healthcare professionals
      - Care planning and assessment
  - Working in in partnership with other community-based services or family carers
    - Healthcare
    - Family carers
    - Other community social care services (e.g. meals services)
- Innovative models of service delivery or interventions

Inductive sub-codes are highlighted in blue.

Results

Identified items (see Table 2) reported studies in the UK [11,20,21], USA [3,22,23], Canada [24–26], Australia [27–29], Germany [30,31], Sweden [32,33], Finland [34], France [35], the Netherlands [36], Croatia [37]and Turkey [38], with a review that found items across the USA, Canada and Western Europe [39]. The studies used a variety of study designs, including observational (*n*=10) [20,24,27,29–31,34,35,37,38], qualitative (*n*=6) [11,21,22,26,32,33], literature review (*n*=3) [3,28,39], pilot studies (*n*=2) [25,36] and protocol/proposal [23]. All were published in peer-reviewed journals, apart from one report of a survey conducted by the UK Alzheimer's Society [20]. Most studies were of older adults accessing homecare services, without further specification (*n*=15). The remaining studies focussed on older people living with dementia (*n*=5) [20,21,30,32,39], alcohol dependency [33] or disability [26].

Table 2. Summary of the characteristics of included records

See Table 2 in Appendix to this file.

Understanding food and drink- related needs/outcomes

The majority of studies in the identified literature framed their understanding of older adults' food and drink needs or outcomes through the lens of nutrition (*n*=15), hydration (*n*=1) or both (*n*=1). This was primarily framed in terms of dehydration or malnutrition, and how to reduce the risk or alleviate costs due to subsequent hospitalisation or institutionalisation [18,19,30,33–37,20–27]. Some studies considered the complex and inter-related causes of malnutrition, including mobility limitations, cognitive impairment and depression [11,23,26,27,29–31,34–37]. Issues related to dental or oral health or problems with mouth dryness, chewing or swallowing and their impact on dietary intake and nutritional status were considered by some studies [30,31,34,35,37]. Food poverty [34] and insecurity [40] were identified as contributing causal factors. Five studies considered the impact of dementia on malnutrition risk, and specific challenges in ensuring good nutritional and hydration-related care for people with dementia [20,30,31,39,41].

The focus on malnutrition was also reflected in the outcome measures used in quantitative studies (see Table 3). The most commonly-used validated measure was the Mini Nutritional Assessment (MNA) [29,30,34–36,38], which is a brief screening tool and assessment of nutritional status of older adults. Scores of 17 to 23.5 indicate risk and ≤17 indicates malnutrition [42,43]. Other studies relied on anthropometric measurements, either alone [31] or alongside the MNA [30,34,36,38] or dietary intake [24,36,38], or other screening tools. The use of measures reflects the breadth of available instruments to assess nutritional status or malnutrition risk, with some tools (e.g. MNA) having a better evidence base for its validity and acceptability to underpin its use [44].

Some of the identified quantitative studies considered QoL, either as a secondary outcome or factor associated with malnutrition. The identified qualitative studies tended to consider food and drink care-related needs and outcomes broadly with regard to QoL, including participation in daily activities [26], psychosocial wellbeing [3], social interaction and relationships [21], and chemo-sensorial, personal or cultural preferences [23,35]. For example, a Canadian study [26] explicitly recognised that food preparation and consumption is not only functional, but also enables people to express social status or cultural meanings, sustain self-identity, personal dignity, personal or familial relationships, and a sense of wider social connectedness. Similarly, a Swedish study found that homecare workers' view of an ideal mealtime for older adults with dementia involved the use of knowledge of the person and their preferences, working in partnership with family carer(s), enabling the person to be involved in food choice and preparation, as far as possible, and considering the social and interpersonal aspects of eating [41]. An English study of homecare workers found that the ideal of person-centred nutritional care was widely recognised, but often not realised in practice within the limited time allocated for homecare visits, the limited availability of food, due to food poverty and insecurity, or reliance on family carers for shopping and collecting food [11].

Table 3. Outcome measure(s)

Outcome measure	Studies
Nutritional risk / Malnutrition	
Mini Nutritional Assessment (MNA)	Adiguzel & Acar-Tek, 2019 Chareh et al, 2020 Denissen et al, 2017 Maitre et al, 2021 Soini et al, 2006 Visvanathan et al 2003
Anthropometry e.g. upper arm or leg circumference, height, weight, weight loss, BMI As an indicator of risk of malnutrition.	Adiguzel & Acar-Tek, 2019 Chareh et al, 2020 Denissen et al, 2017 Kiesswetter et al, 2020 Soini et al, 2006
Dietary Intake	Adiguzel & Acar-Tek, 2019 Denissen et al, 2017 Johnson & Begum, 2008
Nutritional Risk Tool / Elderly Nutrition Screening (ENS)	Johnson & Begum, 2008 Laforest et al, 2007
Nutrition Screening Initiative (NSI) DETERMINE Checklist	Bender et al, 2017
Nutritional Risk Screening 2002 (NRS-2002)	Bender et al, 2017
Malnutrition Screening Tool (MST)	Leggo et al, 2008
Functional status	
Groningen Activity Restriction Scale (GARS)	Denissen et al, 2017
Patient Generated-Subjective Global Assessment (PG-SGA)	Leggo et al, 2008
Quality of Life (Overall)	
EQ-5D Visual Analogue Scale (VAS)	Denissen et al, 2017
Health-related Quality of Life	
Quality of Life Short Form - 36 (SF36)	Adiguzel & Acar-Tek, 2019 Visvanathan et al 2003
Geriatric Depression Scale (GDS)	Visvanathan et al 2003

The role and scope of homecare

The role of homecare workers in supporting older adults with food and drink was explicitly discussed in half of the identified items [20,21,23,25,28,29,33,38,39,41,45]. Homecare activities described as part of food and drink-related care included "monitoring weight, dietary intake, hydration status, and functional ability" and assisting "with shopping, preparing meals, eating, or actual feeding where necessary; and linking clients to services" ([28], p.5). Nutritional knowledge [11,23,30,34], along with effective multidisciplinary work with dieticians and other healthcare professionals [28,32,33], was also noted to be important, especially when supporting people with specific needs, like dementia [28,32] or alcohol problems [33]. Studies noted that homecare workers typically spend more time with older people, compared to other community-based health and social care professionals, and therefore tend to be more familiar with the older person's living environment and personal preferences, practices and beliefs around food, eating and drinking. This knowledge is important in developing an accurate understanding of the person's context and preferences to inform person-centred care that supports QoL [20,25,28,39,41,45].

The framing of routine food and drink-related care in homecare service delivery, especially for older people with dementia, was broader than managing nutrition and hydration or supporting functional status. There was also consideration of the person's individual, social and cultural preferences, their dignity and independence and in supporting individual QoL (i.e., 'person-centred care') [20,21,32,39]. This perspective is important in homecare planning and delivery that is responsive to fluctuating needs, supports independence (e.g. involvement in preparing food) and accommodates personal, social or relational and cultural preferences [20,32,39]. Facilitators of person-centred care included the care worker's familiarity with the client's living environment, tastes and preferences [20,28,32], person-centred care planning, and involving and supporting family carers [20,31,32]. Barriers included the increasingly short duration of homecare visits, typically by resource constraint and underfunding, which means that there is insufficient time to deliver high quality, effective person-centred care [11,21,23,30,33]. In a UK study, for example, a focus on financial cost cutting and lack of aspiration, institutionally and politically, were identified as

contributors to poor quality homecare [11]. Other barriers included the lack of nutritional knowledge, training or specialist advice from dieticians or nutritionists available to homecare workers [11,21,26] and a lack of basic food preparation skills [11,21]. These issues are exacerbated by the view that food-related care is simply 'common sense', which devalues the workforce and their skillset [11], and tends to reduce food and drink-related care to very limited functional tasks to support basic nutrition and hydration [11,26].

Almost half of the studies (*n*=10) [3,11,21,26,28–30,32,36,37] referred to a paucity of evidence that relates to the role and contribution of homecare in addressing the food and drink care-related needs and improving outcomes for older adults living at home, including in the development of innovative service delivery or interventions (see next section for further detail). There is also little awareness of the unique contribution of homecare in working alongside and supporting family carers [11,20,26,28,34,39] or their working with healthcare professionals (e.g. dieticians, community nurses, occupational therapists) to deliver safe and effective holistic care [20–22,29,34,37,38].

Innovations to support food and drink-related needs and improve outcomes

A small number of studies (*n*=3) proposed or evaluated interventions to improve the effectiveness and quality of food and drink-related care for community-dwelling older adults accessing homecare. These varied in the degree to which homecare services were recognised or considered. For example, two studies used dietician-trained volunteers [25] or healthcare workers [27] to screen and identify older adults at highest risk of malnutrition using screening tools, followed by targeted dietician referral [35]. Neither study involved homecare workers in the initial screening or intervention. Instead, homecare was simply considered as an indicator of 'risk' to define the population and study sample, without further considering the (current or future potential) role of homecare workers in routine monitoring, identifying or addressing risk.

Other studies did explicitly consider or engage with homecare. A Canadian study, for example, argued that effective collaboration between homecare, dietician support and home-delivered meals could address the risk of malnutrition among community-dwelling older adults, even if the study did not contribute evidence to the best approaches to integrated service delivery [24]. Some studies proposed targeted support to prepare meals at home [26], home-delivered meals [36] or community-meals at day centres [20,30,32], alongside homecare, to reduce the pressure on homecare delivery and limit care costs. One study evaluated the use of home-delivered meals alongside homecare, for example, which used a heat induction system to avoid the need for assistance to re-heat the meal [36]. However, the underfunding of meal services was identified as a barrier to their effective combination with homecare services, both in the UK and US [3,45]. Home-delivered meals were also perceived to be inadequate replacement for homecare visits, especially for people with dementia [21], who benefit from one-to-one social interaction and prompting to eat or drink [22,32]. Finally, some of the identified studies highlighted that educational interventions and training courses designed to improve homecare workers' skills and knowledge about nutrition [23] or hydration care [22] may improve care quality and effectiveness by addressing knowledge or skills gaps. However, these may not be effective when homecare workers are unable to integrate this knowledge into practice, due to homecare visits of short duration, which limit the time available to provide high quality, effective and personalised care [11].

Discussion

This scoping literature review found that there is limited research relevant to the role of homecare in addressing older adults' food and drink-related needs and improving outcomes. Identified studies were often framed in terms of avoidance of adverse health outcomes for older people and reducing societal costs related to hospitalisation or institutionalisation [18,19,30,33–37,20–27]. A small number of qualitative studies explored the contribution of homecare, especially in delivering person-centred care that supports the individual's QoL with regard to the individual's personal, social and cultural preferences [20,21,32,39]. Some studies considered how homecare works together with community healthcare and family care to improve food and drink-related QoL [20–22,29,34,37,38]. However, overall, the unique role and contribution of homecare is relatively underexplored and is not always recognised or fully acknowledged, even in studies of older adults using homecare. There also tends to be a focus on

needs and outcomes in terms of functional status, malnutrition, dehydration and avoidance of health deterioration, rather than a broader focus that also considers older people's QoL and satisfaction.

The review also identified a paucity of evidence on innovative practice or service delivery models that actively involve, engage with or consider homecare. This may be partly due to the tension between delivering person-centred care that considers QoL-related needs and outcomes and cost-reduction pressures across community-based services [41], which tends to view homecare as a 'cost' to be reduced, rather than a valuable service to support older people's functional status and QoL in its own right. In two of the identified studies [25,27], for example, homecare was not explicitly considered in innovative interventions or their evaluation, but rather was used to define and justify the study sample (i.e., older adults accessing homecare are at higher risk of malnutrition, so would benefit from additional screening). Future studies ought to consider the potential contribution or role of homecare in such interventions, as well as the impact on homecare workers, their work and work-related QoL. Other studies adopted approaches that considered homecare workers and their role, including their skills, knowledge and training [22,23] and use of technological solutions to reduce reliance on care workers' time for basic tasks (e.g. reheating food) [36]. These are all areas that would benefit from further research, especially around 'what works', the feasibility of implementation and considering the impact on older people, carers and care workers' experiences and outcomes.

The review also identified further gaps in the evidence base, which could inform future directions for research. First, there is no evidence of the (cost) effectiveness of homecare in supporting older people with food and drink-related needs, even if EPSEN guidelines on nutrition and hydration of older adults recommend home-based care assistance despite an absence of evidence [46,47]. The development of the evidence base would support a fuller appreciation and understanding of the specific contribution and value of homecare, whether alone or combined with other health and LTC services, to support resource allocation decision-making and targeted investment into homecare services to support older adults' outcomes. There are also gaps in understanding how to best support integrated working between homecare and healthcare and voluntary community services (e.g. 'support at home' schemes [48]), and optimal models of homecare delivery, funding, and workforce skill and training. There were also significant gaps in the literature around socio-economic inequalities in ageing and the effect of individual difference. Issues related to food poverty or insecurity did not significantly feature in the identified literature, even if community-based service policy and delivery in some contexts (notably, the US) targets support to older adults in poverty [2]. In addition, the impact of ageing populations with a migration background, alongside ethnicity-related, religious and cultural aspects of food and drink, did not feature strongly in the identified literature, even if this aspect of care has been explored in some studies of older adults, more broadly [49–51] and is understood to be important to care delivery [7,8]. Future research would usefully address this gap, alongside how other social changes (e.g. in food preference, skills) may affect the role of homecare in supporting older adults food/drink care-related needs and outcomes, especially in delivering person-centred care to support QoL.

The strengths of the scoping review include its broad inclusion criteria and use of multiple databases selected for coverage of literature from different academic disciplines. The identified literature report studies from different countries and regions. A potential limitation is, however, the diversity of homecare internationally, in terms of how it is defined, funded (e.g. public or private, insurance) and operates under national legislative or regulatory frameworks, policy and practice guidelines. These influence e.g., staff entry qualifications, training and skills development and models of delivery, which then affect older people and their families' experience and outcomes. Such international variation may have affected the identification of literature, despite our broad search terms, and also the interpretation and drawing of conclusions, even if we have sought to consider geographic and socio-economic context in our presentation of findings. However, despite these limitations, by considering all available literature together, we are able to develop a broad view of the current international literature and important gaps in evidence to inform directions for future research.

Overall, the study brings together what is known about the role of homecare in addressing the food and drink-related needs and improving outcomes of older adults, to understand the current literature and identify directions and priorities for future research. Identified studies provide insight into the actual or potential role of homecare in supporting older adults' food and drink care-related needs and outcomes, but they also highlight the barriers to

achieving this, e.g., they highlight the negative impact of shortened homecare visits on the quality of care delivery [11]. Our findings also show that the role of homecare, working alongside other health and social care services or family carers, is not always fully acknowledged or considered in research. Existing research often frames homecare as a cost to be contained, rather than fully valuing its contribution to promoting older people's QoL and preventing health deterioration. Future research could inform a more complete understanding of the role, contribution and value of homecare, to support older adults at home, as well as how it interacts with other health and care services and the support of family carers.

Acknowledgements and Disclaimers

Data accessibility statement. Not applicable.

Ethics and consent. Not applicable. No ethical approval was required or sought for this study.

Acknowledgements. We would like to acknowledge and thank the study's project advisory group and also the Patient and Public Involvement (PPI) research advisors, Karin Webb and Della Ogunleye, for their comments and advice on the study design and methods, analysis and interpretation of findings, and knowledge exchange and impact strategy.

Funding. This report is independent research funded by the National Institute for Health Research School for Social Care Research (NIHR SSCR) (Grant Reference Number: 26147). The views expressed in this publication are those of the authors and not necessarily those of the NIHR SSCR, the National Institute for Health Research or the Department of Health and Social Care.

Competing interests. The authors have no competing interests to declare.

Authors' contributions. Author contributions based on CRediT definitions:

Stacey Rand: conceptualisation, methodology, investigation and formal analysis, writing – original draft, project administration, supervision and funding acquisition.

Lavinia Bertini: conceptualisation, methodology, investigation and formal analysis, writing –review and editing, and funding acquisition.

Alan Dargan: methodology, investigation and formal analysis, writing – review and editing.

Monique Raats: conceptualisation, writing – review and editing, supervision and funding acquisition.

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Table 2. Summary of the characteristics of included records

Authors/year	Country	Study Design (*Methods*)	Study aim(s)	Sample size and type	Condition specific?	Does the study also consider the healthcare or other social care services or family care?	Key findings
Abdallah et al, 2009	USA	Qualitative (Focus groups)	To explore health and care providers' perception of risk factors for dehydration and strategies to promote hydration in community-dwelling older adults.	n=36 health or care providers (n=8 homecare), across 4 focus groups	No	Yes - healthcare services	Four themes were identified: intentional avoidance and caution; lack of awareness, education and understanding; poor access to fluids, and social and environmental influences. Strategies to promote hydration included community partnerships, community education, community engagement, and interdisciplinary approaches.
Adiguzel & Acar-Tek, 2019	Turkey	Observational (Survey by face-to-face interview; anthropometric measurements)	To examine nutritional risk factors and sociodemographic variables related to the health-related quality of life in homecare patients	n=209 older adults using homecare	No	No	Nutritional status, using the MNA, was associated with quality of life (SF-36) in homecare patients. High malnourished patient frequency in the sample demonstrates the importance of nutritional screening of older people using homecare services.
Alzheimer's Society, 2000	UK	Observational (Survey)	A report on how to balance individual choice and independence for people with dementia with concerns about safety and nutrition, which drew on a survey of people with dementia.	n=3,777 people with dementia and/or their carers	Yes - dementia	Yes – compares to residential or hospital care	The report highlighted significant failings in services providing food to people with dementia, even if there were some examples of good practice across contexts, including homecare. Some people reported that they used a shopping service, which was part of homecare service provision. Family carers expressed concern over whether care workers would purchase unhealthy food or not adequately consider the person's preferences.
Bender et al, 2017	Croatia	Observational (Survey)	To evaluate nutritional status of older people using homecare immediately after hospital discharge.	n=76 older adults (65+ years) using homecare, after hospital discharge	No	No	Only 5.4% of the participants aged 65-70 years (*n*=37) were found to be malnourished based on BMI, compared to 38.9% of over 70s (*n*=39). The majority of over 70s were at high (82.1%) or moderate (17.9%) risk of mal-nourishment using the DETERMINE checklist. Timely assessment, intervention and training to support awareness of malnutrition risk are recommended.
Campbell et al, 2015	USA	Literature review (Systematic review of items identified from searches of one database – PubMed)	A systematic review of whether home-delivered meals improve older adults' outcomes.	n=80 studies, of which only one (Lee *et al*, 2015) considered homecare.	No	Yes – other community based LTC including meals services	The systematic review focussed on studies of home-delivered meals (n=80), of which only one considered [37]. This was a study of community services for older adults, including homecare and other services (e.g. home delivered meals) using administrative data. The authors argue for better recording of dynamic needs, to identify those at risk and better target service delivery.
Chareh et al, 2020	Germany	Observational	To study the type of care, living situation, and nutritional care in older adults aged ≥65 receiving informal care	n=353 older adults receiving informal	Yes - dementia	Yes – compares to family care; meals service	The pattern of service use varied by the type of care (IC, PC) and living situation (LP, LO, LA). Over 90% of those with informal care (IC) across all types of living situation (LP, LO, LA) had help with food shopping from their informal carer; the majority also had help with

Authors/year	Country	Study Design (*Methods*)	Study aim(s)	Sample size and type	Condition specific?	Does the study also consider the healthcare or other social care services or family care?	Key findings
		(Secondary analysis using administrative data)	(IC) or professional homecare (PC), either living with partner (LP), with others (LO) or alone (LA)	or professional homecare			warm meals (IC-LP 89%, IC-LO 90%, IC-LA 71%). By contrast, 47% of those with professional care (PC) and living alone (LA) prepared their own meals (but also, they had lower levels of difficulty with activities of daily living) and 22% used meals services. Despite these differences in patterns of care, those with PC-LA did not differ from those with IC (all living conditions) by risk of malnutrition.
Denissen et al, 2017	The Netherlands	Pilot study (Feasibility study using quasi-experimental methods)	To evaluate implementation and effectiveness of a meals delivery service to older adults using homecare	n=44 older adults using homecare	No	Yes - meals service	A feasibility pilot study of a meals service intervention for older adults using homecare services (n=25 intervention; n=19 control). The control group continued with habitual food intake. At the end of 3-months, the intervention group had a greater increase in body weight, BMI, upper leg circumference and fat free mass (FFM), compared to controls. No significant differences between intervention and control group for the other measures. 90% of those who received the intervention were satisfied with it; 70% said they would like to receive the service in the future. The evaluation did not consider the role of homecare services or staff in the implementation or effectiveness of the intervention.
Johansson et al, 2017	Sweden	Qualitative (Focus groups)	To explore and describe homecare staff views on how to improve mealtimes for persons with dementia who are still living at home.	n=22 homecare staff, in 4 focus groups	Yes - dementia	No	The study highlighted the perceived importance of personalised care, including the role of knowledge-based planning and problem solving with input from family, staff knowledge and training in dementia care. The role of homecare included enabling meals at home or taking over preparation of meals. Staff expressed a preference for meals prepared freshly at home, to fit with people's preferences, even if the reality is often pre-prepared meals for convenience The benefit of home-like meals is that they offer familiarity and better align with the person's tastes, preferences and previous routines, e.g. on a plate with cutlery rather than served in a box. The social aspect of food preparation and consumption was also noted, including the visual cue of others eating to support eating.
Johnson & Begum, 2008	Canada	Observational (Interview survey)	To examine the dietary adequacy of older adults using homecare by age, sex and level of nutritional risk	n=98 older adults using homecare	No	No	The majority of the sample were at moderate (54%) or high (37%) nutritional risk. Total energy and micronutrient intake (except protein) were not optimal. 54% of the sample were overweight or obese. The study highlights the need for appropriate nutrition, education and support for older people receiving homecare.

Authors/year	Country	Study Design (*Methods*)	Study aim(s)	Sample size and type	Condition specific?	Does the study also consider the healthcare or other social care services or family care?	Key findings
Karlsson & Gunnarson, 2018	Sweden	Qualitative (Focus groups)	To explore homecare staff views on supporting older adults with alcohol dependency	n=18 homecare staff, across three focus groups	Yes - alcohol dependency	No	Using a phenomenological approach to thematic analysis, four themes were identified: squalor of the home; intoxicated bodies; disruptive behaviour; and being involuntarily drawn into the person's world or feeling complicit. Alcohol dependence introduces additional issues in the delivery of homecare - e.g. personal/household hygiene in food preparation and consumption. Specialist services are required, but often not available or sought, due to lack of willingness or ability to engage. Care workers raised concerns over how far they should enable alcohol consumption, especially when the emphasis of personalised care is to support people to eat/drink 'as they prefer', when it also had a detrimental or harmful effect.
Kiesswetter et al, 2020	Germany	Observational (Secondary analysis of four cross-sectional studies with older adults (65+) in different settings)	To identify setting-specific risk profiles and risk factors of malnutrition in older adults.	n=1,073 older adults living at home n=180 geriatric day hospital patients n=335 homecare receivers n=197 nursing home resident	No	Yes – compares to residential care, hospital or no care	The prevalence of malnutrition was 11.0% in community-dwelling (CD, n=1,073) older adults, 18.9% in geriatric day hospital (GDH, n=180) patients, 15.8 % in older adults using homecare (HC, n=335) and 17.2 % in nursing home (NH, n=197) residents. Relevance of specific risk factors varied across settings. For homecare, younger age, nausea and low appetite were associated with malnutrition.
Laforest et al, 2007	Canada	Pilot study (Inter-rater reliability; survey)	To test the reliability of applying the Elderly Nutrition Screening Tool (ENS) in a nutritional screening intervention administered volunteers and the feasibility of the intervention.	n=29 older adults (60+ years) using homecare, plus volunteers (n=15) and case managers (n not reported)	No	Yes – volunteer service to screen for malnutrition	Participating older adults scored their satisfaction with the intervention highly (e.g., 90% reported satisfaction with services arranged by volunteers). The pilot concluded that using dietician-trained and supervised volunteers is a feasible way of screening and educating older adults about their nutritional risk, with reasonable reliability on the ENS. However, trained professionals (dieticians) are best placed to deliver subsequent intervention.
Leggo et al, 2008	Australia	Observational (Prospective observational study)	To develop and implement a nutrition screening and dietetic referral system for community and home care eligible clients.	n=1,145 older adults eligible for community and home care	No	No	Malnutrition was indicated for 170 clients (15% of sample) using the malnutrition screening tool (MST). Of these, 75 (44%) agreed to dietician assessment. After assessment, n=57 (5% of sample) were found to be malnourished. Of these, 34 subsequently agreed to dietetic intervention (review visits over 1 to 23 months). Of these, 28 had an improved Patient Generated-Subjective Global Assessment (PG-SGA) score after dietetic intervention (average 4.1 visits +/- 2.0, range of 2-10 visits).

Authors/year	Country	Study Design (*Methods*)	Study aim(s)	Sample size and type	Condition specific?	Does the study also consider the healthcare or other social care services or family care?	Key findings
Maitre et al, 2021	France	Observational (Structured interview survey and tests)	To explore the heterogeneity of the French older population using a multidisciplinary approach	n=559 older adults (65+ years)	No	Yes – compares to no support, nursing home	Data collected from older adults with different dependency (live at home without help, with help, or resident in a nursing home) were analysed to identify seven 'clusters' or typologies in the population of study. Increasing age and dependency, lower cognitive ability, difficulty with eating and depression were all associated with increased risk of malnutrition. However, other factors included food preferences and food attitudes, as well as physiological, psychological and sociological variables. This raises the need for developing targeted and specific interventions, rather than global solutions to tackle malnutrition and implement health promotion strategies.
Marshall et al, 2017	Australia	Literature review (Narrative review based on searches of four databases to identify items)	To synthesise evidence on the role of homecare and family carers in supporting the nutritional needs of older adults living in the community.	n=16 studies	No	Yes - informal care	Despite the potential for homecare to support older adults' nutritional needs and studies that acknowledged the role of homecare in food and hydration, there was a paucity of interventional research that involves homecare workers or other assistant roles (paid or voluntary). The only identified study that involved homecare services (but did not consider the role of homecare workers, explicitly) is reported here under [23].
Mole et al, 2018	Various incl. Netherlands (n=14), France (n=10), Canada (n=8) & US (n=6)	Literature review (Scoping review of items identified from searches of six databases)	A scoping review to establish what is known about nutritional care of people living with dementia at home.	n=61 studies reported across 63 articles	Yes - dementia	Yes - informal care and other health or care services	A total of 61 studies were identified. The majority of studies used cross sectional (n=24), cohort (n=15) or qualitative (n=9) designs. Only three studies were RCTs. The remaining studies used various designs (e.g. protocol, reviews, pilot studies). None of the identified studies included homecare providers. The authors note this as a gap in the literature - i.e., no studies of how homecare services support people with dementia and/or their carer(s).
Mole et al, 2019	UK	Qualitative (semi-structured interviews)	To explore experiences and perceptions of nutritional care of people living with dementia at home from the perspectives of healthcare professionals and homecare workers.	n=7, of which n=2 were homecare workers	Yes - dementia	Yes - healthcare services	Using interpretative phenomenological analysis (IPA) four themes were identified: responsibility to care; practice restrained by policy; 'in it together'; and improving nutritional care. There was consensus that nutritional care was important; however, time and knowledge constraints were identified as barriers to good nutritional care. Partnership working between homecare, healthcare and family care was perceived to be important. Concerns were raised over the suitability of meals services, especially, on their own, due to the person not eating the meal. It was felt that there would be value in homecare workers having time to prepare meals, both to address nutritional needs and as a social, enjoyable activity for the person.

Authors/year	Country	Study Design (*Methods*)	Study aim(s)	Sample size and type	Condition specific?	Does the study also consider the healthcare or other social care services or family care?	Key findings
Puri, 2022	USA	Proposal / protocol	A description of the implementation of a nutrition-training program for homecare workers.	N/A	No	No	The Nutrition Training Package is a two-day educational tool designed to improve nutritional knowledge and dietary needs for people with common chronic conditions (e.g. diabetes). It uses a combination of lecture-style teaching, role play, trivia, worksheets and group activities. The paper outlines the steps to implement the Nutrition Training Package for Home Care Aides, as well as proposed the mechanism for change and its outcomes; further evaluation is needed.
Soini et al, 2006	Finland	Observational (Survey)	To understand the nutritional status of older adults receiving homecare, and the role of care workers in supporting nutritional needs	n=178 older adults using homecare	No	Yes – meals service	48% of the sample (n=178) were at risk of malnutrition and 4% were malnourished. The majority (93%) reported at least one problem with eating. Just under half (44%) received meals services alongside homecare. Over half (53%) relied on unpaid care for shopping, which was significantly related to higher risk of malnutrition – likely, due to the relationship with functional limitation. Informal help with shopping and chewing/swallowing issues were both significantly related to malnutrition or risk of malnutrition.
Turcotte et al, 2015	Canada	Qualitative (Semi-structured interviews)	To explore participation needs among older adults with disabilities, perceived by the older people themselves, their caregivers and healthcare providers	n=11 older adults (65+) accessing homecare n=11 family carers n=11 healthcare providers	Yes - Disability	No	Fulfilled needs mostly related to nutrition, personal care, housing (i.e., personal care and activities done at home). External resources (e.g., self-funded help) were often used for meal preparation and grocery shopping. Older adults' unmet needs mainly related to leisure/social activities, community engagement and mobility (e.g., going out to restaurants).
Visvanathan et al, 2003	Australia	Observational (Baseline and 12-month follow-up interview survey)	To identify predictors and consequences of nutritional risk among older adults using homecare	n=250 older adults using homecare	No	No	Nutritional risk, using the MNA, of 250 older adults using homecare was assessed at baseline and 12-month follow-up. At baseline, 38.4% were at risk of malnutrition and 4.8% were malnourished. Predictors of low MNA scores were living alone and poorer psychological and physical health rated on the SF-36. Those with worse MNA scores were more likely, over the 12-month period, to be admitted to hospital (at all) and also be admitted twice or more in an emergency, spend >4 weeks in hospital, and report weight loss.
Watkinson-Powell et al, 2014	UK	Qualitative (Semi-structured interviews)	To explore homecare staff views on the barriers and facilitators to food provision for older people using homecare.	n=9 homecare staff	No	No	Thematic analysis of qualitative interviews using grounded theory identified three themes: time pressures; supply of food; and food-related knowledge. A key finding was that the short length of homecare visits was perceived to be a barrier to providing high quality personalised care. Nutritional care is limited to providing 'ready meals'. There is not enough time to engage in social and relational aspects of food preparation and consumption. Staff also thought that enabling individual choice was more important than nutritional considerations. However, this was limited by food availability, e.g. due to budget limits that affect access to food.

Authors/year	Country	Study Design (*Methods*)	Study aim(s)	Sample size and type	Condition specific?	Does the study also consider the healthcare or other social care services or family care?	Key findings
							Despite staff's knowledge of the person and their role in preparing meals, staff thought they had not received enough training around nutritional care. Homecare staff also expressed the view that they were not engaged by healthcare professionals in the management of malnutrition or nutritional risk. The study indicates that the role of homecare in supporting older adults' food-related care needs is undervalued and not sufficiently recognised.