



Invited Review

Hydration Interventions for older people living in residential and nursing care homes: overview of the literature

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Abstract

Introduction: Care home populations experiencing high levels of multi-morbidity and dementia require support from caregivers to meet their hydration requirements. This article provides an overview of literature related to hydration interventions and highlights gaps in knowledge.

Sources of data: This paper draws on UK-focused literature from Applied Social Sciences Index and Abstracts (ASSIA), CINAHL, Medline, Proquest Hospital Premium Collection, Cochrane Library and RCN databases on hydration interventions for older people living with multi-morbidity and dementia in care homes.

Areas of agreement: Fluid intake is too low in care home residents, and no single hydration intervention is effective in addressing the complex problems that older residents present.

Areas of controversy: There is a lack of consensus about how much fluid an older person should consume daily for optimum health. There is also lack of agreement about what interventions are effective in supporting individuals with complex physical and cognitive problems to achieve daily fluid intake targets.

Growing points: To improve hydration care for residents, care home teams should be competent in the delivery of hydration care, and work closely with integrated multi-professional healthcare specialists to provide proactive case management.

Areas timely for developing research: There is a need for understanding of what hydration practices and processes are effective for care home residents and including these in multi-component interventions.

Key words: hydration interventions, older residents, care home

Introduction

Although defined in a variety of ways, ranging from a general application to older people who are ill or disabled to clinical conceptualizations reflecting a variety of interrelated co-morbidities,¹ there is a widespread acceptance that an increasing ageing population means that levels of frailty are also expected to increase.² For example, one recent study identified as many as 12% of people over the age of 75 using primary care are severely frail.³ As such, it is expected that care home populations, which reflect ageing, dependency and possible health-related needs requiring ongoing care, are likely to experience high levels of frailty.⁴

A recurring challenge that exists in care homes is the need for good hydration care. Those residents who are moderately to severely frail are reliant on staff for support to meet their hydration requirements. Other factors that increase reliance on caregivers include the presence of disease and/or disability, cognitive impairment that impacts on swallowing, reduced mobility, altered alertness and poor dexterity.⁵⁻⁷ Of the care home population, residents living with dementia are particularly at high risk of dehydration,⁸⁻¹⁰ notably through issues such as forgetting where to get drinks, refusing to drink, choking and swallowing difficulties. Hodgkinson *et al.*'s¹⁰ systematic review aimed to determine the best available research evidence related to maintaining oral hydration in older adults. The review highlighted that decreased mobility, reduced functional capability and impaired cognition were risk factors of both dehydration and decreased fluid intake. Those living

in institutional care were also identified as more likely to experience reduced fluid intake. Although a variety of approaches can be used to combat dehydration for care home residents, including those with dementia, Bunn *et al.*'s¹¹ systematic review of hydration interventions in long-term care suggested a trend towards increasing fluid intake via the use of multi-component interventions. As residents often have many coexisting health, sensory, functional and cognitive problems it is unlikely that a single intervention would be effective. Identified components included greater choice and availability of beverages, increased staff awareness, and increased staff assistance with drinking and elimination.

This article provides an overview of the literature related to hydration interventions to support care home residents to drink sufficient fluid, highlighting gaps in knowledge and important areas for future research.

Sources of data

This review draws on three sources. First, Hodgkinson *et al.*'s¹⁰ systematic review that aimed to determine the best available research evidence related to maintaining oral hydration in older adults. Second, Bunn *et al.*'s¹¹ systematic review of practices for increasing fluid intake and reducing dehydration risk in older people living in long-term care. Third, a literature review undertaken for the purpose of the development of a multicomponent hydration intervention for people with dementia living in care homes.¹² This review used an adapted version of Bunn *et al.*'s¹¹ systematic review strategy on the

following databases: Applied Social Sciences Index and Abstracts (ASSIA), CINAHL, Medline, Proquest Hospital Premium Collection, Cochrane Library and RCN databases using the following search terms:

('Dehydration' OR 'Hydration' OR 'Drinking' OR 'Beverage' OR ('fluid intake') OR ('Fluid balance') OR ('Fluid imbalance')) AND ('Alzheimer*' OR 'Dement*' OR ('memory problem*') OR ('cognitive problem*') OR ('cognitive impair*')) AND (('Assisted living') OR ('resident* care') OR ('resident* home') OR ('resident* facilit*') OR ('nursing home') OR ('nursing facilit*') OR ('care home') OR ('care facilit*')). Search results were limited to the period 2013 to 2019 to update literature included in Bunn *et al.*'s¹² review.

A total of 2144 articles were identified, but this was reduced to 66 when results were screened for relevant titles and abstracts. Following full review text assessment three studies were included in the final synthesis.^{13–15} The reasons for the exclusion of items included the following: observational studies without an intervention, opinion pieces, hydration being included alongside nutrition without a distinct hydration focus, study population groups not comparable to older people with dementia in care homes and population focus on specific conditions affecting fluid intake (e.g. dysphagia). Following selection, data extraction was completed using PICO, which is endorsed by the Cochrane Collaboration.¹⁶ The overall quality of this evidence was not strong, but three papers were included after raising the threshold in order to engage with the interventions that had been investigated. The selected studies either included hydration levels as an outcome measure alongside other factors^{13,15} or used descriptive measures to assess effectiveness of interventions, such as changes to overall hydration consumption in the care facility.¹⁴ However, a range of variables that may have an impact on hydration (e.g. environmental factors such as meal-time location and visual prompts to drink) were not investigated in these studies. This clearly suggests the need for further evidence on hydration interventions for people with dementia in care homes.

Due to the low numbers of studies that met all three categories of the population studies (hydration, care home residents, dementia) and criteria for methodological rigour (study design and clear intervention), descriptive studies and those focusing on related issues were also considered as background literature. This added three more studies for consideration, one with a focus on dysphagia rather than dementia¹⁷ and two that discussed comparable nutrition interventions of which hydration could be part.^{18,19}

Areas of agreement in the literature

There is a growing body of evidence that suggests hydration is an ongoing concern for residents living in care homes, often as a consequence of chronic health conditions, mobility and communication problems, and is a major cause of subsequent hospital admissions.^{11,12,20} Within this population, those with dementia or cognitive problems experience exacerbated difficulties with drinking.^{8–10} Jimoh *et al.*²¹ reported on the Dehydration Recognition In our Elders (DRIE) and Fluid Intake study in the Elderly (FISE) studies and concluded that overall drink intake is too low in care homes. Inadequate fluid intake can lead to many health problems, such as headaches, lethargy, inattention and dizziness²² and even decreased quality of life, morbidity and mortality for those with dementia.^{23–25} Despite this, hydration is not always at the forefront of the literature for this population, as greater focus is often given to issues such as nutrition^{18,19} or dysphagia.^{17,26} As such, research into hydration care should be a key priority.

Potential successful strategies found in the most recent literature focus on single approaches and interventions including the use of equipment such as specialized beakers, increased staff awareness of the importance of hydration, the use of feeding assistants, improved atmosphere and environment design at meal times, greater choice and availability of beverages and increased frequency of routine offers.^{13,14} However, some studies indicate that use of multi-component interventions is most effective

for negating poor oral fluid intake.¹⁰ One recent example of this approach included the use of comprehensive geriatric assessment to identify subsequent appropriate individualized therapeutic interventions.¹⁵

Areas of controversy

While there is substantial discussion about how much an individual should drink each day, there remains a lack of consensus and robust evidence-based knowledge across the scientific community about what constitutes adequate intake and poor intake for older people living with multimorbidities.^{27–29} It is widely recognized that hydration requirements vary for each individual, depending on physical activity, environmental conditions, dietary patterns, alcohol intake, health problems, gender and age. General guidelines exist, such as the ‘8x8’ rule, which promotes drinking at least eight 8-oz glasses of water a day (~1.9 litres), and the ‘1600mls for women and 2000 mls for men’ rule.²⁹ European guidelines recommend an intake of 2.5 litres of fluid consumed through food and drink daily for men, and 2 litres of fluid daily for women. These guidelines suggest 70–80% of the daily water intake should come from drinks, and the remaining 20–30% from food.³⁰ Chidester and Spangler³¹ offer the calculation, 100 mL/kg for first 10 kg, 50 mL/kg for next 10 kg, and 15 mL for remaining kilograms, which adjusts fluid requirements for body weight, whether the individual is of normal weight, underweight or overweight. Furthermore, while it is acknowledged that the prevalence of multimorbidity and polypharmacy in the care home resident population is high and this should be taken into consideration when determining hydration targets for individuals, little evidence exists that improves knowledge about how these conditions should be accounted for in required intake calculations.

Though there is ongoing discussion about how much fluid an older person with complex needs requires each day, there is agreement that supporting them to drink sufficient fluid is challenging. This is exacerbated when residents restrict their own

fluid intake to manage anxiety about incontinence or choking. While there is agreement about these issues, and attention has been given to describing the nature of the problem, there is less agreement about what interventions are effective in supporting individuals with complex physical and cognitive problems to achieve daily fluid intake targets. In Bunn *et al.*'s¹¹ systematic review a range of evidence describing ways of encouraging older people to drink more was identified. Six of the nine intervention studies selected for this review identified a positive effect of multicomponent strategies on fluid intake. However, few of the selected studies evaluated the feasibility of interventions and there was a dearth of studies that evaluated the feasibility of hydration strategies with people with dementia living in long term care. Cook *et al.*'s¹² review points to the ongoing lack of development in this area of dementia care. Hence, conclusive evidence for effective hydration interventions for care home residents remains lacking.

Growing points

While the evidence base for what interventions are effective in supporting resident hydration remains underdeveloped, it has long been recognized that oral hydration support can be a very intensive and time-consuming work. This has to be balanced with other aspects of essential care.^{32–35} Such workforce constraints and the time demand required to support residents to drink will not decrease. Indeed increasing dependency levels of residents with multimorbidity and those with cognitive problems would suggest that the constraints of this aspect of care will escalate. This is drawing attention to the staffing requirements of care homes, not only numbers of staff but also the competence of staff to deliver this aspect of care. Workforce competency and proficiency to deliver effective hydration support is a subject that is gaining attention within the context of recent workforce competency frameworks development. These frameworks set out competency standards required for care home staff and health professionals to deliver enhanced care for older people

with complex needs, including those residing in care homes.³⁶ Hydration care and the competency needed to deliver this aspect of care is often secondary to nutritional support. Recent research concerning development and testing of hydration interventions is leading to recommendations for hydration care to be a core element of induction training for work in care homes and ongoing professional development programmes, with the aim of improving knowledge about fluid intake requirements and how to optimize intake.¹²

The recent NHS Care Home Vanguard initiatives in the UK³⁷ highlighted the incidence of admission to hospital from care homes with primary and secondary diagnosis of dehydration. Although coding errors are inherent in electronic health records, and there is potential for residents to become dehydrated during their journey to hospital for urgent and emergency care, it is clear that the prevalence of dehydration in the care home population is higher than community dwelling older people. One response to this is to improve hydration care in care homes, not only by the care home team, but through integrated working with multi-professional healthcare specialists and residents' visitors (including family and friends). A virtual ward team comprised of geriatricians, psychogeriatricians, nutritionists and specialist nurses, working alongside an enhanced community and primary care model of wrapped around care home services, offer one approach for proactive case management for enhanced healthcare to be implemented with residents who are struggling to drink sufficient fluids.³⁸

Future research requirements

Due to the lack of consensus and focus on the fluid requirements of older individuals with multimorbidity and polypharmacy, research is required to further understand and calculate hydration requirements for these individuals. There is a need for further understanding of what hydration practices and processes are effective in increasing fluid intake by care home residents. Jimoh *et al.*²¹ offer a detailed insight to drink patterns in care homes and argue

that offering more drinks frequently in sufficient quantities, particularly before and during breakfast and with medications, is necessary for residents to meet daily fluid requirements. This team also stresses the need for research to assess the effectiveness of hydration strategies on fluid intake and health outcomes.

In particular, there is a need for further development of multicomponent interventions. Although the potential effectiveness of these was established by Bunn *et al.*,¹¹ only one recent study has adopted this approach.²⁷ The available evidence suggests that multicomponent interventions need to incorporate support for functional issues alongside raising awareness of hydration; an example of functional issues being the use of coloured glasses to highlight the presence of a drink for older people with dementia. Currently, raising the awareness of hydration is infrequently incorporated in interventions.

Cook *et al.*¹² identified a range of hydration practices that are implemented in English care homes. In addition to interventions described in previous studies this team drew attention to the influence of social interaction in encouraging residents to drink (such as visitors participating in cake baking and then enjoying a cup of tea while eating their cake) and drinking activities (such as themed and taster drinks sessions) as novel and creative hydration practices. The contribution of families' and friends' involvement in hydration support for residents therefore should be considered in future research.

There is also a need for improvement in the quality of evidence in hydration care. Prior studies combined hydration outcomes alongside other outcomes^{13,14} or evaluated the effectiveness of interventions via descriptive measures.¹⁵ There is also a lack of a consistent hydration outcome measures adopted across all studies.

Embedding effective hydration interventions in care homes is complex. Implementing new approaches to hydration care requires careful planning and organizational commitment in order to facilitate adoption and sustain change.³⁹ In addition, workforce issues should be considered, in particular staff competence to provide hydration support. This

includes staff competence to implement hydration support both within care home routines and through creative, person-centred approaches. Care home staff also requires competence to address the ethical dimensions of respecting resident autonomy, and resident capacity to make informed choices about how much they should drink to remain healthy, artificial hydration support, and end-of-life care decisions.

Discussion

The literature review has identified that frailty and dementia are significant risk factors for decreased fluid intake for residents living in long-term care facilities, indicating the importance of promoting hydration interventions that are supported by families and friends, and implemented by the workforce caring for them. Despite this, the literature on hydration practices for people living in care homes remains underdeveloped, and there is limited agreement on effective hydration interventions and outcome measures that determine efficacy.

Potential approaches for addressing issues of hydration in care homes are divided into three categories within the literature: environmental modifications (such as changes to routine, context and ambience); behavioural modifications (such as changes to education and training of people with frailty and dementia and their caregivers); and multi-component approaches (multiple ingestion episodes alongside awareness-raising processes). However, despite the evidence in the literature that multi-component interventions are potentially most effective in addressing hydration needs in this area, it is noticeable that this approach has not been discussed regularly in the evidence published since Bunn *et al.*'s¹¹ systematic review in 2015. This is a potentially key reflection when considering that although hydration care is integral to daily life, at best attention focuses on functional aspects of hydration care, and at worst it is often overlooked in the literature in favour of a focus on nutrition.

Of particular concern is that overall quality of current evidence of the effectiveness of hydration

interventions is not strong. In the current evidence, there is also limited recognition of the contribution of integrated multi-professional healthcare teams working closely with care home teams to improve resident hydration, particularly in the context of complex multi-morbidity. Furthermore, this will raise a necessity for competency standards across the entire older people's care workforce. Moral dilemmas exist when providing support for extremely vulnerable residents, for example ethical issues arising when residents cannot drink or refuse to drink, and decisions are required about artificial hydration. Hence, these issues should also be considered in workforce planning for older people's services.

Conclusions

The challenge of providing optimum hydration care for care home residents cannot be underestimated. Hydration status must not only be addressed at times of crisis but should be a routine part of care for those living in care homes with complex needs and dementia. If it is accepted that multi-component approaches are most effective, then implementation will be required at scale. This, however, requires greater and more formalized organizational and cross-organizational support, and a workforce skilled at understanding the complexity of issues such as individual hydration need, problems in drinking sufficient fluid and how to implement effective hydration strategies. However, such support and understanding can be particularly challenging in care home settings, which may be faced with low levels of staff recruitment and retention, high levels of staff turnover and difficulties in accessing education and skills development opportunities.

Authors' biography

Glenda Cook PhD; MA (Medical Ethics); BSc (Psy); RGN; RNT

Glenda is Professor of Nursing, at Northumbria University, UK. She leads the ageing, later life and long-term conditions research group. The research

group is comprised of four pillars of activity. These are ageing, housing and communities; creative ageing; quality older people's care and integrated ageing services across health, social care and housing. Her particular research interests focus on services that enable older people to experience optimum quality of life, whether that is living independently in their own home and community, or living in long term care.

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Dr Philip Hodgson is a lecturer in health research in the Department of Nursing, Midwifery and Health at Northumbria University, UK. He leads the home and health research and holds a particular interest in housing and health, advice services and the integration of health, social care and housing. Philip has undertaken a substantial number of applied health research and evaluation projects, including a recent feasibility study of a multi-component hydration intervention for care home residents with dementia.

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Juliana is a senior lecturer in adult nursing, and departmental PGR programme lead at Northumbria University, UK. She is a Scholar of the Florence Nightingale Foundation, a Community of Practice Workforce Lead for the North Regional Frailty Programme, and a former member of the National Vanguard 'Enhanced Health in Care Homes' project. Her academic and research activities focus on the development of a workforce skilled in the health and social care of older people, integrated health and social care, gerontology, and the involvement of older people in nurse education.

Lesley Bainbridge MA; BSc; RM; RN

Lesley is a registered nurse who has spent most of her career specializing in the care of older people. She has been involved in a number of national initiatives and is currently working as a clinical lead for the Care Closer to Home Programme across North Cumbria, North East England and Hambleton Richmondshire and Whitby where the sole focus of the work is frailty. She is passionate about ensuring the care system reflects the needs of the whole person

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Paul is a qualified mental health nurse with over 14 years' experience of working in older person's mental health. Paul works as a Practice Education Facilitator leading with supporting student nurse placements in the care home sector and is also the care home copper with in the Community of Practice North Regional Frailty Programme.

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Conflict of interest statement

The authors have no potential conflicts of interest.

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