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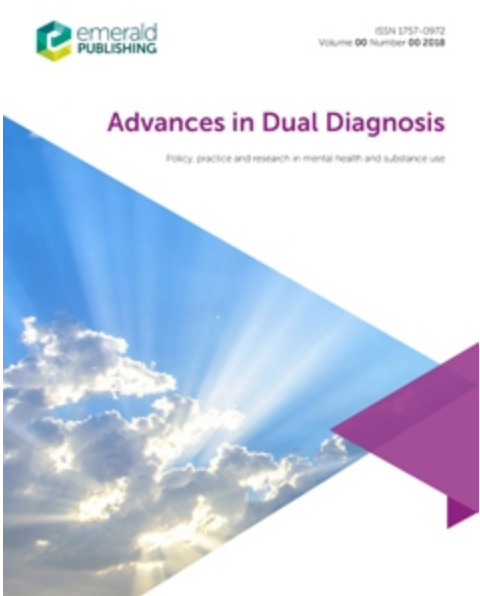
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Systematic review of modifications to alcohol screening and brief interventions for older adults with cognitive impairment

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Alcohol brief interventions for cognitive impairment

Systematic review of modifications to alcohol screening and brief interventions for older adults with cognitive impairment

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Alcohol brief interventions for cognitive impairment

Abstract

Purpose:

Older adults with cognitive impairment who drink too much alcohol risk further cognitive decline and other alcohol-related harms. We reviewed the literature to synthesise existing knowledge about modifications to alcohol screening and brief interventions for people with cognitive impairment and their effectiveness.

Design:

We carried out a systematic review (PROSPERO: CRD42022378827). We included studies of older adults with cognitive impairment that examined alcohol screening or brief interventions applied to or modified for this group. A narrative synthesis was conducted.

Findings:

Four studies (5 papers) were found that met the review inclusion criteria. Alcohol screening tools and brief interventions were reported to be acceptable and feasible in older people with cognitive impairment (2 studies). No studies of effectiveness of alcohol screening or brief interventions for people with cognitive impairment were identified.

Originality:

This original systematic review found no studies exploring the effectiveness of alcohol screening or brief interventions modified for people with cognitive impairment though studies indicated they are considered feasible and acceptable in this population.

Research implications:

Research should focus on the development of modified interventions that should be tested rigorously to tackle the large and growing burden of cognitive impairment globally.

Key words: Alcohol-related disorders, cognition, cognitive dysfunction, alcohol screening, alcohol brief intervention, systematic review.

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4 **1. Introduction**
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8 Dementia, an umbrella term for a group of largely progressive diseases that affect memory, other cognitive
9 functions and behaviour, is a significant public health issue (World Health Organization (WHO), 2017) and the
10 number of people with dementia worldwide is expected to reach 152.8 million by 2050 (Nichols et al., 2022).
11
12 In addition to the substantial human cost, the estimated financial cost of dementia in the UK is currently £42
13 billion (Alzheimer’s Society, 2024). Worldwide, the cost of dementia is expected to rise to an estimated US\$
14 2.8 trillion by 2030 (Patterson, 2018, Wimo et al., 2023, Alzheimer’s Disease International, 2021).

15
16 Mild cognitive impairment (MCI - impairment that can be identified in diagnostic tests, but where activities of
17 daily living are not severely affected) and subjective cognitive decline (SCD) are very common in older people
18 (Winblad et al., 2004b, Röhr et al., 2020) and both are linked to a higher likelihood of further cognitive decline
19 and dementia (Slot et al., 2018, Lopez et al., 2012, Glodzik-Sobanska et al., 2007, Dufouil et al., 2005).

20
21 Drinking alcohol above low risk levels is associated with an increased risk of cognitive impairment and
22 progression to dementia (Rehm et al., 2019, Cooper et al., 2015, Bos et al., 2017, Yao et al., 2020), and in
23 England, 40% of men and 19% of women aged 65-74 drink above low risk levels (above 14 units (112g of
24 ethanol) per week consistent with the UK Low Risk Drinking Guidelines) (Department of Health, 2016, NHS
25 England, 2024). ~~Using prevalence estimates for MCI, SCD and at-risk drinking, we have estimated there to be~~
26 ~~927,484 older people in the UK at an additional, preventable, risk of further cognitive decline or dementia due~~
27 ~~to alcohol consumption. These estimate calculations can be found in <supplementary materials 1>.~~

28
29 Drinking above 14 units of alcohol per week is associated with an increased risk of dementia, and the risk
30 increases with higher consumption (Sabia et al., 2018). ~~Chronic heavy alcohol consumption is causally~~
31 ~~associated with cognitive impairment though a number of pathways, including nutritional deficiencies, liver~~
32 ~~and cerebrovascular disorders, brain injury and direct neurotoxic effects of alcohol (Heirene et al., 2018).~~ In
33 addition to older adults drinking above low risk levels being more likely to experience cognitive decline (Rehm
34 et al., 2019, Lao et al., 2021, Cooper et al., 2015, Bos et al., 2017), they also experience higher levels of frailty
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(Strandberg et al., 2018), a greater risk of falls (Tan et al., 2021, Ortolá et al., 2017, WHO, 2007), and harm as a consequence of interactions between medication and alcohol (Zanjani et al., 2018). With 24% of the population projected to be aged 65 and above by 2043 (Lewis, 2010), addressing alcohol consumption in this age group is a public health priority.

The World Health Organization and Lancet Commission have identified alcohol as a key modifiable risk factor in the development of dementia and recommend interventions to reduce drinking in older adults with and without MCI (WHO, 2017, Livingston et al., 2024). The need for appropriate alcohol interventions has been further highlighted in a recent national consensus on dementia risk reduction policy in England (Demnitz-King et al., 2026).

The UK clinical guidelines for alcohol treatment (Department of Health and Social Care, 2025) recommend that staff in all health and social care settings (1) use validated screening tools in order to identify people whose health is at risk from their alcohol consumption and (2) deliver alcohol brief interventions to people who drink above low risk guidelines but are not alcohol dependent. The international evidence base indicates that alcohol brief interventions, typically delivered by non-specialists outside of alcohol treatment settings, are effective in reducing alcohol consumption (Kaner et al., 2018). However, older adults experiencing cognitive impairment present specific challenges both when identifying at-risk alcohol consumption and when addressing at-risk alcohol consumption through the delivery of alcohol brief interventions. Cognitive impairment can affect multiple cognitive domains, including memory, attention, language, executive function and processing speed (Winblad et al., 2004a, Roberts and Knopman, 2013); ~~and it is also~~ related to a number of behavioural changes, including apathy and disinhibition (Musa Salech et al., 2022) and is linked to impaired insight into difficulties (Vogel et al., 2004, Muñoz-Neira et al., 2019), all of which ~~that~~ can have a negative impact on engagement with interventions such as alcohol brief interventions. Cognitive impairment may negatively impact accurate screening for at-risk alcohol consumption; These multifaceted impairments may affect an individual's ability to engage in both the process of alcohol screening (for example, memory impairments may lead to issues with accurate recall of recent alcohol consumption (Wadd et al., 2013)).

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~~Furthermore, and with engagement in brief interventions (for example,~~ problems with planning, evaluation of evidence, ~~and~~ decision making, ~~as well as and~~ retention of information, may ~~affect impact~~ the effectiveness of alcohol brief interventions that rely on providing feedback on current drinking, ~~—and—associated risks highlighting risks~~, eliciting benefits of reducing alcohol, identifying ~~alcohol reduction~~ goals and providing a choice of strategies to support reduction (Department of Health and Social Care, 2025). Modifications may therefore be required for both screening and brief interventions to be effective in this population. At present, no guidance is available regarding alcohol screening and brief interventions in people with cognitive impairment.

2. Objectives

This systematic review attempted to synthesise the current evidence about the effectiveness of alcohol screening to identify at-risk drinking and brief interventions to reduce alcohol intake among people with cognitive impairment by addressing the following review questions:

1. How has alcohol screening been modified for older adults with cognitive impairment?
2. What is the content of alcohol brief interventions modified for older adults with cognitive impairment?
3. How effective are (i) alcohol screening tools and (ii) brief interventions modified for older adults with cognitive impairment in (i) identifying at-risk alcohol consumption and (ii) reducing alcohol consumption in older at-risk drinkers with cognitive impairment?

3. Methods

The review protocol was registered on the PROSPERO international prospective register of systematic reviews: CRD42022378827. The review was conducted using Covidence, a web-based collaboration software platform that streamlines the production of systematic reviews (www.covidence.org). Reporting was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 checklist (Page et al., 2021).

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Inclusion criteria

Papers were included if they involved:

Participants: Adults aged 50+ with cognitive impairment that was not due to traumatic brain injury, stroke or learning disability from birth, including SCD, MCI, and dementia and, for studies of brief interventions, drinking above low risk levels (>14 units (112g) of alcohol per week). Preliminary searches indicated that some papers relating to interventions for older adults with cognitive impairment included patients aged 50 and above; therefore, 50 was chosen for greater inclusivity of studies. Papers relating to traumatic brain injury, stroke or learning disability from birth were excluded due to the significant differences in aetiology and progression compared to SCD, MCI and dementia.

Interventions: Alcohol screening or alcohol brief interventions with any modifications made for people experiencing cognitive impairment. Screening and/or interventions delivered in any setting were included. Alcohol screening included any tools used to identify at-risk drinking. In line with Kaner et al.'s (Kaner et al., 2018) Cochrane review of brief alcohol interventions, brief interventions were defined as time limited brief advice or brief life-style counselling delivered in non-specialist (i.e., non-alcohol treatment) settings.

Comparators: Studies including any comparators were considered, including those with no comparator.

Outcomes: For review questions 1 and 2, all papers with the relevant participants and intervention were included, regardless of outcomes. For review question 3, we were interested in the outcome of reduced alcohol consumption.

Primary research studies of any research design and systematic or scoping reviews published between January 2000 and January 2023 in the English language were included.

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Search strategy and data sources

A search strategy for PubMed, Cochrane Library, EBSCO CINAHL Plus, EBSCO MEDLINE, PsycINFO, and Web of Science was implemented between 06/12/2022 and 13/01/2023, combining alcohol-related terms, screening and intervention and cognition terms. The search strategy is included in <supplementary materials [21](#)>. Reference lists of included papers were screened for potentially relevant studies.

Study selection and data extraction

Study selection was completed by two researchers (PC and MG) using Covidence software. Covidence identified and removed duplicate studies. Guidance on study selection was developed for both the title and abstract screening phase and the full paper review phase. Due to the high number of papers identified through the search strategy, title and abstract screening was split between PC and MG and the third reviewer (LF) checked a random 10% of papers to ensure agreement on the decision made. Two reviewers (PC and MG) conducted the full text screening of all studies and any disagreements on study inclusion were taken to the third reviewer (LF) for discussion and decision on whether to include them.

Data extraction

Data were extracted from reports by the lead author (PC). The reports and extracted data were reviewed by all authors and changes or additions to the included extracted materials were made.

Quality assessment

Quality was assessed using the Critical Appraisal Skills Programme (CASP) Qualitative Studies Checklist (CASP, 2023a) for qualitative studies, CASP Diagnostic Test Study Checklist (CASP, 2023b) for tool validation studies, and the Cochrane Risk of Bias (RoB 2) tool for randomised controlled trials (Sterne Jac, 2019). To assess quality of surveys and cross-sectional analyses, the AXIS tool was used (Downes et al., 2016).

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Data synthesis

A narrative synthesis was conducted following the guidance of Popay et al. (2006). Synthesis involved tabulation, textual descriptions and concept mapping. We tabulated study data with details of country, setting, aims, design, participants, intervention description, modifications for people with cognitive impairment, and results.

A conceptual map of modifications to screening and interventions for people with cognitive impairment was developed to guide how the reports were grouped for synthesis. Similarities and differences between studies were then explored through aims, study populations and descriptions of interventions.

4. Results

Study selection

The search was completed on 13th January 2023 and found 21,199 references (including 5 through reference list searches), of which 10,673 were duplicates, leaving 10,526 to screen. Of these, 328 reports were retrieved for full text screening. The majority of reports (n=193) were excluded at full text screening stage because they either did not include people with cognitive impairment or did not describe whether any participants had cognitive impairment.

Two reports were published protocols of relevant studies that were not yet completed (Hoy et al., 2022, Paula et al., 2021) . At the time of publication of this review, these published protocols did not report any results and therefore had no data to be included.

A list of excluded papers is available upon request.

Five reports of four studies were included in the review. Figure 1 shows the PRISMA flow diagram and Table 1 contains descriptions of the included studies.

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Objective 1: How has alcohol screening been modified for people with cognitive impairment?

Four studies (five papers) included the use of alcohol screening tools (Philpot et al., 2003, Randall-James et al., 2015, Thake et al., 2015, Ettner et al., 2014, Duru et al., 2015). Table 2 includes a summary list of modifications and suggested modifications to alcohol screening from the included papers. Philpot et al. (Philpot et al., 2003) examined test characteristics (i.e. sensitivity, specificity and positive predictive value) of screening tools to identify problem alcohol use in people aged 65 and older attending a community mental health service in London, UK, of whom 68% had cognitive impairment; these tools were CAGE (mnemonic of Cut down, Annoyed, Guilty, Eye-opener) and the Alcohol Use Disorders Identification Test (AUDIT).Whilst the authors did not look at modifications to existing screening tools or processes, they sought to identify which tool is most effective in older adults, including those with cognitive impairment, and investigated the most appropriate cut scores to identify an alcohol use disorder in this population. They concluded that the AUDIT and AUDIT-5 were more accurate at identifying AUD in this population than the CAGE and that a cut score of 4/5 on the AUDIT was recommended for this population.

Randall-James et al. (2015) examined feasibility and acceptability of alcohol screening tools within a single English memory assessment service (MAS) using qualitative interviews with service users with cognitive impairment. Thake et al. (2015) examined current practice, barriers and facilitators of alcohol screening tools in multiple MAS in England and Wales from the perspective of service providers and professionals using a survey and focus groups. These two studies made suggestions about modifications based on their findings. Randall-James et al. (2015) suggested that recall may be improved by providing drink diaries and measuring cups before administering screening tools, and accuracy may be improved by using interpersonal skills to develop rapport, repeating, offering confirmatory statements, following up on questions to ensure shared understanding, and involving informants, for example, carers or family members. Randall-James et al. (2015) assessed these modifications in terms of feasibility and acceptability, finding them both feasible and acceptable, but not in terms of effectiveness. They identified some key challenges to screening for at-risk

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alcohol consumption in this population, including the need to build a trusting relationship, difficulties with completing drinking diaries, issues with using informants to gather information and the need for education for staff. Thake et al. (2015) in their study of practitioner views, found that the use of validated alcohol screening tools was rare (one out of thirty five sites). Like Randall-James et al. (2015), they also suggested that involving informants may improve detection of alcohol problems in MAS, but may, conversely, cause respondents to underreport alcohol consumption due to stigma and relationship dynamics. Observations of the home environment were also suggested. Thake et al. (2015) made recommendations and identified challenges, such as staff knowledge and skills, perceived denial of problems by services users and insufficient resources, but the authors did not assess the modifications in their study.

One study (two reports) described an alcohol screening tool that was used to identify study participants and inform the content of the brief intervention (Duru et al., 2015, Ettner et al., 2014). This study described a screening tool that included a question about memory problems: the Comorbidity Alcohol Risk Evaluation Tool (CARET) (Ettner et al., 2014, Duru et al., 2015). The tool explores a range of comorbidities and assigns a level of alcohol consumption that corresponds to at-risk drinking for people with that comorbidity. This tool includes one item that refers to memory problems: "Alcohol use and comorbidities in the past 12 months: option e: Memory problems, heartburn, stomach pain, nausea, vomiting, or feel sad/blue in the past 12 months" people who select this item are considered at-risk drinkers if they drink: 5 (US standard) drinks per day at any frequency, 4 drinks per day at least 2 times per month, or 3 drinks per day at least 2 times per week. The inclusion of an item relating to memory problems had two impacts: (1) it provided a specific level of alcohol consumption at which drinking was considered at risk if individuals also had memory problems and (2) following screening, it prompted the provision of a 'forgetfulness tip sheet' to people drinking at risky levels who also experienced memory problems. ~~It should be noted that the inclusion of memory as a comorbidity is part of the original tool and its inclusion alongside other comorbidities within the same item limits its specificity to a population of people with cognitive impairment.~~

Objective 2: What is the content of alcohol brief interventions modified for people with cognitive impairment?

Two studies (three reports) examined alcohol brief interventions (Thake et al., 2015, Duru et al., 2015, Ettner et al., 2014). Table 3 includes a summary of modifications and suggested modifications to brief interventions.

One qualitative study examined barriers and facilitators of alcohol brief interventions (as well as screening tools) in MAS in England and Wales from the perspective of service providers and professionals (Thake et al., 2015). The authors suggested that modifications to MAS to enable this type of service to respond to at-risk drinking would require better training and skills among professionals, more time in consultations and clear and resourced pathways for ongoing care (Thake et al., 2015).

Another study examined the effectiveness (Ettner et al., 2014) and active ingredients (Duru et al., 2015) of a brief intervention for people aged 60+ in a randomised controlled trial (RCT) (the Project Senior Health and Alcohol Risk Education (SHARE) study) in the United States. Patients with severe cognitive impairment (assessed by the treating physician) were excluded and levels of mild to moderate cognitive impairment amongst the study population were not reported. After screening using the CARET, participants identified as at-risk drinkers received a personalised report, a booklet on alcohol and ageing, and “tip sheets” according to specific circumstances. Participants identified as having “memory problems” were provided with the “forgetfulness tip sheet”. Physicians were prompted to discuss the report with the patient during subsequent routine visits. The tip sheet included reasons for forgetfulness, including ageing, anxiety, depression, medications, Alzheimer’s Disease along with activities to help, serious signs to look out for and places to access help. However, it did not include any information on the link between alcohol and memory problems or suggest any specific support for at-risk drinkers with memory problems. Clinicians and health educators had subsequent tailored interactions with participants, through three contacts, including: assessment and feedback, negotiation and goal setting, behavioural change skills, self-help resources, and follow-up and reinforcement, so it is likely that there were further modifications for those with memory problems, but these were not described in the reports.

Objective 3: How effective are (i) alcohol screening tools and (ii) brief interventions modified for people with cognitive impairment in (i) identifying at-risk alcohol consumption and (ii) reducing alcohol consumption in older at-risk drinkers with cognitive impairment?

Alcohol screening tools

No studies specifically examined the effectiveness of alcohol screening tools modified for people with cognitive impairment. In the Project SHARE Study, the screening tool included a question about memory problems (Ettner et al., 2014, Duru et al., 2015), but there was no specific evaluation of the effectiveness of using this question in this context. Philpot et al. (2003) compared the CAGE, AUDIT and an abbreviated version of the AUDIT (AUDIT-5) in a population with high levels of cognitive impairment and found the AUDIT and AUDIT-5 to be superior to the CAGE. Thake et al. (2015) and Randall-James et al. (2015) suggested modifications, but it was not within the scope of either study to test them.

Alcohol brief interventions

The trial in the US of the Project SHARE alcohol brief intervention found that it reduced at-risk drinking (56% versus 67%, $p \leq 0.01$) and usual number of drinks per week (9.5 (intervention) versus 11.6 (control), $p \leq 0.01$) at 12 months (Ettner et al., 2014). The authors did not report its effectiveness specifically in people with cognitive impairment. The associated report suggested that keeping a drinking diary AND making a drinking agreement, and a discussion with a physician during the 12 month follow up were likely to be active ingredients of the intervention, but whether specific elements were more effective for people with cognitive impairment was not reported (Duru et al., 2015). Thake et al. (2015) made suggestions for modifications but it was not within the scope of the study to test them.

Risk of bias in assessing evidence of effectiveness in included studies

A summary of our quality assessments is provided in <supplementary materials 32>. The study designs of the included studies were heterogeneous, and none specifically assessed effectiveness of modifications to

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screening tools or alcohol brief interventions in people with cognitive impairment, so assessing risk of bias was not relevant.

The qualitative studies in British MAS by Randall-James et al. (2015) and Thake et al. (2015) were of moderate to good quality and provided useful evidence to support development of modified screening tools and brief interventions, but no evidence of effectiveness.

The study by Philpot et al. about test characteristics was moderate quality (Philpot et al., 2003).

The Project SHARE RCT was good quality and provided evidence to support development of brief interventions for people with cognitive impairment, but no direct evidence of effectiveness in this group (Ettner et al., 2014).

5. Discussion

This review found a very limited evidence base relating to modifications to alcohol screening and brief interventions for older adults with cognitive impairment, with no studies exploring the effectiveness of modifications, although there was some evidence of feasibility and acceptability of screening and brief intervention in memory services that serve this population. This evidence, in combination with the high prevalence of at-risk drinking in people aged 65 and older in the UK, indicates that this is a key area for intervention development.

From this review, the AUDIT was a more effective screening tool than CAGE at identifying at-risk drinkers in older populations including those with cognitive impairment; however, the recommendation of using a cut score of 4/5 in this population has implications for its utility in clinical practice as a single upper cut score is often used to aid clinical decision making (Office for Health Improvement and Disparities, 2020).Whilst modifications to administering the AUDIT in people with cognitive impairment were suggested (Randall-James et al., 2015, Thake et al., 2015), the effectiveness of these modifications has not been tested. Both papers suggested using informants to gather accurate data on alcohol consumption; however, larger numbers of

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people living alone, including a higher proportion of older adults (Office for National Statistics, 2025), means that this may not always be feasible in practice.

Project SHARE showed promising results for an alcohol brief intervention for older adults delivered in primary care services. However, whilst it is likely that the sample included some older adults with mild cognitive impairment, this was not measured and therefore any results for this population remain unknown. Cognition was included as a possible comorbidity; however, its inclusion alongside other comorbidities within the same item limits its specificity to a population of people with cognitive impairment. Furthermore, it was not the focus of the intervention and the link between alcohol consumption and cognition was not illustrated in the “tip sheet”.

Research into alcohol and other drug interventions delivered over longer time periods and in specialist services, have identified potential modifications to alcohol interventions for people with cognitive impairment that could be useful in informing the design of a brief intervention modified for older adults with cognitive impairment. Modifications in the literature include changes to training and information provision (e.g. staff training on alcohol and cognitive impairment, providing information on the link between alcohol and cognitive impairment to patients), changes to intervention delivery (e.g. written records, multi-format materials, single goal focus, detailed plans and steps, flexible length and pace, practising skills rather than focussing on concepts) and pragmatic facilitators (e.g. ways to identify staff, using prompts and reminders for appointments) (Seddon et al., 2021, Wadd et al., 2020, Collings et al., 2022). These modifications largely mirror modifications to (non-alcohol specific) treatments for people with cognitive impairment caused by brain injury, which often focus on adaptive (e.g. reducing distractions, timing sessions to maximise cognitive capacity, reducing complexity of tasks) and compensatory (e.g. assistive technologies, such as electronic planners and reminders, timers, alarms and notebooks) modifications (Wortzel and Arciniegas, 2012, Gallagher et al., 2019), as well as making links between the cause of cognitive impairment and the impairment itself explicit (Gallagher et al., 2019). Given the evidence in these related fields, some of these modifications could be applied to an alcohol brief intervention to be tested in future research, especially highlighting the

1 Alcohol brief interventions for cognitive impairment

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3 link between alcohol consumption and cognitive impairment, the simplification of materials, focussing on one
4 goal and the use of a suite of options for reminders and prompts that are appropriate to the individual (as
5 described by (Bogner et al., 2021)).
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10 Furthermore, since cognitive impairment can affect a range of cognitive functions that go beyond memory
11 problems (Winblad et al., 2004a, Roberts and Knopman, 2013), brief interventions for this group could include
12 modifications that meet the needs of people struggling with specific cognitive functions. For example, a future
13 brief intervention to be tested through research might be preceded by both alcohol and cognitive screening,
14 with a tailored intervention offered that is specific to the individual’s needs.
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18 It has been suggested that computer-based interventions may have benefits for people with cognitive
19 impairment, including flexibility of pace and the ability to repeat tasks and there is modest evidence from
20 computer-based alcohol and other drug interventions, that people with cognitive impairment did as well as
21 those without cognitive impairment (Shulman et al., 2018, Carroll et al., 2011). However, these studies
22 included predominantly younger age groups experiencing problems with drugs and/or alcohol, so the
23 usefulness of computer-based interventions for older adults with cognitive impairment remains unclear.
24 Preliminary evidence of a personalised smartphone intervention for middle and older age at-risk drinkers
25 indicates acceptability and feasibility in this age group, but limited effectiveness (Bolt et al., 2026), highlighting
26 the need for further robust evidence of this type of intervention.
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30 Two protocol papers were found that have no currently published findings. Paula et al. (2021) reported their
31 protocol for an RCT testing a 15-minute alcohol intervention delivered by non-specialist community workers
32 in Brazil to at-risk drinkers aged 60 and older. Although there was no specific mention of modifications for
33 cognitive impairment, the authors will be measuring cognitive function at baseline and follow-up. Hoy et al.
34 (2022) reported their protocol for an RCT testing a brief internet-delivered alcohol intervention to at-risk
35 drinkers aged 60 to 75 years in Australia and cite their study aim is to evaluate whether the intervention is
36 effective in reducing alcohol consumption and cognitive decline in older at-risk drinkers.
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Very few papers were found that met the study criteria, demonstrating an urgent need for more research in this area. The papers identified by this review were heterogenous in terms of study aims, populations, interventions and methods used. It was therefore not possible to conduct any quantitative synthesis of findings.

Alcohol brief interventions, defined as time limited brief advice or brief life-style counselling delivered in non-specialist (i.e., non-alcohol treatment) settings, includes a broad range of delivery techniques and approaches that could impact the identification and comparability of relevant papers. We addressed identification challenges by being over inclusive in our title and abstract screening, allowing us to read a high number of full text papers to ensure no studies were missed. Comparability was addressed using narrative synthesis.

Many studies (e.g. (Andersen et al., 2020, van Gils et al., 2021)) and reviews (e.g. (Purser and Lemieux, 2022)) examining alcohol screening and interventions for older adults excluded people with any cognitive impairment, and, in studies where people with mild or moderate cognitive impairment were said to be included, there was no indication that modifications had been made for this population and results for people with and without cognitive impairment were not reported (Levkoff et al., 2004, Oslin et al., 2006) making any evaluation of their effectiveness in this population impossible. A previous review of broader alcohol interventions for older adults found no studies that also reported cognitive or dementia outcomes (Kelly et al., 2018). Considering the prevalence of cognitive impairment in older age groups and the likely need for modified delivery of interventions, their exclusion from research into alcohol screening and brief intervention research is of concern.

No evidence was identified on the effectiveness of alcohol screening and brief interventions modified for older adults with cognitive impairment, but we did find important learning that can inform the development of such an intervention. This must be used to build interventions to tackle alcohol consumption as a contributing factor to the large and growing global burden of cognitive impairment.

6. Clinical Implications

The number of older adults is increasing along with the prevalence of cognitive impairment and at-risk drinking. The research presented in this review suggests that screening for at-risk drinking and delivering brief interventions is feasible and acceptable in non-alcohol specialist settings, such as memory assessment clinics; however, there is a lack of robust evidence about how screening tools and brief interventions should be modified for people with cognitive impairment. Future research might focus on developing an intervention modified in collaboration with service users and clinicians and using examples from the wider cognitive impairment literature shared above. Any newly developed intervention should be tested with people who experience cognitive impairment and drink at risky levels through pilot and feasibility studies to identify and operationalise key outcomes and control groups, leading to a definitive and to test it with people who experience cognitive impairment and drink at risky levels, through a randomised controlled trial with alcohol consumption outcome measures.

Data availability statement

Data sharing not applicable – no new data generated. Data sharing is not applicable to this article as no new data were created or analysed in this study.

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Tables and figures

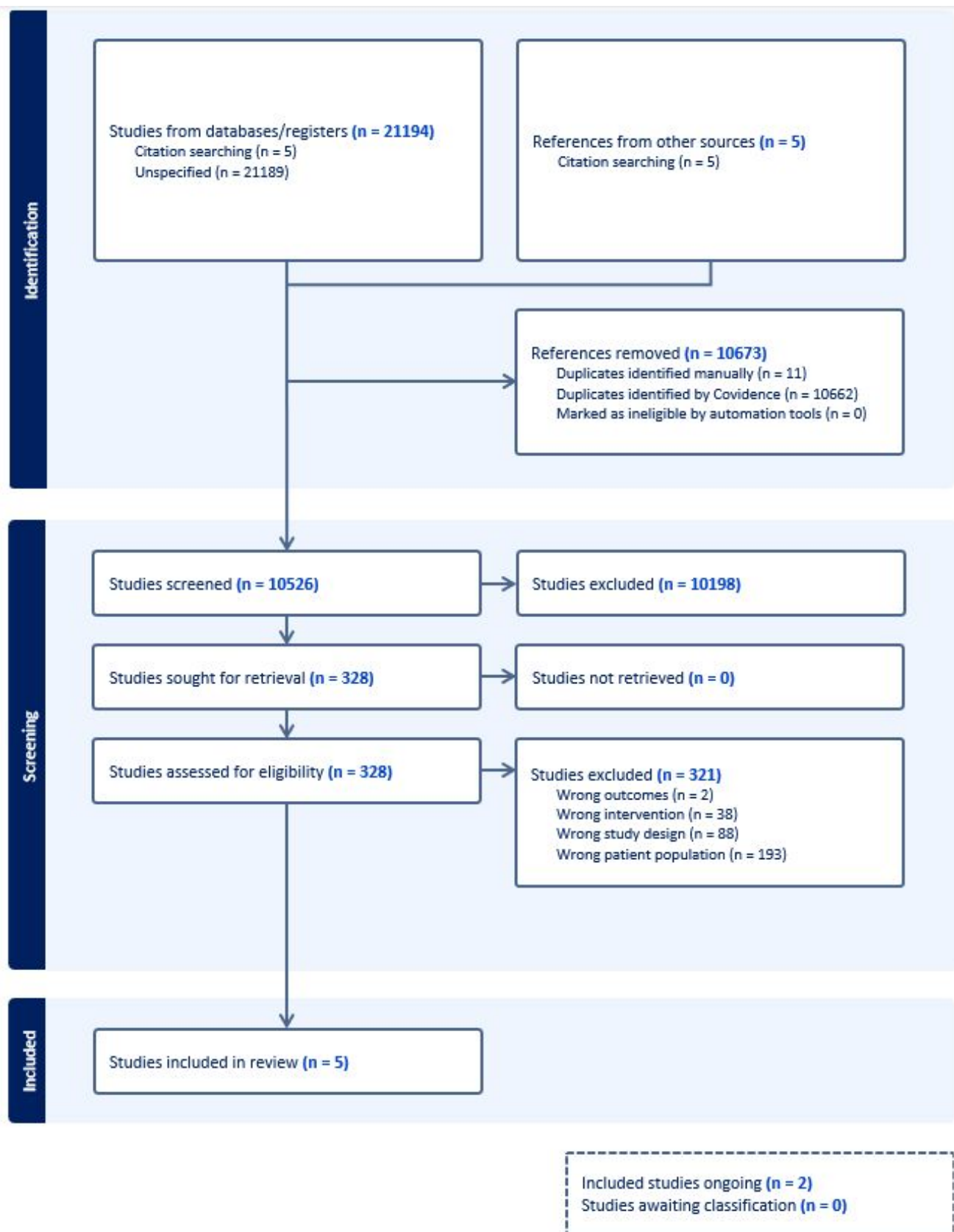


Figure 1: Paper inclusion flow diagram

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Table I: Study aims, design, setting, and description of participants

First author, year	Aims	Study design	Setting	Participants
Randall-James et al. (Randall-James et al., 2015)	To examine the feasibility and acceptability of screening older adults with cognitive impairment (CI) for alcohol misuse in Memory Assessment Service (MAS)	Qualitative interview study	A single MAS, UK	10 MAS service users aged 65+ with a diagnosis of dementia or mild CI
Thake et al. (Thake et al., 2015)	To examine, in MAS <ul style="list-style-type: none">practice of alcohol screening and interventionbarriers to and facilitators of alcohol screening and intervention	Cross-sectional survey and qualitative focus groups	Several MAS, UK	35 MAS professionals completed survey 12 MAS professionals took part in focus groups
Philpot et al. (Philpot et al., 2003)	To compare CAGE and AUDIT screening alcohol problems in older adults against three 'gold standards': <ul style="list-style-type: none">Royal College of Psychiatrists drinking guidelines (21 men/14 women units/week)criteria for hazardous drinking (42 men/28 women units/week)clinical case identification	Diagnostic test study	Community older adult mental health service, UK	128 adults aged 65+ referred to community mental health team; 54% diagnosed with dementia; 63 (of 104 with Mini Mental State Examination (MMSE) score available) were cognitively impaired (scored ≤23).
Ettner et al. (Ettner et al., 2014)	To examine the effectiveness of a patient-provider brief educational intervention (Project SHARE) in reducing at-risk drinking among older adults	Cluster randomised controlled trial (RCT)	Primary care, USA	1186 adults aged 60+, identified as at-risk drinkers through the Comorbidity Alcohol Risk Evaluation Tool (CARET). Average age 71. Number with CI not provided
Duru et al. (Duru et al., 2015)	To identify the active ingredients of Project SHARE			

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Table II: Modifications to alcohol screening tools

First author, year	Summary of modifications
Randall-James et al. (Randall-James et al., 2015)	Modifications suggested: <ul style="list-style-type: none"> • drinking diary and measuring cup provided 1 week prior to assessment • using interpersonal skills to develop rapport • repeating and offering confirmatory statements • following up on questions to ensure shared understanding • involving informants, for example, carers, family members or friends.
Thake et al. (Thake et al., 2015)	Modifications to screening suggested: <ul style="list-style-type: none"> • involving informants in assessing alcohol consumption • observations of the home environment
Philpot et al. (Philpot et al., 2003)	AUDIT and AUDIT-5 performed much better in people with CI than CAGE in terms of sensitivity, specificity and positive predictive value, regardless of the gold standard used. Receiver operating curve indicated that lower cut points are required to identify at-risk drinking in older adult mental health services: AUDIT: score of 4/5 to indicate at-risk drinking, CAGE: score of 0/1 to indicate at-risk drinking.
Ettner et al. (Ettner et al., 2014) Duru et al. (Duru et al., 2015)	The CARET screening tool includes a question to identify people with memory problems along with other comorbidities.

Table III: Modifications to alcohol brief interventions

First author, year	Summary of modifications
Thake et al. (Thake et al., 2015)	Modifications to interventions suggested: <ul style="list-style-type: none"> • training for MAS professionals • more time for consultations • resourced referral pathways for specialist support
Ettner et al. (Ettner et al., 2014) Duru et al. (Duru et al., 2015)	The specific modification to the intervention was a "forgetfulness tip sheet" provided to participants who reported memory problems. The forgetfulness tip sheet outlined: <ul style="list-style-type: none"> • common causes of forgetfulness • activities to improve memory • serious symptoms to be aware of • services where people could access help The tip sheet did not mention alcohol or the link between alcohol and cognition.

References

- Alzheimer's Disease International, 2021. *Dementia Statistics* [Online]. Available: <https://www.alzint.org/about/dementia-facts-figures/dementia-statistics/> [Accessed 08 January 2026].
- Alzheimer's Society & Carnell Farrar, 2024. The economic impact of dementia. Module 1: Annual costs of dementia May 2024. Accessed at: <https://www.alzheimers.org.uk/sites/default/files/2024-05/the-annual-costs-of-dementia.pdf> on 08/01/2026
- Andersen, K., Behrendt, S., Bilberg, R., Bogenschutz, M. P., Braun, B., Buehringer, G., Ekstrøm, C. T., Mejlidal, A., Petersen, A. H. & Nielsen, A. S. 2020. Evaluation of adding the community reinforcement approach to motivational enhancement therapy for adults aged 60 years and older with DSM-5 alcohol use disorder: a randomized controlled trial. *Addiction (Abingdon, England)*, 115, 69-81.
- Bogner, J., Corrigan, J. D., Peng, J., Kane, C. & Cox, K. 2021. Comparative effectiveness of a brief intervention for alcohol misuse following traumatic brain injury: A randomized controlled trial. *Rehabilitation Psychology*, 66, 345-355.

Alcohol brief interventions for cognitive impairment

- Bolt, G. L., Rowland, B., Piercy, H., Bradshaw, J., Lubman, D. I. & Manning, V. 2026. AAT-App+: A double-blind, pilot randomised controlled trial of a novel personalised smartphone intervention to reduce hazardous and harmful alcohol consumption among middle–older adults. *Addictive Behaviors*, 173.
- Bos, I., Vos, S. J., Frölich, L., Kornhuber, J., Wiltfang, J., Maier, W., Peters, O., Rüther, E., Engelborghs, S., Niemantsverdriet, E., De Roeck, E. E., Tsolaki, M., Freund-Levi, Y., Johannsen, P., Vandenberghe, R., Lleó, A., Alcolea, D., Frisoni, G. B., Galluzzi, S., Nobili, F., Morbelli, S., Drzezga, A., Didic, M., Van Berckel, B. N., Salmon, E., Bastin, C., Dauby, S., Santana, I., Baldeiras, I., De Mendonça, A., Silva, D., Wallin, A., Nordlund, A., Coloma, P. M., Wientzek, A., Alexander, M., Novak, G. P., Gordon, M. F., Wallin, Å. K., Hampel, H., Soininen, H., Herukka, S.-K., Scheltens, P., Verhey, F. R. & Visser, P. J. 2017. The frequency and influence of dementia risk factors in prodromal Alzheimer's disease. *Neurobiology of aging*, 56, 33-40.
- Carroll, K. M., Kiluk, B. D., Nich, C., Babuscio, T. A., Brewer, J. A., Potenza, M. N., Ball, S. A., Martino, S., Rounsaville, B. J. & Lejuez, C. W. 2011. Cognitive Function and Treatment Response in a Randomized Clinical Trial of Computer-Based Training in Cognitive-Behavioral Therapy. *Substance Use & Misuse*, 46, 23-34.
- Collings, S., Allan, J. & Munro, A. 2022. Improving treatment for people with cognitive impairment and substance misuse issues: Lessons from an inclusive residential treatment program pilot in Australia. *Disability and Health Journal*, 15, 101295.
- Cooper, C., Sommerlad, A., Lyketsos, C. G. & Livingston, G. 2015. Modifiable predictors of dementia in mild cognitive impairment: A systematic review and meta-analysis. *American Journal of Psychiatry*, 172, 323-334.
- Critical Appraisal Skills Programme (CASP), 2023a. *CASP Qualitative Studies Checklist* [Online]. Available: <https://casp-uk.net/casp-tools-checklists/> [Accessed 28/10/2023 2023].
- Critical Appraisal Skills Programme (CASP), 2023b. *CASP Diagnostic Study Checklist* [Online]. Available: <https://casp-uk.net/casp-tools-checklists/> [Accessed 29/10/2023 2023].
- Demnitz-King, H., Banerjee, S., Cooper, C., Kenten, C., Phillips, R., Zabihi, S., Birks, Y., Brayne, C., Browning, S., Carroll, C., Charlesworth, G., Coupland, C. A., Denning, T., Dobson, R., Foote, I. F., Foster, S., Fox, C., Howard, R., Isaacs, J. D., Jaffry, U., Koychev, I., Livingston, G., Llewellyn, D. J., Oakley, R., Opazo Bretón, M., Orrell, M., Noyce, A. J., Pouncey, T., Rait, G., Ranson, J., Rauf, M., Raymont, V., Sampson, E. L., Schott, J. M., Smith, D., Tai, X. Y., Thomson, A., Walsh, S., Williams, D. M., Mukadam, N., Marshall, C. R., Carr, G., Giebel, C., Harrison-Dening, K., Hunter, R. M. & Lang, I. 2026. The Nottingham consensus on dementia risk reduction policy: recommendations from a modified Delphi process. *Nature Reviews Neurology*.
- Department of Health, 2016. UK Chief Medical Officers' Low Risk Drinking Guidelines. 11-11.
- Department of Health and Social Care, 2025. Clinical guidelines for alcohol treatment. *In*: Department of Health and Social Care. (ed.). UK: GOV.UK.
- Downes, M. J., Brennan, M. L., Williams, H. C. & Dean, R. S. 2016. Development of a critical appraisal tool to assess the quality of cross-sectional studies (AXIS). *BMJ Open*, 6, e011458.
- Dufouil, C., Fuhrer, R. & Alperovitch, A. 2005. Subjective cognitive complaints and cognitive decline: Consequence or predictor? The epidemiology of vascular aging study. *Journal of the American Geriatrics Society*, 53, 616-621.
- Duru, O. K., Xu, H., Moore, A. A., Mirkin, M., Ang, A., Tallen, L., Tseng, C.-H. & Ettner, S. L. 2015. Examining the Impact of Separate Components of a Multicomponent Intervention Designed to Reduce At-Risk Drinking Among Older Adults: The Project SHARE Study. *Alcoholism, clinical and experimental research*, 39, 1227-1235.
- Ettner, S. L., Xu, H., Duru, O. K., Ang, A., Tseng, C.-H., Tallen, L., Barnes, A., Mirkin, M., Ransohoff, K. & Moore, A. A. 2014. The effect of an educational intervention on alcohol consumption, at-risk drinking, and health care utilization in older adults: the Project SHARE study. *Journal of studies on alcohol and drugs*, 75, 447-457.
- Gallagher, M., Mcleod, H. J. & Mcmillan, T. M. 2019. A systematic review of recommended modifications of CBT for people with cognitive impairments following brain injury. *Neuropsychological Rehabilitation*, 29, 1-21.
- Glodzik-Sobanska, L., Reisberg, B., De Santi, S., Babb, J. S., Pirraglia, E., Rich, K. E., Brys, M. & De Leon, M. J. 2007. Subjective memory complaints: Presence, severity and future outcome in normal older subjects. *Dementia and Geriatric Cognitive Disorders*, 24, 177-184.
- ~~Heirene, R., John, B. & Roderique-Davies, G. 2018. Identification and evaluation of neuropsychological tools used in the assessment of alcohol-related cognitive impairment: A systematic review.~~
- Hoy, N., Newton, N., Kochan, N. A., Sunderland, M., Baillie, A., Chapman, C., Winter, V., Sachdev, P., Teesson, M. & Mewton, L. 2022. Rethink My Drink: study protocol for a 12-month randomised controlled trial comparing a

Alcohol brief interventions for cognitive impairment

- brief internet-delivered intervention to an online patient information booklet in reducing risky alcohol consumption among older adults in Australia. *Addiction (Abingdon, England)*, 117, 815-825.
- Kaner, E. F. S., Beyer, F. R., Muirhead, C., Campbell, F., Pienaar, E. D., Bertholet, N., Daeppen, J. B., Saunders, J. B. & Burnand, B. 2018. Effectiveness of brief alcohol interventions in primary care populations. *Cochrane Database of Systematic Reviews*.
- Kelly, S., Olanrewaju, O., Cowan, A., Brayne, C. & Lafortune, L. 2018. Interventions to prevent and reduce excessive alcohol consumption in older people: a systematic review and meta-analysis. *Age and ageing*, 47, 175-184.
- Lao, Y., Hou, L., Li, J., Hui, X., Yan, P. & Yang, K. 2021. Association between alcohol intake, mild cognitive impairment and progression to dementia: a dose-response meta-analysis. *Aging Clinical and Experimental Research*, 33, 1175-1185.
- Levkoff, S. E., Chen, H., Coakley, E., Herr, E. C. M., Oslin, D. W., Katz, I., Bartels, S. J., Maxwell, J., Olsen, E., Miles, K. M., Constantino, G. & Ware, J. H. 2004. Design and sample characteristics of the PRISM-E multisite randomized trial to improve behavioral health care for the elderly. *Journal of aging and health*, 16, 3-27.
- Lewis, A. 2010. Housing an ageing population. *Housing, Care and Support*, 72, 9-27.
- Livingston, G., Huntley, J., Liu, K. Y., Costafreda, S. G., Selbæk, G., Alladi, S., Ames, D., Banerjee, S., Burns, A., Brayne, C., Fox, N. C., Ferri, C. P., Gitlin, L. N., Howard, R., Kales, H. C., Kivimäki, M., Larson, E. B., Nakasujja, N., Rockwood, K., Samus, Q., Shirai, K., Singh-Manoux, A., Schneider, L. S., Walsh, S., Yao, Y., Sommerlad, A. & Mukadam, N. 2024. Dementia prevention, intervention, and care: 2024 report of the Lancet standing Commission. *The Lancet*, 404, 572-628.
- Lopez, O. L., Becker, J. T., Chang, Y. F., Sweet, R. A., Dekosky, S. T., Gach, M. H., Carmichael, O. T., Mcdade, E. & Kuller, L. H. 2012. Incidence of mild cognitive impairment in the Pittsburgh Cardiovascular Health Study-Cognition Study. *Neurology*, 79, 1599-1606.
- Muñoz-Neira, C., Tedde, A., Coulthard, E., Thai, N. J. & Pennington, C. 2019. Neural correlates of altered insight in frontotemporal dementia: a systematic review. *Neuroimage Clin*, 24, 102066.
- Musa Saleh, G., Lillo, P., Van Der Hiele, K., Méndez-Orellana, C., Ibáñez, A. & Slachevsky, A. 2022. Apathy, Executive Function, and Emotion Recognition Are the Main Drivers of Functional Impairment in Behavioral Variant of Frontotemporal Dementia. *Frontiers in Neurology*, 12.
- NHS England, 2024. *Health Survey for England, 2022 Part 1* [Online]. Available: <https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2022-part-1> [Accessed 22/08/2024 2024].
- Nichols, E., Steinmetz, J. D., Vollset, S. E., Fukutaki, K., Chalek, J., Abd-Allah, F., Abdoli, A., Abualhasan, A., Abu-Gharbieh, E., Akram, T. T., Al Hamad, H., Alahdab, F., Alanezi, F. M., Alipour, V., Almustanyir, S., Amu, H., Ansari, I., Arabloo, J., Ashraf, T., Astell-Burt, T., Ayano, G., Ayuso-Mateos, J. L., Baig, A. A., Barnett, A., Barrow, A., Baune, B. T., Béjot, Y., Bezabhe, W. M. M., Bezabih, Y. M., Bhagavathula, A. S., Bhaskar, S., Bhattacharyya, K., Bijani, A., Biswas, A., Bolla, S. R., Bloor, A., Brayne, C., Brenner, H., Burkart, K., Burns, R. A., Cámara, L. A., Cao, C., Carvalho, F., Castro-De-Araujo, L. F. S., Catalá-López, F., Cerin, E., Chavan, P. P., Cherbuin, N., Chu, D.-T., Costa, V. M., Couto, R. a. S., Dadras, O., Dai, X., Dandona, L., Dandona, R., De La Cruz-Góngora, V., Dhamnetiya, D., Dias Da Silva, D., Diaz, D., Douiri, A., Edvardsson, D., Ekholuenetale, M., El Sayed, I., El-Jaafary, S. I., Eskandari, K., Eskandarieh, S., Esmailnejad, S., Fares, J., Faro, A., Farooque, U., Feigin, V. L., Feng, X., Fereshtehnejad, S.-M., Fernandes, E., Ferrara, P., Filip, I., Fillit, H., Fischer, F., Gaidhane, S., Galluzzo, L., Ghashghaee, A., Ghith, N., Gialluisi, A., Gilani, S. A., Glavan, I.-R., Gnedovskaya, E. V., Golechha, M., Gupta, R., Gupta, V. B., Gupta, V. K., Haider, M. R., Hall, B. J., Hamidi, S., Hanif, A., Hankey, G. J., Haque, S., Hartono, R. K., Hasaballah, A. I., Hasan, M. T., Hassan, A., et al. 2022. Estimation of the global prevalence of dementia in 2019 and forecasted prevalence in 2050: an analysis for the Global Burden of Disease Study 2019. *The Lancet Public Health*, 7, e105-e125.
- Office for Health Improvement and Disparities, 2020. *Guidance on the 5 alcohol use screening tests* [Online]. Available: <https://www.gov.uk/government/publications/alcohol-use-screening-tests/guidance-on-the-5-alcohol-use-screening-tests#:~:text=4%20or%20below%20then%20this,a%20wide%20variety%20of%20settings>. [Accessed 30/01/2026 2026].
- Office for National Statistics, 2025. *Families and households in the UK: 2024* [Online]. ONS website. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/bulletins/familiesandhouseholds/2024#cite-this-statistical-bulletin> [Accessed 02/02/2026 2026].

Alcohol brief interventions for cognitive impairment

- Ortolá, R., García-Esquinas, E., Galán, I., Guallar-Castillón, P., López-García, E., Banegas, J. R. & Rodríguez-Artalejo, F. 2017. Patterns of alcohol consumption and risk of falls in older adults: a prospective cohort study. *Osteoporosis International*.
- Oslin, D. W., Grantham, S., Coakley, E., Maxwell, J., Miles, K., Ware, J., Blow, F. C., Krahn, D. D., Bartels, S. J., Zubritsky, C., Olsen, E., Kirchner, J. E. & Levkoff, S. 2006. PRISM-E: comparison of integrated care and enhanced specialty referral in managing at-risk alcohol use. *Psychiatric services (Washington, D.C.)*, 57, 954-958.
- Page Mj, M. J., Bossuyt Pm, Boutron I, Hoffmann Tc, Mulrow Cd, Et Al. 2021. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. . *BMJ*, 372.
- Patterson, C. 2018. World Alzheimer Report 2018. In: Alzheimer's Disease International. (ed.). London, UK.
- Paula, T. C. S., Chagas, C., Noto, A. R., Formigoni, M. L. O. S., Pereira, T. V. & Ferri, C. P. 2021. Brief interventions for older adults (BIO) delivered by non-specialist community health workers to reduce at-risk drinking in primary care: a study protocol for a randomised controlled trial. *BMJ open*, 11, e043918-e043918.
- Philpot, M., Pearson, N., Petratou, V., Dayanandan, R., Silverman, M. & Marshall, J. 2003. Screening for problem drinking in older people referred to a mental health service: a comparison of CAGE and AUDIT. *Aging & mental health*, 7, 171-175.
- Popay, J. R., Helen; Sowden, Amanda; Petticrew, Mark; Arai, Lisa; Rodgers, Mark; Britten, Nicky; Roen, Katrina; Duffy, Steven 2006. Guidance on the Conduct of Narrative Synthesis in Systematic Reviews. In: PROGRAMME, A. P. F. T. E. M. (ed.).
- Purser, G. L. & Lemieux, C. M. 2022. Brief alcohol interventions with older adults: a systematic review of literature. *Journal of Social Work Practice in the Addictions*, 22, 120-136.
- Randall-James, J., Wadd, S., Edwards, K. & Thake, A. 2015. Alcohol Screening in People With Cognitive Impairment: An Exploratory Study. *Journal of Dual Diagnosis*, 11, 65-74.
- Rehm, J., Hasan, O. S. M., Black, S. E., Shield, K. D. & Schwarzer, M. 2019. Alcohol use and dementia: A systematic scoping review 11 Medical and Health Sciences 1117 Public Health and Health Services. *Alzheimer's Research and Therapy*, 11, 1-12.
- Roberts, R. & Knopman, D. S. 2013. Classification and Epidemiology of MCI. *Clinics in Geriatric Medicine*, 29, 753-772.
- Röhr, S., Pabst, A., Riedel-Heller, S. G., Jessen, F., Turana, Y., Handajani, Y. S., Brayne, C., Matthews, F. E., Stephan, B. C. M., Lipton, R. B., Katz, M. J., Wang, C., Guerchet, M., Preux, P. M., Mbelesso, P., Ritchie, K., Ancelin, M. L., Carrière, I., Guaita, A., Davin, A., Vaccaro, R., Kim, K. W., Han, J. W., Suh, S. W., Shahar, S., Din, N. C., Vanoh, D., Van Boxtel, M., Köhler, S., Ganguli, M., Jacobsen, E. P., Snitz, B. E., Anstey, K. J., Cherbuin, N., Kumagai, S., Chen, S., Narazaki, K., Ng, T. P., Gao, Q., Gwee, X. Y., Brodaty, H., Kochan, N. A., Trollor, J., Lobo, A., López-Antón, R., Santabárbara, J., Crawford, J. D., Lipnicki, D. M. & Sachdev, P. S. 2020. Estimating prevalence of subjective cognitive decline in and across international cohort studies of aging: A COSMIC study. *medRxiv*, 1-14.
- Sabia, S., Fayosse, A., Dumurgier, J., Dugravot, A., Akbaraly, T., Britton, A., Kivimäki, M. & Singh-Manoux, A. 2018. Alcohol consumption and risk of dementia: 23 year follow-up of Whitehall II cohort study. *BMJ (Online)*, 362.
- Seddon, J., Wadd, S., Elliott, L. & Madoc-Jones, I. 2021. Cognitive impairment and treatment outcomes amongst people attending an alcohol intervention service for those aged 50+. *Advances in Dual Diagnosis*, 14, 58-69.
- Shulman, M., Campbell, A., Pavlicova, M., Hu, M.-C., Aharonovich, E. & Nunes, E. V. 2018. Cognitive functioning and treatment outcomes in a randomized controlled trial of internet-delivered drug and alcohol treatment. *The American Journal on Addictions*, 27, 509-515.
- Slot, R., A. M. Sikkema, S., Berkhof, J., Brodaty, H., Buckley, R., Cavedo, E., Dardistis, E., Guillo-Benarous, F., Hampel, H., Kockan, N., Lista, S., Luck, T., Maruffe, P., Molinue, J. L., Kornhuber, J., Reisberg, B., Riedel-Heller, S., Risacher, S. L., Roehrn, S., Sachdev, P. S., Scarnea, N., Scheltensa, P., Shulman, M. B., Saykin, A. J., Verfailliea, S. C. J., Vissera, J., Vosx, S. J. B., Wagner, M., Wolfsgruber, S. & Jessen, F. 2018. Subjective cognitive decline and rates of incident Alzheimer's disease and non-Alzheimer's disease dementia.
- Sterne Jac, S. J., Page Mj, Elbers Rg, Blencowe Ns, Boutron I, Cates Cj, Cheng H-Y, Corbett Ms, Eldridge Sm, Hernán Ma, Hopewell S, Hróbjartsson a, Junqueira Dr, Jüni P, Kirkham Jj, Lasserson T, Li T, Mcleenan a, Reeves Bc, Shepperd S, Shrier I, Stewart La, Tilling K, White Ir, Whiting Pf, Higgins Jpt. 2019. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ*, 366.

Alcohol brief interventions for cognitive impairment

- Strandberg, A. Y., Trygg, T., Pitkälä, K. H. & Strandberg, T. E. 2018. Alcohol consumption in midlife and old age and risk of frailty. *Age and Ageing*, 47, 248-254.
- Tan, G. J., Tan, M. P., Luben, R. N., Wareham, N. J., Khaw, K. T. & Myint, P. K. 2021. The relationship between alcohol intake and falls hospitalization: Results from the EPIC-Norfolk. *Geriatrics and Gerontology International*.
- Thake, A., Wadd, S., Edwards, K. & Randall-James, J. 2015. Identifying and responding to alcohol misuse in memory clinics: current practice, barriers and facilitators. *Advances in Dual Diagnosis*, 8, 65-77.
- Van Gils, Y., Franck, E., Dierckx, E., Van Alphen, S. P. J., Saunders, J. B. & Dom, G. 2021. Validation of the AUDIT and AUDIT-C for Hazardous Drinking in Community-Dwelling Older Adults. *International journal of environmental research and public health*, 18.
- Vogel, A., Stokholm, J., Gade, A., Andersen, B. B., Hejl, A. M. & Waldemar, G. 2004. Awareness of deficits in mild cognitive impairment and Alzheimer's disease: do MCI patients have impaired insight? *Dement Geriatr Cogn Disord*, 17, 181-7.
- Wadd, S., Randall, J., Thake, A., Edwards, K., Galvani, S., McCabe, L. & Coleman, A. 2013. Alcohol Misuse and Cognitive Impairment in Older People.
- Wadd, S., Seddon, J., Mccann, M., Dutton, M., Elliott, L., Trevena, P., Adnum, L., Madoc-Jone, I., Wilson, F., Donnelly, M. & Close, C. 2020. 2015 to 2020 Evaluation of the Drink Wise Age Well Programme. *Drink Wise Age Well Programme report*.
- Wimo, A., Seeher, K., Cataldi, R., Cyhlarova, E., Dieleman, J. L., Frisell, O., Guerchet, M., Jönsson, L., Malaha, A. K., Nichols, E., Pedroza, P., Prince, M., Knapp, M. & Dua, T. 2023. The worldwide costs of dementia in 2019. *Alzheimer's & Dementia*, 19, 2865-2873.
- Winblad, B., Palmer, K., Kivipelto, M., Jelic, V., Fratiglioni, L., Wahlund, L. O., Nordberg, A., Bäckman, L., Albert, M., Almkvist, O., Arai, H., Basun, H., Blennow, K., De Leon, M., Decarli, C., Erkinjuntti, T., Giacobini, E., Graff, C., Hardy, J., Jack, C., Jorm, A., Ritchie, K., Van Duijn, C., Visser, P. & Petersen, R. C. 2004a. Mild cognitive impairment – beyond controversies, towards a consensus: report of the International Working Group on Mild Cognitive Impairment. *Journal of Internal Medicine*, 256, 240-246.
- Winblad, B., Palmer, K., Kivipelto, M., Jelic, V., Fratiglioni, L., Wahlund, L. O., Nordberg, A., Bäckman, L., Albert, M., Almkvist, O., Arai, H., Basun, H., Blennow, K., De Leon, M., Decarli, C., Erkinjuntti, T., Giacobini, E., Graff, C., Hardy, J., Jack, C., Jorm, A., Ritchie, K., Van Duijn, C., Visser, P. & Petersen, R. C. Mild cognitive impairment - Beyond controversies, towards a consensus: Report of the International Working Group on Mild Cognitive Impairment. *Journal of Internal Medicine*, 2004b. 240-246.
- World Health Organization (WHO), 2007. WHO Global Report on Falls Prevention in Older Age. *Ageing Life Course, Family and Community Health, WHO*.
- World Health Organization (WHO), 2017. Global action plan on the public health response to dementia 2017-2025. Geneva: World Health Organization.
- Wortzel, H. S. & Arciniegas, D. B. 2012. Treatment of Post-Traumatic Cognitive Impairments. *Current Treatment Options in Neurology*, 14, 493-508.
- Yao, L., Hou, L., Lao, Y., Luo, W., Lu, Z., Chen, J. & Liu, Y. 2020. Effect of alcohol intake on the development of mild cognitive impairment into dementia A protocol for systematic review and dose-response meta-analysis Study Protocol Systematic Review Medicine® OPEN 1. *Medicine*, 99.
- Zanjani, F., Allen, H., Schoenberg, N., Martin, C. & Clayton, R. 2018. Acceptability of intervention materials to decrease risk for alcohol and medication interactions among older adults. *Evaluation and program planning*, 67, 160-166.

1 Version 1.3, 21/Jan/2023

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3 Supplementary Materials 1

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5 SEARCH STRATEGY: Systematic review of modifications to alcohol brief interventions for people with
6 cognitive impairment.

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Participants: Adults aged 50+ who drink above low risk levels (>14 units of alcohol per week) and experience any type of cognitive decline, including subjective cognitive decline, mild cognitive impairment, and dementia.
Intervention: Alcohol brief interventions with any modifications made for people experiencing any type of cognitive decline. Interventions delivered in any setting will be included.
Outcomes: Reduction in alcohol consumption.
Databases: PubMed, Cochrane Library, EBSCO CINAHL Plus, EBSCO MEDLINE, PsycINFO, and Web of Science
Years: 2000 and 2022
Language: English language

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25 This was the second search conducted in January following the advice of a specialist librarian. These
26 results were added to Covidence and duplicates were automatically removed.

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28 **EBSCO MEDLINE Search:**
29 Last search date: 13/01/2023
30 **Years: January 2000 to December 2023**
31
32 **Age: 45-65, 65+, 80+**
33
34 **Language: English**

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36
37 **Participants:**
38 MeSH terms: alcohol drinking OR alcohol-related disorders [both exploded]
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40 OR
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42 Alcohol AND ("increase* risk" OR "high* risk" OR "at risk" OR Harm* OR Hazard* OR depend* OR
43 abuse OR misuse)
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45 OR
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47 alcohol use disorder or alcoholism or alcohol addiction or alcohol abuse or alcohol dependence
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51 **Intervention:**
52 Screening OR screen OR "brief intervention" OR "extend* intervention" OR "identification and brief
53 advice" OR "Screening Brief Intervention and Referral to Treatment" OR SBIRT
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55 OR
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57
58 MeSH terms: (MH "Psychotherapy, Multiple") OR (MH "Psychotherapy, Brief") OR (MH "Psychosocial
59 Intervention")
60

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N=5059

We added the terms below, but the results were too restricted, therefore imported both searches into Covidence in case any did not cross over.

AND

cognitive decline or cognitive impairment or cognitive function or memory

OR

MeSH terms: (MH "cognitive dysfunction+")

N=146

Web of Science (Clarivate)

Date of last search: 13/01/2023

Years: January 2000 to December 2023

Language: English

Participants:

Alcohol AND ("increase* risk" OR "high* risk" OR "at risk" OR Harm* OR Hazard* OR depend* OR abuse OR misuse)

OR

alcohol use disorder or alcoholism or alcohol addiction or alcohol abuse or alcohol dependence

Intervention:

Screening OR screen OR "brief intervention" OR "extend* intervention" OR "identification and brief advice" OR "Screening Brief Intervention and Referral to Treatment" OR SBIRT

AND

cognitive decline or cognitive impairment or cognitive function or memory

N=649

PubMed:

Date of last search: 16/01/2023

Years: January 2000 to December 2023

Age: 45+, 45-65, 65+, 80+

Language: English

Title/abstract screen

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MeSH terms: alcohol drinking OR alcohol-related disorders

OR

Alcohol AND ("increase* risk" OR "high* risk" OR "at risk" OR Harm* OR Hazard* OR depend* OR abuse OR misuse)

OR

alcohol use disorder or alcoholism or alcohol addiction or alcohol abuse or alcohol dependence

AND

Intervention:

Screening OR screen OR "brief intervention" OR "extend* intervention" OR "identification and brief advice" OR "Screening Brief Intervention and Referral to Treatment" OR SBIRT

N=2980

EBSCO CINAHL

Date of last search: 13/01/2023

Years: January 2000 to December 2023

Age: 45-65, 65+, 80+

Language: English

Participants:

CINAHL subject headings: (MH "Alcoholism") OR (MH "Alcohol-Related Disorders+") OR (MH "Alcohol Drinking+") OR (MH "Alcohol Amnestic Disorder+") OR (MH "Alcohol Abuse+") OR (MH "Alcohol Abuse (Saba CCC)")

[exploded]

OR

Alcohol AND ("increase* risk" OR "high* risk" OR "at risk" OR Harm* OR Hazard* OR depend* OR abuse OR misuse)

OR

alcohol use disorder or alcoholism or alcohol addiction or alcohol abuse or alcohol dependence

AND

Intervention:

Screening OR screen OR "brief intervention" OR "extend* intervention" OR "identification and brief advice" OR "Screening Brief Intervention and Referral to Treatment" OR SBIRT

OR

Version 1.3, 21/Jan/2023

CINAHL terms: (MH "Internet-Based Intervention") OR (MH "Psychosocial Intervention") OR (MH "Intervention Trials") OR (MH "Nursing Interventions") OR (MH "Experimental Studies+") OR (MH "Substance Use Prevention (Iowa NIC)") OR (MH "Substance Use Treatment (Iowa NIC)+") OR (MH "Randomized Controlled Trials+") OR (MH "Psychosocial Care (Saba CCC)+") OR (MH "Older Adult Care (Saba CCC)") OR (MH "Health Promotion (Saba CCC)") OR (MH "Alcohol Abuse Control (Saba CCC)")

N = 3796

PsycInfo

Date of last search: 16/01/2023

Years: January 2000 to December 2023

Age: 40-64, 65+, 85+

Language: English

APA thesaurus of psychological index terms: DE "Alcohol Use" OR DE "Binge Drinking" OR DE "Social Drinking" OR DE "Alcohol Use Disorder" OR DE "Alcohol Abuse" OR DE "Alcohol Intoxication" OR DE "Alcohol Withdrawal"

OR

Alcohol AND ("increase* risk" OR "high* risk" OR "at risk" OR Harm* OR Hazard* OR depend* OR abuse OR misuse)

OR

alcohol use disorder or alcoholism or alcohol addiction or alcohol abuse or alcohol dependence

AND

Intervention:

Screening OR screen OR "brief intervention" OR "extend* intervention" OR "identification and brief advice" OR "Screening Brief Intervention and Referral to Treatment" OR SBIRT

N=4313

Cochrane

Date of last search: 06/01/2023

Years: January 2000 to December 2023

Search terms: alcohol brief interventions

N=13

Alcohol brief interventions for cognitive impairment

Supplementary Materials 2: Quality assessment table

Author, year	Study design	Quality assessment tool used	Summary of quality assessment
Randall-James et al., 2015 (38)	Qualitative interview study	CASP Qualitative Studies Checklist (31)	<ul style="list-style-type: none">•No clear theoretical framework presented, but highly exploratory so this is acceptable•Ethics approval obtained•Data collection methods described satisfactorily•Analysis good quality•No discussion of reflexivity•Limitations acknowledged•Relevance to review question – high in relation to modifications, but not effectiveness
Thake et al., 2015 (39)	Cross-sectional survey Qualitative focus groups	AXIS (35) CASP Qualitative Studies Checklist (31)	<u>Survey</u> <ul style="list-style-type: none">•Not a validated questionnaire, but was piloted.•Sampling frame was Memory Services National Accreditation Programme (40-45% of MAS in UK). Sent to 54 clinics, 64% responded.•Risk that not representative of all services – probably around 30% of all MAS•Likely bias in sampling and response <u>Focus groups</u> <ul style="list-style-type: none">•No clear theoretical framework presented, but highly exploratory so this is acceptable•Ethics approval obtained•Data collection methods described satisfactorily•Analysis good quality•No discussion of reflexivity <u>Overall</u> <ul style="list-style-type: none">•Clear objectives•Clear and reasonable conclusions based on findings•Reasonable discussion of limitations•Relevance to review question – high in relation to modifications, but not effectiveness
Philpot et al., 2003 (37)	Diagnostic test study	CASP Diagnostic Test Study Checklist (32)	<ul style="list-style-type: none">•Clear objectives•Response rate high, sample size limited•Analysis of effect of non-response appropriate•Comparison of tests appeared appropriate but clinical criterion for problem drinking not clearly defined•Methods and analysis presented clearly

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			<ul style="list-style-type: none"> • Results presented appropriately though lacking explanation of how to interpret cut scores (i.e. authors identify cut scores with more than one option – “CAGE 0/1”) • Moderate quality study
Ettner et al., 2014 (40) Duru et al., 2015 (41)	Cluster randomised controlled trial	Cochrane Risk of Bias (RoB 2) tool for randomised controlled trials (33)	<ul style="list-style-type: none"> • Randomisation – good • Blinded allocation and data entry • Losses to follow up higher in the intervention group (worst case scenario sensitivity analysis carried out) • Intention to treat analysis, not described. <p>Moderate quality in terms of answering our review questions because although it was brief, it is not clear how many participants had cognitive impairment</p>

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Alcohol brief interventions for cognitive impairment

Systematic review of modifications to alcohol screening and brief interventions for older adults with cognitive impairment

Word count: 4601

To submit to: Advances in Dual Diagnosis

Correspondence to:

Author note:

Acknowledgements:

Alcohol brief interventions for cognitive impairment

Abstract

Purpose:

~~People~~ Older adults with cognitive impairment who drink too much alcohol risk further cognitive decline and other alcohol-related harms. We reviewed the literature to synthesise existing knowledge about modifications to alcohol screening and brief interventions for people with cognitive impairment and their effectiveness.

Design:

We carried out a systematic review (PROSPERO: CRD42022378827). We included studies of ~~people~~ older adults with cognitive impairment that examined alcohol screening or brief interventions applied to or modified for this group. A narrative synthesis was conducted.

Findings:

Four studies (5 papers) were found that met the review inclusion criteria. Alcohol screening tools and brief interventions were reported to be acceptable and feasible in older people with cognitive impairment (2 studies). ~~We found no evidence~~ No studies of effectiveness of alcohol screening or brief interventions for people with cognitive impairment were identified.

Originality:

This original systematic review found no ~~evidence studies exploring the~~ effectiveness of alcohol screening or brief interventions modified for people with cognitive impairment though studies indicated they are considered feasible and acceptable in this population.

Research implications:

Research should focus on the development of modified interventions that should be tested rigorously to tackle the large and growing burden of cognitive impairment globally.

Key words: Alcohol-related disorders, cognition, cognitive dysfunction, alcohol screening, alcohol brief intervention, systematic review.

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4 **1. Introduction**
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8 Dementia, an umbrella term for a group of largely progressive diseases that affect memory, other cognitive
9 functions and behaviour, is a significant public health issue (World Health Organization (WHO), 2017) and the
10 number of people with dementia worldwide is expected to reach 152.8 million by 2050 (Nichols et al., 2022).
11 In addition to the substantial human cost, the estimated financial cost of dementia in the UK is currently £42
12 billion (Alzheimer’s Society, 2024). Worldwide, the cost of dementia is expected to rise to an estimated US\$
13 2.8 trillion by 2030 (Patterson, 2018, Wimo et al., 2023, Alzheimer’s Disease International, 2021).
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15 Mild cognitive impairment (MCI - impairment that can be identified in diagnostic tests, but where activities of
16 daily living are not severely affected) and subjective cognitive decline (SCD) are very common in older people
17 (Winblad et al., 2004, Röhr et al., 2020) and both are linked to a higher likelihood of further cognitive decline
18 and dementia (Slot et al., 2018, Lopez et al., 2012, Glodzik-Sobanska et al., 2007, Dufouil et al., 2005).
19
20 Alcohol is the seventh leading risk factor for deaths worldwide (GBD, 2018) with approximately 2.6 million
21 deaths caused by alcohol consumption in 2019 (Organization, 2024). In England, 40% of men and 19% of
22 women aged 65-74 drink above low risk levels (above 14 units (112g of ethanol) per week consistent with the
23 UK Low Risk Drinking Guidelines (Department of, 2016, England, 2024). Drinking above low risk levels is
24 associated with an increased risk of cognitive impairment and progression to dementia (Rehm et al., 2019,
25 Cooper et al., 2015, Bos et al., 2017, Yao et al., 2020), and in England, 40% of men and 19% of women aged
26 65-74 drink above low risk levels (above 14 units (112g of ethanol) per week consistent with the UK Low Risk
27 Drinking Guidelines) (Department of Health, 2016, NHS England, 2024). Using prevalence estimates for MCI,
28 SCD and at-risk drinking, we have estimated there to be 927,484 older people in the UK at an additional,
29 preventable, risk of further cognitive decline or dementia due to alcohol consumption. These estimate
30 calculations can be found in <supplementary materials 1>.
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32 Drinking above 14 units of alcohol per week is associated with an increased risk of dementia, and the risk
33 increases with higher consumption (Sabia et al., 2018). Chronic heavy alcohol consumption is causally
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Alcohol brief interventions for cognitive impairment

associated with cognitive impairment through a number of pathways, including nutritional deficiencies, liver and cerebrovascular disorders, brain injury and direct neurotoxic effects of alcohol (Heirene et al., 2018). In addition to older adults drinking above low risk levels ~~are being~~ more likely to experience cognitive decline (Rehm et al., 2019, Lao et al., 2021, Cooper et al., 2015, Bos et al., 2017), ~~they also experience~~ higher levels of frailty (Strandberg et al., 2018), a greater risk of falls (Tan et al., 2021, Ortolá et al., 2017, WHO, 2007), and harm as a consequence of interactions between medication and alcohol (Zanjani et al., 2018). With 24% of the population projected to be aged 65 and above by 2043 (Lewis, 2010), addressing alcohol consumption in this age group is a public health priority.

Mild cognitive impairment (MCI—impairment that can be identified in diagnostic tests, but where limitations to daily living are limited) and subjective cognitive decline (SCD) are very common in older people (Winblad et al., 2004, Röhr et al., 2020). Both MCI and SCD are linked to a higher likelihood of further cognitive decline and dementia (Slot et al., 2018, Lopez et al., 2012, Glodzik-Sobanska et al., 2007, Dufouil et al., 2005). Drinking above low risk levels is associated with an increased risk of cognitive impairment (CI) and progression to dementia (Rehm et al., 2019, Cooper et al., 2015, Bos et al., 2017, Yao et al., 2020). We have estimated there to be 690,000 people in the UK at an additional, preventable, risk of further cognitive decline or dementia due to alcohol consumption. These estimate calculations can be found in ~~<supplementary materials 1>~~. (Heirene et al., 2018)

The estimated cost of dementia in the UK is currently £42 billion (Society, 2024). Worldwide, the cost of dementia is estimated at \$1 trillion and is expected to double by 2023 (Patterson, 2018, Wimo et al., 2023, International, 2021). The World Health Organization ~~and Lancet Commission have~~ identified alcohol as a key modifiable risk factor in the development of dementia and recommends interventions to reduce drinking in older adults with and without MCI (WHO, 2017, Livingston et al., 2024). The need for appropriate alcohol interventions has been further highlighted in a recent national consensus on dementia risk reduction policy in England (Demnitz-King et al., 2026).

Alcohol brief interventions for cognitive impairment

The UK clinical guidelines for alcohol treatment (Department of Health and Social Care, 2025) recommend that staff in all health and social care settings (1) use validated screening tools in order to identify people whose health is at risk from their alcohol consumption and (2) deliver alcohol brief interventions to people who drink above low risk guidelines but are not alcohol dependent. The international evidence base indicates ~~There is evidence suggesting~~ that alcohol brief interventions, typically delivered by non-specialists outside of alcohol treatment settings, are effective in reducing alcohol consumption (Kaner et al., 2018). However, older adults experiencing ~~CI~~ cognitive impairment present specific challenges both when identifying at-risk alcohol consumption and when addressing at-risk alcohol consumption through the delivery of alcohol brief interventions. Cognitive impairment can affect multiple cognitive domains, including memory, attention, language, executive function and processing speed (Winblad et al., 2004, Roberts and Knopman, 2013) and is also related to a number of behavioural changes, including apathy and disinhibition (Musa Saleh et al., 2022) that can have a negative impact on engagement with interventions such as alcohol brief interventions. These multifaceted impairments may affect an individual's ability to engage in both the process of alcohol screening (for example, memory impairments may lead to, including issues with accurate recall of recent alcohol consumption, retention of information and difficulties working with abstract ideas (Wadd et al., 2013)) and with engagement in brief interventions (for example, problems with planning, evaluation of evidence and decision making, as well as retention of information, may affect the effectiveness of alcohol brief interventions that rely on providing feedback on current drinking and associated risks, eliciting benefits of reducing alcohol, identifying alcohol reduction goals and providing a choice of strategies to support reduction (Department of Health and Social Care, 2025)). Modifications may therefore be required for both screening and brief interventions to be effective in this population. At present, no guidance is available regarding alcohol screening and brief interventions in people with ~~CI~~ cognitive impairment.

2. Objectives

This systematic review attempted to synthesise the current evidence about the effectiveness of alcohol screening to identify at-risk drinking and brief interventions to reduce alcohol intake among people with CI cognitive impairment by addressing the following review questions:

1. How has alcohol screening been modified for older adults with cognitive impairment?

1.2. What is the content of alcohol ~~screening and~~ brief interventions modified for ~~people older adults~~ with cognitive impairment?

2.3. How effective are (i) alcohol screening tools and (ii) brief interventions modified for ~~people older adults~~ with cognitive impairment in (i) identifying at-risk alcohol consumption and (ii) reducing alcohol consumption in older at-risk drinkers with cognitive impairment?

3. Methods

The review protocol was registered on the PROSPERO international prospective register of systematic reviews: CRD42022378827. The review was conducted using Covidence, a web-based collaboration software platform that streamlines the production of systematic reviews (www.covidence.org). Reporting was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 checklist (Page et al., 2021).

Inclusion criteria

Papers were included if they involved:

Participants: Adults aged 50+ with CI cognitive impairment that was not due to traumatic brain injury, stroke or learning disability from birth, including SCD, MCI, and dementia and, for studies of brief interventions, drinking above low risk levels (>14 units (112g) of alcohol per week). Preliminary searches indicated that some papers relating to interventions for older adults with cognitive impairment included patients aged 50 and

Alcohol brief interventions for cognitive impairment

above; therefore, 50 was chosen for greater inclusivity of studies. Papers relating to traumatic brain injury, stroke or learning disability from birth were excluded due to the significant differences in aetiology and progression compared to SCD, MCI and dementia.

Interventions: Alcohol screening or alcohol brief interventions with any modifications made for people experiencing cognitive impairment. Screening and/or interventions delivered in any setting were included. Alcohol screening included any tools used to identify at-risk drinking. In line with Kaner et al.'s (Kaner et al., 2018) Cochrane review of brief alcohol interventions, brief interventions were defined as time limited brief advice or brief life-style counselling delivered in non-specialist (i.e., non-alcohol treatment) settings.

Comparators: Studies including any comparators were considered, including those with no comparator.

Outcomes: For review questions 1 and 2, all papers with the relevant participants and intervention were included, regardless of outcomes. For review question 23, we were interested in the outcome of reduced alcohol consumption.

Primary research studies of any research design and systematic or scoping reviews published between January 2000 and January 2023 in the English language were included.

Search strategy and data sources

A search strategy for PubMed, Cochrane Library, EBSCO CINAHL Plus, EBSCO MEDLINE, PsycINFO, and Web of Science was implemented between 06/12/2022 and 13/01/2023, combining alcohol-related terms, screening and intervention and cognition terms. The search strategy is included in <supplementary materials 2>.

Reference lists of included papers were screened for potentially relevant studies.

Study selection and data extraction

Study selection was completed by two researchers (PC and MG) using Covidence software. Covidence identified and removed duplicate studies. Guidance on study selection was developed for both the title and

Alcohol brief interventions for cognitive impairment

abstract screening phase and the full paper review phase. Due to the high number of papers identified through the search strategy, title and abstract screening was split between PC and MG and the third reviewer (LF) checked a random 10% of papers to ensure agreement on the decision made. Two reviewers (PC and MG) conducted the full text screening of all studies and any disagreements on study inclusion were taken to the third reviewer (LF) for discussion and decision on whether to include them.

Data extraction

Data were extracted from reports by the lead author (PC). The reports and extracted data were reviewed by all authors and changes or additions to the included extracted materials were made.

Quality assessment

Quality was assessed using the Critical Appraisal Skills Programme (CASP) Qualitative Studies Checklist (Programme, 2023a) for qualitative studies, CASP Diagnostic Test Study Checklist (Programme, 2023b) for tool validation studies, and the Cochrane Risk of Bias (RoB 2) tool for randomised controlled trials (Sterne JAC, 2019). To assess quality of surveys and cross-sectional analyses, the AXIS tool was used (Downes et al., 2016).

Data synthesis

A narrative synthesis was conducted following the guidance of Popay et al. (2006). Synthesis involved tabulation, textual descriptions and concept mapping. We tabulated study data with details of country, setting, aims, design, participants, intervention description, modifications for people with Gl cognitive impairment, and results.

A conceptual map of modifications to screening and interventions for people with Gl cognitive impairment was developed to guide how the reports were grouped for synthesis. Similarities and differences between studies were then explored through aims, study populations and descriptions of interventions.

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4. Results

Study selection

The search was completed on 13th January 2023. ~~It and~~ found 21,199 references (including 5 through reference list searches), of which 10,673 were duplicates, leaving 10,526 to screen. Of these, 328 reports were retrieved for full text screening. The majority of reports (n=193) were excluded at full text screening stage because they either did not include people with ~~CI~~cognitive impairment or did not describe whether any participants had CIcognitive impairment.

Two reports were published protocols of relevant studies that were not yet completed (Hoy et al., 2022, Paula et al., 2021) . ~~These~~At the time of publication of this review, these published protocols did not report any results and therefore had no data to be included.

A list of excluded papers is available upon request.

Five reports of four studies were included in the review. Figure 1 shows the PRISMA flow diagram and Table 1 contains descriptions of the included studies.

Objective 1: How has alcohol screening been modified for people with cognitive impairment?

~~Aims, design, interventions and study populations of included studies~~

~~Aims, designs and study populations of the included studies are described in Table 1.~~

~~Studies of screening tools in people with cognitive impairment~~

~~Three~~Four studies (five papers) ~~examined~~included the use of alcohol screening tools (Philpot et al., 2003, Randall-James et al., 2015, Thake et al., 2015, Ettner et al., 2014, Duru et al., 2015). Table 2 includes a summary

Alcohol brief interventions for cognitive impairment

list of modifications and suggested modifications to alcohol screening from the included papers. Philpot et al. (2003) examined test characteristics (i.e. sensitivity, specificity and positive predictive value) of screening tools to identify problem alcohol use in people aged 65 and older attending a community mental health service in London, UK, of whom 68% had cognitive impairment; these tools were CAGE (mnemonic of Cut down, Annoyed, Guilty, Eye-opener) and the Alcohol Use Disorders Identification Test (AUDIT). Whilst the authors did not look at modifications to existing screening tools or processes, they sought to identify which tool is most effective in older adults, including those with cognitive impairment, and investigated the most appropriate cut scores to identify an alcohol use disorder in this population. They concluded that the AUDIT and AUDIT-5 were more accurate at identifying AUD in this population than the CAGE and that a cut score of 4/5 on the AUDIT was recommended for this population.

Randall-James et al. (2015) examined feasibility and acceptability of alcohol screening tools within a single English memory assessment service (MAS) using qualitative interviews with service users with cognitive impairment. Thake et al. (2015) examined current practice, barriers and facilitators of alcohol screening tools in multiple MAS in England and Wales from the perspective of service providers and professionals using a survey and focus groups. These two studies made suggestions about modifications based on their findings. Randall-James et al. (2015) suggested that recall may be improved by providing drink diaries and measuring cups before administering screening tools, and accuracy may be improved by using interpersonal skills to develop rapport, repeating, offering confirmatory statements, following up on questions to ensure shared understanding, and involving informants, for example, carers or family members. Randall-James et al. (2015) assessed these modifications in terms of feasibility and acceptability, finding them both feasible and acceptable, but not in terms of effectiveness. They identified some key challenges to screening for at-risk alcohol consumption in this population, including the need to build a trusting relationship, difficulties with completing drinking diaries, issues with using informants to gather information and the need for education for staff. Thake et al. (2015) in their study of practitioner views, found that the use of validated alcohol screening tools was rare (one out of thirty-five sites). Like Randall-James et al. (2015), they also suggested that involving

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informants may improve detection of alcohol problems in MAS, but may, conversely, cause respondents to underreport alcohol consumption due to stigma and relationship dynamics. Observations of the home environment were also suggested. Thake et al. (2015) made recommendations and identified challenges, such as staff knowledge and skills, perceived denial of problems by services users and insufficient resources, but the authors did not assess the modifications in their study.

One study (two reports) described an alcohol screening tool that was used to identify study participants and inform the content of the brief intervention (Duru et al., 2015, Ettner et al., 2014). This study described a screening tool that included a question about memory problems: the Comorbidity Alcohol Risk Evaluation Tool (CARET) (Ettner et al., 2014, Duru et al., 2015). The tool explores a range of comorbidities and assigns a level of alcohol consumption that corresponds to at-risk drinking for people with that comorbidity. This tool includes one item that refers to memory problems: “Alcohol use and comorbidities in the past 12 months: option e: Memory problems, heartburn, stomach pain, nausea, vomiting, or feel sad/blue in the past 12 months” people who select this item are considered at-risk drinkers if they drink: 5 (US standard) drinks per day at any frequency, 4 drinks per day at least 2 times per month, or 3 drinks per day at least 2 times per week. The inclusion of an item relating to memory problems had two impacts: (1) it provided a specific level of alcohol consumption at which drinking was considered at risk if individuals also had memory problems and (2) following screening, it prompted the provision of a ‘forgetfulness tip sheet’ to people drinking at risky levels who also experienced memory problems. It should be noted that the inclusion of memory as a comorbidity is part of the original tool and its inclusion alongside other comorbidities within the same item limits its specificity to a population of people with cognitive impairment.

Studies of brief interventions for people with at-risk drinking and cognitive impairment

Objective 2: What is the content of alcohol brief interventions modified for people with cognitive impairment?

Two studies (three reports) examined alcohol brief interventions (Thake et al., 2015, Duru et al., 2015, Ettner et al., 2014). ~~None of the identified reports were of studies aiming to test the effectiveness of brief interventions modified for older adults with CI.~~ Table 3 includes a summary of modifications and suggested modifications to brief interventions.

One qualitative study examined barriers and facilitators of alcohol brief interventions (as well as screening tools) in MAS in England and Wales from the perspective of service providers and professionals (Thake et al., 2015). The authors suggested that modifications to MAS to enable this type of service to respond to at-risk drinking would require better training and skills among professionals, more time in consultations and clear and resourced pathways for ongoing care (Thake et al., 2015).

Another study examined the effectiveness (Ettner et al., 2014) and active ingredients (Duru et al., 2015) of a brief intervention for people aged 60+ in a randomised controlled trial (RCT) (the Project Senior Health and Alcohol Risk Education (SHARE) study) in the United States. Patients with severe cognitive impairment (assessed by the treating physician) were excluded and ~~I.~~ Levels of mild to moderate cognitive impairment amongst the study population were not reported. After screening using the ~~Comorbidity Alcohol Risk Evaluation Tool (CARET)~~, participants identified as at-risk drinkers received a personalised report, a booklet on alcohol and ageing, and “tip sheets” according to specific circumstances. Participants identified as having “memory problems” were provided with the “forgetfulness tip sheet”. Physicians were prompted to discuss the report with the patient during subsequent routine visits. ~~Patients received three contacts from health educators, including: assessment and feedback, negotiation and goal setting, behavioural change skills, self-help resources, and follow-up and reinforcement.~~ The tip sheet included reasons for forgetfulness, including ageing, anxiety, depression, medications, Alzheimer’s Disease along with activities to help, serious signs to look out for and places to access help. However, it did not include any information on the link between alcohol and memory problems or suggest any specific support for at-risk drinkers with memory problems. Clinicians

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and health educators had subsequent tailored interactions with participants, through three contacts, including: assessment and feedback, negotiation and goal setting, behavioural change skills, self-help resources, and follow-up and reinforcement, so it is likely that there were further modifications for those with memory problems, but these were not described in the reports.

Objective 3: How effective are (i) alcohol screening tools and (ii) brief interventions modified for people with cognitive impairment in (i) identifying at-risk alcohol consumption and (ii) reducing alcohol consumption in older at-risk drinkers with cognitive impairment?

Alcohol screening tools

No studies specifically examined the effectiveness of alcohol screening tools modified for people with CI. In the Project SHARE Study, the screening tool included a question about memory problems (Ettner et al., 2014, Duru et al., 2015), but there was no specific evaluation of the effectiveness of using this question in this context. Philpot et al. (2003) compared the CAGE, AUDIT and an abbreviated version of the AUDIT (AUDIT-5) in a population with high levels of CI and found the AUDIT and AUDIT-5 to be superior to the CAGE. Thake et al. (2015) and Randall-James et al. (2015) suggested modifications, but it was not within the scope of either study to test them.

Alcohol brief interventions

The trial in the US of the Project SHARE alcohol brief intervention found that it reduced at-risk drinking (56% versus 67%, $p \leq 0.01$) and usual number of drinks per week (9.5 (intervention) versus 11.6 (control), $p \leq 0.01$) at 12 months (Ettner et al., 2014). The authors did not report its effectiveness specifically in people with cognitive impairment. The associated report suggested that keeping a drinking diary AND making a drinking agreement, and a discussion with a physician during the 12 month follow up were likely to be active ingredients of the intervention, but whether specific elements were more effective for people with CI was not reported (Duru et al., 2015). Thake et al. (2015) made suggestions for modifications but it was not within the scope of the study to test them.

Risk of bias in assessing evidence of effectiveness in included studies

A summary of our quality assessments is provided in <supplementary materials 3>. The study designs of the included studies were heterogeneous, and none specifically assessed effectiveness of modifications to screening tools or alcohol brief interventions in people with [cognitive impairment](#), so assessing risk of bias was not relevant.

The qualitative studies in British MAS by Randall-James et al. (2015) and Thake et al. (2015) were of moderate to good quality and provided useful evidence to support development of modified screening tools and brief interventions, but no evidence of effectiveness.

The study by Philpot et al. (2003) about test characteristics was moderate quality.

The Project SHARE RCT was good quality and provided evidence to support development of brief interventions for people with [cognitive impairment](#), but no direct evidence of effectiveness in this group (Ettner et al., 2014).

Results of included studies

Modifications to tools and interventions for people with cognitive impairment

~~The components of modifications are shown in Table II and Figure 2.~~

Modifications to alcohol screening tools

~~One study described a screening tool that included a question about memory problems: the CARET (Ettner et al., 2014, Duru et al., 2015). The tool explores a range of comorbidities and assigns a level of alcohol consumption that corresponds to at-risk drinking for people with that comorbidity; for example, people who drink alcohol and have experienced memory problems, heartburn, stomach pain, nausea, vomiting, or feel~~

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sad/blue in the past 12 months are considered at-risk drinkers if they drink: 5 (US standard) drinks per day at any frequency, 4 drinks per day at least 2 times per month, or 3 drinks per day at least 2 times per week.

The two qualitative studies made suggestions about modifications based on their findings. Randall-James et al. (Randall-James et al., 2015) in their study of people attending MAS suggested that recall may be improved by providing drink diaries and measuring cups before administering screening tools, and accuracy may be improved by using interpersonal skills to develop rapport, repeating, offering confirmatory statements, following up on questions to ensure shared understanding, and involving informants, for example, carers or family members. Randall-James et al. (Randall-James et al., 2015) assessed these modifications in terms of feasibility and acceptability, but not in terms of effectiveness. Thake et al. (Thake et al., 2015) in their study of practitioner views, also suggested that involving informants may improve detection of alcohol problems in MAS, but may, conversely, cause respondents to underreport alcohol consumption. Observations of the home environment were also suggested. Thake et al. (Thake et al., 2015) made recommendations but did not assess them in their study.

Modifications to alcohol brief interventions

Thake et al. (Thake et al., 2015) suggested that modifications to MAS to enable this type of service to respond to at-risk drinking would require better training and skills among professionals, more time in consultations and clear and resourced pathways for ongoing care.

In the Project SHARE Study, as part of the brief intervention, the researchers mailed a paper-based 'forgetfulness tip sheet' to those who reported memory problems at screening (Ettner et al., 2014, Duru et al., 2015). The tip sheet included reasons for forgetfulness, including ageing, anxiety, depression, medications, Alzheimer's Disease along with activities to help, serious signs to look out for and places to access help. However, it did not include any information on the link between alcohol and memory problems or suggest any specific support for at-risk drinkers with memory problems. Clinicians and health educators had subsequent tailored interactions with participants, so it is likely that there were further modifications for those with memory problems, but these were not described in the reports.

Effectiveness of alcohol screening tools and brief interventions modified for people with cognitive impairment

Table III shows the results of the studies.

Alcohol screening tools

No studies specifically examined the effectiveness of alcohol screening tools modified for people with CI. In the Project SHARE Study, the screening tool included a question about memory problems (Ettner et al., 2014, Duru et al., 2015), but there was no specific evaluation of the effectiveness of using this question in this context.

Philpot et al. (Philpot et al., 2003) compared the CAGE, AUDIT and an abbreviated version of the AUDIT (AUDIT-5) in a population with high levels of CI and found the AUDIT and AUDIT-5 to be superior to the CAGE.

Alcohol brief interventions

The trial in the US of the Project SHARE alcohol brief intervention found that it reduced at-risk drinking at 12 months (56% versus 67%, $p \leq 0.01$) (Ettner et al., 2014). The authors did not report its effectiveness specifically in people with CI. The associated report suggested that keeping a drinking diary AND making a drinking agreement, and a discussion with a physician during the 12 month follow up were likely to be active ingredients of the intervention, but whether specific elements were more effective for people with CI was not reported (Duru et al., 2015).

5. Discussion

This review found no evidence of effectiveness of a very limited evidence base relating to modifications to alcohol screening and brief interventions for older adults with CI/cognitive impairment, with no studies exploring the effectiveness of modifications, although there was some evidence of feasibility and acceptability of screening and brief intervention in memory services that serve this population. This evidence, in

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combination with the high prevalence of at-risk drinking in people aged 65 and older in the UK, indicates that this is a key area for intervention development.

From this review, the AUDIT was a more effective screening tool than CAGE at identifying at-risk drinkers in older populations including those with Cognitive impairment; however, the recommendation of using a cut score of 4/5 in this population has implications for its utility in clinical practice as a single upper cut score is often used to aid clinical decision making (Office for Health Improvement and Disparities, 2020), but whilst modifications to administering the AUDIT in people with Cognitive impairment were suggested (Randall-James et al., 2015, Thake et al., 2015), we found no evidence that the effectiveness of these modifications had has not been tested. Both papers suggested using informants to gather accurate data on alcohol consumption; however, larger numbers of people living alone, including a higher proportion of older adults (Office for National Statistics, 2025), means that this may not always be feasible in practice.

Project SHARE showed promising results for an alcohol brief intervention for older adults delivered in primary care services. However, whilst it is likely that the sample included some older adults with mild cognitive impairment, this was not measured and therefore any results for this population remain unknown. Cognition was included as a possible comorbidity; however, it was not the focus of the intervention and the link between alcohol consumption and cognition was not illustrated in the “tip sheet”.

Research into alcohol and other drug interventions delivered over longer time periods and in specialist services, have identified potential modifications to alcohol interventions for people with Cognitive impairment that could be useful in informing the design of a brief intervention modified for older adults with Cognitive impairment. Modifications in the literature include changes to training and information provision (e.g. staff training on alcohol and cognitive impairment, providing information on the link between alcohol and Cognitive impairment to patients), changes to intervention delivery (e.g. written records, multi-format materials, single goal focus, detailed plans and steps, flexible length and pace, practising skills rather than focussing on concepts) and pragmatic facilitators (e.g. ways to identify staff, using prompts and reminders for appointments) (Seddon et al., 2021, Wadd et al., 2020, Collings et al., 2022). These modifications largely mirror

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modifications to (non-alcohol specific) treatments for people with cognitive impairment caused by brain injury, which often focus on adaptive (e.g. reducing distractions, timing sessions to maximise cognitive capacity, reducing complexity of tasks) and compensatory (e.g. assistive technologies, such as electronic planners and reminders, timers, alarms and notebooks) modifications (Wortzel and Arciniegas, 2012, Gallagher et al., 2019), as well as making links between the cause of cognitive impairment and the impairment itself explicit (Gallagher et al., 2019). Given the evidence in these related fields, some of these modifications could be applied to an alcohol brief intervention to be tested in future research, especially highlighting the link between alcohol consumption and cognitive impairment, the simplification of materials, focussing on one goal and the use of a suite of options for reminders and prompts that are appropriate to the individual (as described by Bogner et al., 2021).

Furthermore, since cognitive impairment can affect a range of cognitive functions that go beyond memory problems (Winblad et al., 2004, Roberts and Knopman, 2013), brief interventions for this group could include modifications that meet the needs of people struggling with specific cognitive functions. For example, a future brief intervention to be tested through research might be preceded by both alcohol and cognitive screening, with a tailored intervention offered that is specific to the individual's needs.

It has been suggested that computer-based interventions may have benefits for people with CI-cognitive impairment, including flexibility of pace and the ability to repeat tasks and there is modest evidence from computer-based alcohol and other drug interventions, that people with CI-cognitive impairment did as well as those without CI-cognitive impairment (Shulman et al., 2018, Carroll et al., 2011). However, these studies included predominantly younger age groups experiencing problems with drugs and/or alcohol, so the usefulness of computer-based interventions for older adults with CI-cognitive impairment remains unclear. Preliminary evidence of a personalised smartphone intervention for middle and older age at-risk drinkers indicates acceptability and feasibility in this age group, but limited effectiveness (Bolt et al., 2026), highlighting the need for further robust evidence of this type of intervention.

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Two protocol papers were found that have~~ed~~ no currently published findings. Paula et al. (Paula et al., 2021) reported their protocol for an RCT testing a 15-minute alcohol intervention delivered by non-specialist community workers in Brazil to at-risk drinkers aged 60 and older. Although there was no specific mention of modifications for ~~C~~cognitive impairment, the authors will be measuring cognitive function at baseline and follow-up. Hoy et al. (Hoy et al., 2022) reported their protocol for an RCT testing a brief internet-delivered alcohol intervention to at-risk drinkers aged 60 to 75 years in Australia and cite their study aim is to evaluate whether the intervention is effective in reducing alcohol consumption and cognitive decline in older at-risk drinkers.

5.1 Limitations

Very few papers were found that met the study criteria, demonstrating an urgent need for more research in this area. The papers identified by this review were heterogenous in terms of study aims, populations, interventions and methods used. It was therefore not possible to conduct any quantitative synthesis of findings.

Many studies (~~e.g. (Andersen et al., 2020, van Gils et al., 2021))~~ and reviews (~~e.g. (Purser and Lemieux, 2022))~~) examining alcohol screening and interventions for older adults excluded people with any ~~C~~cognitive impairment(~~e.g. (Andersen et al., 2020, van Gils et al., 2021))~~), and, in studies where people with mild or moderate ~~C~~cognitive impairment were said to be included, there was no indication that modifications had been made for this population and results for people with and without ~~C~~cognitive impairment were not reported (Levkoff et al., 2004, Oslin et al., 2006) making any evaluation of their effectiveness in this population impossible. A previous review of broader alcohol interventions for older adults found no studies that also reported cognitive or dementia outcomes (Kelly et al., 2018). Considering the prevalence of ~~C~~cognitive impairment in older age groups and the likely need for modified delivery of interventions, their exclusion from research into alcohol screening and brief intervention research is of concern.

No evidence was identified on the effectiveness of alcohol screening and brief interventions modified for older adults with ~~C~~cognitive impairment, but we did find important learning that can inform the development of

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such an intervention. This must be used to build interventions to tackle alcohol consumption as a contributing factor to the large and growing global burden of CIcognitive impairment.

6. Clinical Implications

The number of older adults is increasing along with the prevalence of CIcognitive impairment and at-risk drinking. The research presented in this review suggests that screening for at-risk drinking and delivering brief interventions is feasible and acceptable in non-alcohol specialist settings, such as memory assessment clinics; however, there is a lack of robust evidence about how screening tools and brief interventions should be modified for people with CIcognitive impairment. ~~Next steps are to~~ Future research might focus on developing an suitably modified intervention modified in collaboration with service users and clinicians and using examples from the wider cognitive impairment literature shared above, and to test it with people who experience cognitive impairmentCI and drink at risky levels, through a randomised controlled trial with alcohol consumption outcome measures.

Acknowledgements

Declaration of interest statement

Data availability statement

Data sharing not applicable – no new data generated. Data sharing is not applicable to this article as no new data were created or analysed in this study.

Tables and figures

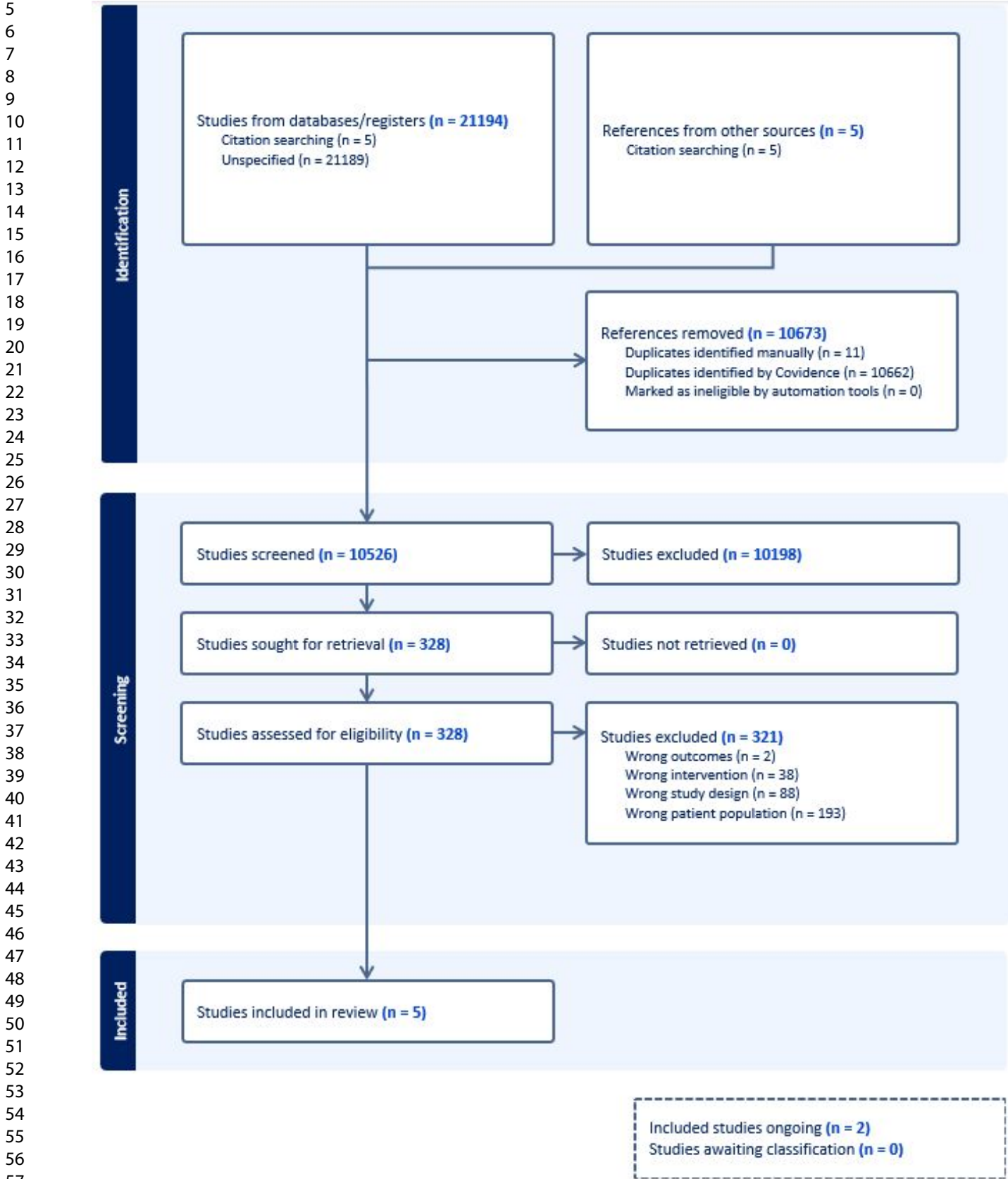


Figure 1: Paper inclusion flow diagram

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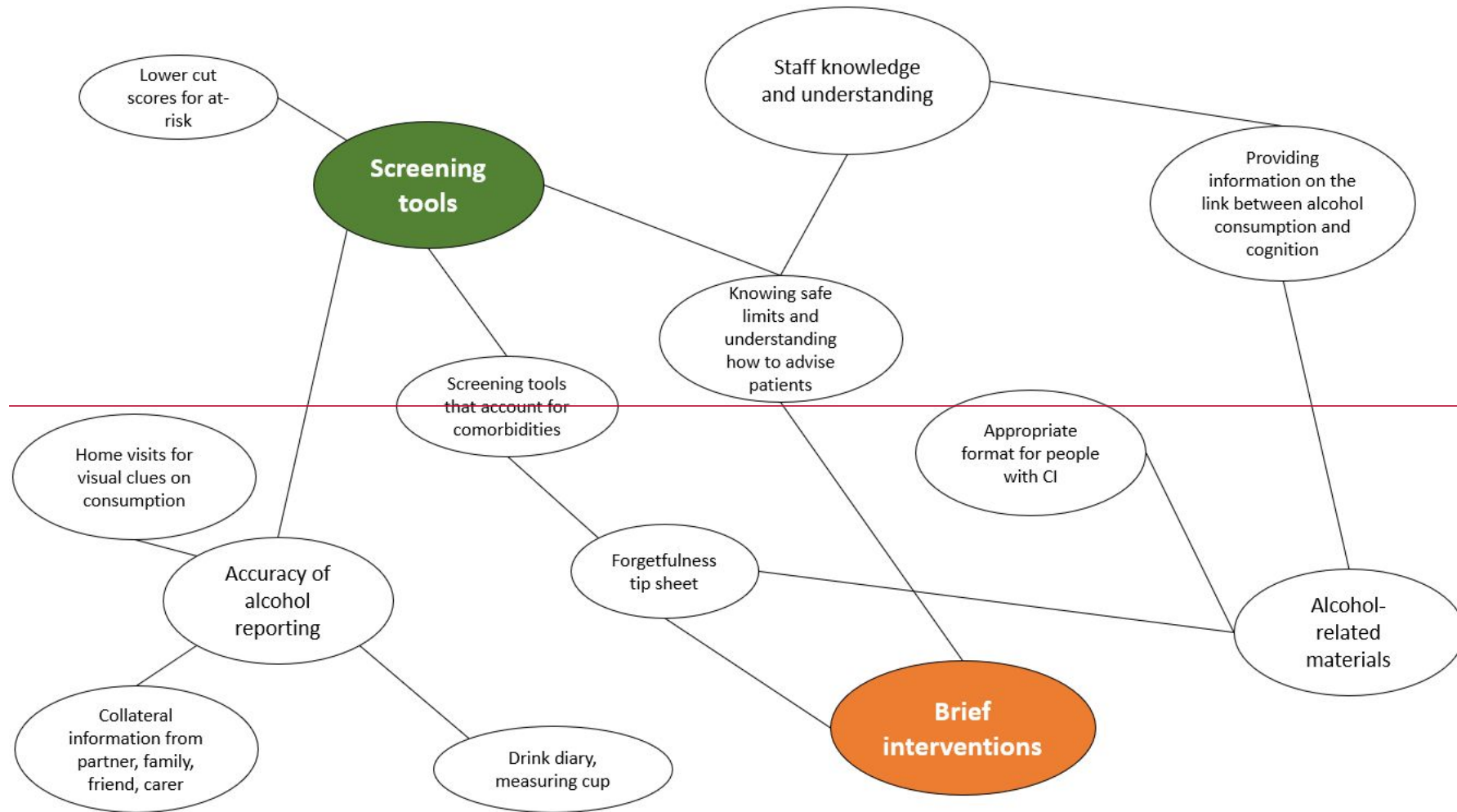


Figure 2: Conceptual mapping of modifications to alcohol screening and interventions for people with cognitive impairment

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Table I: Study aims, design, setting, and description of participants

First author, year	Aims	Study design	Setting	Participants
Randall-James et al. (Randall-James et al., 2015)	To examine the feasibility and acceptability of screening older adults with cognitive impairment (CI) for alcohol misuse in Memory Assessment Service (MAS)	Qualitative interview study	A single MAS, UK	10 MAS service users aged 65+ with a diagnosis of dementia or mild CI
Thake et al. (Thake et al., 2015)	To examine, in MAS <ul style="list-style-type: none">practice of alcohol screening and interventionbarriers to and facilitators of alcohol screening and intervention	Cross-sectional survey and qualitative focus groups	Several MAS, UK	35 MAS professionals completed survey 12 MAS professionals took part in focus groups
Philpot et al. (Philpot et al., 2003)	To compare CAGE and AUDIT screening alcohol problems in older adults against three 'gold standards': <ul style="list-style-type: none">Royal College of Psychiatrists drinking guidelines (21 men/14 women units/week)criteria for hazardous drinking (42 men/28 women units/week)clinical case identification	Diagnostic test study	Community older adult mental health service, UK	128 adults aged 65+ referred to community mental health team; 54% diagnosed with dementia; 63 (of 104 with Mini Mental State Examination (MMSE) score available) were cognitively impaired (scored ≤23).
Ettner et al. (Ettner et al., 2014)	To examine the effectiveness of a patient-provider brief educational intervention (Project SHARE) in reducing at-risk drinking among older adults	Cluster randomised controlled trial (RCT)	Primary care, USA	1186 adults aged 60+, identified as at-risk drinkers through the Comorbidity Alcohol Risk Evaluation Tool (CARET). Average age 71. Number with CI not provided
Duru et al. (Duru et al., 2015)	To identify the active ingredients of Project SHARE			

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Table II: Modifications to alcohol screening tools and interventions

First author, year	Tool/intervention	Modifications
Randall-James et al. (Randall-James et al., 2015)	Alcohol screening tools	Modifications suggested <ul style="list-style-type: none"> — drinking diary and measuring cup provided 1 week prior to assessment — using interpersonal skills to develop rapport — repeating and offering confirmatory statements — following up on questions to ensure shared understanding — involving informants, for example, carers, family members or friends.
Thake et al. (Thake et al., 2015)	Alcohol screening tools and brief interventions	Modifications to screening suggested <ul style="list-style-type: none"> — involving informants in assessing alcohol consumption — observations of the home environment Modifications to interventions suggested <ul style="list-style-type: none"> — training for MAS professionals — more time for consultations — resourced referral pathways for specialist support
Ettner et al. (Ettner et al., 2014) Duru et al. (Duru et al., 2015)	Alcohol screening and brief intervention	A question to identify people with memory problems was included in the CARET screening tool. The specific modification to the intervention was a “forgetfulness tip sheet” provided to participants who reported memory problems. The forgetfulness tip sheet outlined common causes of forgetfulness, activities to improve memory, serious symptoms to be aware of and services where people could access help. The tip sheet did not mention alcohol or the link between alcohol and cognition. Clinicians and health educators had subsequent tailored interactions with participants, so it is likely that there were further specific modifications for those with memory problems.

Table III: Study results

First author, year	Summary of results
Randall-James et al. (Randall-James et al., 2015)	Participants with CI could engage with and complete alcohol screening tools with help from professionals and without distress. Use of screening tools acceptable and feasible within memory clinic setting. Challenges could be overcome with the help of the person administering the tool. Other key findings <ul style="list-style-type: none"> — education for professionals on the link between alcohol and CI needed — need for comprehensive assessment of service users — need to build a trusting relationship in order to obtain accurate information — drinking diaries may be challenging — informants may or may not increase accuracy of assessment of alcohol intake
Thake et al. (Thake et al., 2015)	<ul style="list-style-type: none"> — only one out of 35 MAS used a validated alcohol screening tool. — challenges of screening: perceived service user misreporting, ageism (“the only pleasure left”), insufficient resources and training, family members present at interview may lead to underreporting. — facilitators of screening: information from home visits and/or family members. — challenges of delivering interventions: perceived service user denial of problem, insufficient resources, challenge of delivering interventions to people with CI, staff knowledge and skills, alcohol interventions not within service remit and lack of services for onward referral.
Philpot et al. (Philpot et al., 2003)	AUDIT and AUDIT-5 performed much better in people with CI than CAGE in terms of sensitivity, specificity and positive predictive value, regardless of the gold standard used. Receiver operating curve indicated that lower cut points are required to identify at risk drinking in older adult mental health services: AUDIT: score of 4/5 to indicate at-risk drinking, CAGE: score of 0/1 to indicate at-risk drinking.

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Ettner et al. (Ettner et al., 2014)	At-risk drinking (CARET) in the intervention group 56% versus control group 67% (12 months), $p \leq 0.01$ Usual number of drinks per week intervention group 9.5 versus control group 11.6 (12 months), $p \leq 0.01$
Duru et al. (Duru et al., 2015)	Associated with lower odds of being an at-risk drinker at 12 months • Keeping a drinking diary AND making a drinking agreement • Physician alcohol risk discussion

Table II: Modifications to alcohol screening tools

First author, year	Summary of modifications
Randall-James et al. (Randall-James et al., 2015)	Modifications suggested: <ul style="list-style-type: none">• drinking diary and measuring cup provided 1 week prior to assessment• using interpersonal skills to develop rapport• repeating and offering confirmatory statements• following up on questions to ensure shared understanding• involving informants, for example, carers, family members or friends.
Thake et al. (Thake et al., 2015)	Modifications to screening suggested: <ul style="list-style-type: none">• involving informants in assessing alcohol consumption• observations of the home environment
Philpot et al. (Philpot et al., 2003)	AUDIT and AUDIT-5 performed much better in people with CI than CAGE in terms of sensitivity, specificity and positive predictive value, regardless of the gold standard used. Receiver operating curve indicated that lower cut points are required to identify at-risk drinking in older adult mental health services: AUDIT: score of 4/5 to indicate at-risk drinking, CAGE: score of 0/1 to indicate at-risk drinking.
Ettner et al. (Ettner et al., 2014) Duru et al. (Duru et al., 2015)	The CARET screening tool includes a question to identify people with memory problems along with other comorbidities.

Table III: Modifications to alcohol brief interventions

First author, year	Summary of modifications
Thake et al. (Thake et al., 2015)	Modifications to interventions suggested: <ul style="list-style-type: none">• training for MAS professionals• more time for consultations• resourced referral pathways for specialist support
Ettner et al. (Ettner et al., 2014) Duru et al. (Duru et al., 2015)	The specific modification to the intervention was a "forgetfulness tip sheet" provided to participants who reported memory problems. The forgetfulness tip sheet outlined: <ul style="list-style-type: none">• common causes of forgetfulness• activities to improve memory• serious symptoms to be aware of• services where people could access help The tip sheet did not mention alcohol or the link between alcohol and cognition.

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References

- Alzheimer's Disease International, 2021. *Dementia Statistics* [Online]. Available: <https://www.alzint.org/about/dementia-facts-figures/dementia-statistics/> [Accessed 08 January 2026].
- Alzheimer's Society & Carnell Farrar, 2024. The economic impact of dementia. Module 1: Annual costs of dementia May 2024. Accessed at: <https://www.alzheimers.org.uk/sites/default/files/2024-05/the-annual-costs-of-dementia.pdf> on 08/01/2026
- Andersen, K., Behrendt, S., Bilberg, R., Bogenschütz, M. P., Braun, B., Buehringer, G., Ekstrøm, C. T., Mejlidal, A., Petersen, A. H. & Nielsen, A. S. 2020. Evaluation of adding the community reinforcement approach to motivational enhancement therapy for adults aged 60 years and older with DSM-5 alcohol use disorder: a randomized controlled trial. *Addiction (Abingdon, England)*, 115, 69-81.
- Bogner, J., Corrigan, J. D., Peng, J., Kane, C. & Coxe, K. 2021. Comparative effectiveness of a brief intervention for alcohol misuse following traumatic brain injury: A randomized controlled trial. *Rehabilitation Psychology*, 66, 345-355.
- Bolt, G. L., Rowland, B., Piercy, H., Bradshaw, J., Lubman, D. I. & Manning, V. 2026. AAT-App+: A double-blind, pilot randomised controlled trial of a novel personalised smartphone intervention to reduce hazardous and harmful alcohol consumption among middle-older adults. *Addictive Behaviors*, 173.
- Bos, I., Vos, S. J., Frölich, L., Kornhuber, J., Wiltfang, J., Maier, W., Peters, O., Rütther, E., Engelborghs, S., Niemantsverdriet, E., De Roeck, E. E., Tsolaki, M., Freund-Levi, Y., Johannsen, P., Vandenberghe, R., Lleó, A., Alcolea, D., Frisoni, G. B., Galluzzi, S., Nobili, F., Morbelli, S., Drzezga, A., Didic, M., Van Berckel, B. N., Salmon, E., Bastin, C., Dauby, S., Santana, I., Baldeiras, I., De Mendonça, A., Silva, D., Wallin, A., Nordlund, A., Coloma, P. M., Wientzek, A., Alexander, M., Novak, G. P., Gordon, M. F., Wallin, Å. K., Hampel, H., Soininen, H., Herukka, S.-K., Scheltens, P., Verhey, F. R. & Visser, P. J. 2017. The frequency and influence of dementia risk factors in prodromal Alzheimer's disease. *Neurobiology of aging*, 56, 33-40.
- Department of Health and Social Care, 2025. Clinical guidelines for alcohol treatment. *In: Department of Health and Social Care. (ed.). UK: GOV.UK.*
- Carroll, K. M., Kiluk, B. D., Nich, C., Babuscio, T. A., Brewer, J. A., Potenza, M. N., Ball, S. A., Martino, S., Rounsaville, B. J. & Lejuez, C. W. 2011. Cognitive Function and Treatment Response in a Randomized Clinical Trial of Computer-Based Training in Cognitive-Behavioral Therapy. *Substance Use & Misuse*, 46, 23-34.
- Collings, S., Allan, J. & Munro, A. 2022. Improving treatment for people with cognitive impairment and substance misuse issues: Lessons from an inclusive residential treatment program pilot in Australia. *Disability and Health Journal*, 15, 101295.
- Cooper, C., Sommerlad, A., Lyketsos, C. G. & Livingston, G. 2015. Modifiable predictors of dementia in mild cognitive impairment: A systematic review and meta-analysis. *American Journal of Psychiatry*, 172, 323-334.
- Critical Appraisal Skills Programme, 2023a. *CASP Qualitative Studies Checklist* [Online]. Available: <https://casp-uk.net/casp-tools-checklists/> [Accessed 28/10/2023 2023].
- Critical Appraisal Skills Programme, 2023b. *CASP Diagnostic Study Checklist* [Online]. Available: <https://casp-uk.net/casp-tools-checklists/> [Accessed 29/10/2023 2023].
- Demnitz-King, H., Banerjee, S., Cooper, C., Kenten, C., Phillips, R., Zabihi, S., Birks, Y., Brayne, C., Browning, S., Carroll, C., Charlesworth, G., Coupland, C. A., Denning, T., Dobson, R., Foote, I. F., Foster, S., Fox, C., Howard, R., Isaacs, J. D., Jaffry, U., Koychev, I., Livingston, G., Llewellyn, D. J., Oakley, R., Opazo Bretón, M., Orrell, M., Noyce, A. J., Pouncey, T., Rait, G., Ranson, J., Rauf, M., Raymont, V., Sampson, E. L., Schott, J. M., Smith, D., Tai, X. Y., Thomson, A., Walsh, S., Williams, D. M., Mukadam, N., Marshall, C. R., Carr, G., Giebel, C., Harrison-Dening, K., Hunter, R. M. & Lang, I. 2026. The Nottingham consensus on dementia risk reduction policy: recommendations from a modified Delphi process. *Nature Reviews Neurology*.
- Department of Health, 2016. UK Chief Medical Officers' Low Risk Drinking Guidelines. 11-11.
- Downes, M. J., Brennan, M. L., Williams, H. C. & Dean, R. S. 2016. Development of a critical appraisal tool to assess the quality of cross-sectional studies (AXIS). *BMJ Open*, 6, e011458.
- Dufouil, C., Fuhrer, R. & Alperovitch, A. 2005. Subjective cognitive complaints and cognitive decline: Consequence or predictor? The epidemiology of vascular aging study. *Journal of the American Geriatrics Society*, 53, 616-621.

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Duru, O. K., Xu, H., Moore, A. A., Mirkin, M., Ang, A., Tallen, L., Tseng, C.-H. & Ettner, S. L. 2015. Examining the Impact of Separate Components of a Multicomponent Intervention Designed to Reduce At-Risk Drinking Among Older Adults: The Project SHARE Study. *Alcoholism, clinical and experimental research*, 39, 1227-1235.

Ettner, S. L., Xu, H., Duru, O. K., Ang, A., Tseng, C.-H., Tallen, L., Barnes, A., Mirkin, M., Ransohoff, K. & Moore, A. A. 2014. The effect of an educational intervention on alcohol consumption, at-risk drinking, and health care utilization in older adults: the Project SHARE study. *Journal of studies on alcohol and drugs*, 75, 447-457.

Gallagher, M., Mcleod, H. J. & Mcmillan, T. M. 2019. A systematic review of recommended modifications of CBT for people with cognitive impairments following brain injury. *Neuropsychological Rehabilitation*, 29, 1-21.

Glodzik-Sobanska, L., Reisberg, B., De Santi, S., Babb, J. S., Pirraglia, E., Rich, K. E., Brys, M. & De Leon, M. J. 2007. Subjective memory complaints: Presence, severity and future outcome in normal older subjects. *Dementia and Geriatric Cognitive Disorders*, 24, 177-184.

Heirene, R., John, B. & Roderique-Davies, G. 2018. *Identification and evaluation of neuropsychological tools used in the assessment of alcohol-related cognitive impairment: A systematic review*.

Hoy, N., Newton, N., Kochan, N. A., Sunderland, M., Baillie, A., Chapman, C., Winter, V., Sachdev, P., Teesson, M. & Mewton, L. 2022. Rethink My Drink: study protocol for a 12-month randomised controlled trial comparing a brief internet-delivered intervention to an online patient information booklet in reducing risky alcohol consumption among older adults in Australia. *Addiction (Abingdon, England)*, 117, 815-825.

Kaner, E. F. S., Beyer, F. R., Muirhead, C., Campbell, F., Pienaar, E. D., Bertholet, N., Daeppen, J. B., Saunders, J. B. & Burnand, B. 2018. Effectiveness of brief alcohol interventions in primary care populations. *Cochrane Database of Systematic Reviews*.

Kelly, S., Olanrewaju, O., Cowan, A., Brayne, C. & Lafortune, L. 2018. Interventions to prevent and reduce excessive alcohol consumption in older people: a systematic review and meta-analysis. *Age and ageing*, 47, 175-184.

Lao, Y., Hou, L., Li, J., Hui, X., Yan, P. & Yang, K. 2021. Association between alcohol intake, mild cognitive impairment and progression to dementia: a dose-response meta-analysis. *Aging Clinical and Experimental Research*, 33, 1175-1185.

Levkoff, S. E., Chen, H., Coakley, E., Herr, E. C. M., Oslin, D. W., Katz, I., Bartels, S. J., Maxwell, J., Olsen, E., Miles, K. M., Constantino, G. & Ware, J. H. 2004. Design and sample characteristics of the PRISM-E multisite randomized trial to improve behavioral health care for the elderly. *Journal of aging and health*, 16, 3-27.

Lewis, A. 2010. Housing an ageing population. *Housing, Care and Support*, 72, 9-27.

Livingston, G., Huntley, J., Liu, K. Y., Costafreda, S. G., Selbæk, G., Alladi, S., Ames, D., Banerjee, S., Burns, A., Brayne, C., Fox, N. C., Ferri, C. P., Gitlin, L. N., Howard, R., Kales, H. C., Kivimäki, M., Larson, E. B., Nakasujja, N., Rockwood, K., Samus, Q., Shirai, K., Singh-Manoux, A., Schneider, L. S., Walsh, S., Yao, Y., Sommerlad, A. & Mukadam, N. 2024. Dementia prevention, intervention, and care: 2024 report of the Lancet standing Commission. *The Lancet*, 404, 572-628.

Lopez, O. L., Becker, J. T., Chang, Y. F., Sweet, R. A., Dekosky, S. T., Gach, M. H., Carmichael, O. T., Mcdade, E. & Kuller, L. H. 2012. Incidence of mild cognitive impairment in the Pittsburgh Cardiovascular Health Study-Cognition Study. *Neurology*, 79, 1599-1606.

Musa Salech, G., Lillo, P., Van Der Hiele, K., Méndez-Orellana, C., Ibáñez, A. & Slachevsky, A. 2022. Apathy, Executive Function, and Emotion Recognition Are the Main Drivers of Functional Impairment in Behavioral Variant of Frontotemporal Dementia. *Frontiers in Neurology*, 12.

NHS England, 2024. *Health Survey for England, 2022 Part 1* [Online]. Available: <https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2022-part-1> [Accessed 22/08/2024 2024].

Nichols, E., Steinmetz, J. D., Vollset, S. E., Fukutaki, K., Chalek, J., Abd-Allah, F., Abdoli, A., Abualhasan, A., Abu-Gharbieh, E., Akram, T. T., Al Hamad, H., Alahdab, F., Alanezi, F. M., Alipour, V., Almustanyir, S., Amu, H., Ansari, I., Arabloo, J., Ashraf, T., Astell-Burt, T., Ayano, G., Ayuso-Mateos, J. L., Baig, A. A., Barnett, A., Barrow, A., Baune, B. T., Béjot, Y., Bezabhe, W. M. M., Bezabih, Y. M., Bhagavathula, A. S., Bhaskar, S., Bhattacharyya, K., Bijani, A., Biswas, A., Bolla, S. R., Boloor, A., Brayne, C., Brenner, H., Burkart, K., Burns, R. A., Cámara, L. A., Cao, C., Carvalho, F., Castro-De-Araujo, L. F. S., Catalá-López, F., Cerin, E., Chavan, P. P., Cherbuin, N., Chu, D.-T., Costa, V. M., Couto, R. a. S., Dadras, O., Dai, X., Dandona, L., Dandona, R., De La Cruz-Góngora, V., Dhamnetiya, D., Dias Da Silva, D., Diaz, D., Douiri, A., Edvardsson, D., Ekholuenetale, M., El Sayed, I., El-Jaafary, S. I., Eskandari, K., Eskandarieh, S., Esmaeilnejad, S., Fares, J., Faro, A., Farooque, U., Feigin, V. L., Feng, X., Fereshtehnejad, S.-M., Fernandes, E., Ferrara, P., Filip, I., Fillit, H., Fischer, F., Gaidhane, S., Galluzzo, L.,

Alcohol brief interventions for cognitive impairment

- Ghashghaee, A., Ghith, N., Gialluisi, A., Gilani, S. A., Glavan, I.-R., Gnedovskaya, E. V., Golechha, M., Gupta, R., Gupta, V. B., Gupta, V. K., Haider, M. R., Hall, B. J., Hamidi, S., Hanif, A., Hankey, G. J., Haque, S., Hartono, R. K., Hasaballah, A. I., Hasan, M. T., Hassan, A., et al. 2022. Estimation of the global prevalence of dementia in 2019 and forecasted prevalence in 2050: an analysis for the Global Burden of Disease Study 2019. *The Lancet Public Health*, 7, e105-e125.
- Office for Health Improvement and Disparities, O. 2020. *Guidance on the 5 alcohol use screening tests* [Online]. Available: <https://www.gov.uk/government/publications/alcohol-use-screening-tests/guidance-on-the-5-alcohol-use-screening-tests#:~:text=4%20or%20below%20then%20this,a%20wide%20variety%20of%20settings>. [Accessed 30/01/2026 2026].
- Office for National Statistics, 2025. *Families and households in the UK: 2024* [Online]. ONS website. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/bulletins/familiesandhouseholds/2024#cite-this-statistical-bulletin> [Accessed 02/02/2026 2026].
- Ortolá, R., García-Esquinas, E., Galán, I., Guallar-Castillón, P., López-García, E., Banegas, J. R. & Rodríguez-Artalejo, F. 2017. Patterns of alcohol consumption and risk of falls in older adults: a prospective cohort study. *Osteoporosis International*.
- Oslin, D. W., Grantham, S., Coakley, E., Maxwell, J., Miles, K., Ware, J., Blow, F. C., Krahn, D. D., Bartels, S. J., Zubritsky, C., Olsen, E., Kirchner, J. E. & Levkoff, S. 2006. PRISM-E: comparison of integrated care and enhanced specialty referral in managing at-risk alcohol use. *Psychiatric services (Washington, D.C.)*, 57, 954-958.
- Page, M. J., Bossuyt Pm, Boutron I, Hoffmann Tc, Mulrow Cd, Et Al. 2021. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. . *BMJ*, 372.
- Patterson, C. 2018. World Alzheimer Report 2018. In: INTERNATIONAL, A. S. D. (ed.). London, UK.
- Paula, T. C. S., Chagas, C., Noto, A. R., Formigoni, M. L. O. S., Pereira, T. V. & Ferri, C. P. 2021. Brief interventions for older adults (BIO) delivered by non-specialist community health workers to reduce at-risk drinking in primary care: a study protocol for a randomised controlled trial. *BMJ open*, 11, e043918-e043918.
- Philpot, M., Pearson, N., Petratou, V., Dayanandan, R., Silverman, M. & Marshall, J. 2003. Screening for problem drinking in older people referred to a mental health service: a comparison of CAGE and AUDIT. *Aging & mental health*, 7, 171-175.
- Popay, J. R., Helen; Sowden, Amanda; Petticrew, Mark; Arai, Lisa; Rodgers, Mark; Britten, Nicky; Roen, Katrina; Duffy, Steven 2006. Guidance on the Conduct of Narrative Synthesis in Systematic Reviews: A product from the ESRC Methods Programme
- Purser, G. L. & Lemieux, C. M. 2022. Brief alcohol interventions with older adults: a systematic review of literature. *Journal of Social Work Practice in the Addictions*, 22, 120-136.
- Randall-James, J., Wadd, S., Edwards, K. & Thake, A. 2015. Alcohol Screening in People With Cognitive Impairment: An Exploratory Study. *Journal of Dual Diagnosis*, 11, 65-74.
- Rehm, J., Hasan, O. S. M., Black, S. E., Shield, K. D. & Schwarzingier, M. 2019. Alcohol use and dementia: A systematic scoping review 11 Medical and Health Sciences 1117 Public Health and Health Services. *Alzheimer's Research and Therapy*, 11, 1-12.
- Roberts, R. & Knopman, D. S. 2013. Classification and Epidemiology of MCI. *Clinics in Geriatric Medicine*, 29, 753-772.
- Röhr, S., Pabst, A., Riedel-Heller, S. G., Jessen, F., Turana, Y., Handajani, Y. S., Brayne, C., Matthews, F. E., Stephan, B. C. M., Lipton, R. B., Katz, M. J., Wang, C., Guerchet, M., Preux, P. M., Mbelesso, P., Ritchie, K., Ancelin, M. L., Carrière, I., Guaita, A., Davin, A., Vaccaro, R., Kim, K. W., Han, J. W., Suh, S. W., Shahar, S., Din, N. C., Vanoh, D., Van Boxtel, M., Köhler, S., Ganguli, M., Jacobsen, E. P., Snitz, B. E., Anstey, K. J., Cherbuin, N., Kumagai, S., Chen, S., Narazaki, K., Ng, T. P., Gao, Q., Gwee, X. Y., Brodaty, H., Kochan, N. A., Trollor, J., Lobo, A., López-Antón, R., Santabábara, J., Crawford, J. D., Lipnicki, D. M. & Sachdev, P. S. 2020. Estimating prevalence of subjective cognitive decline in and across international cohort studies of aging: A COSMIC study. *medRxiv*, 1-14.
- Sabia, S., Fayosse, A., Dumurgier, J., Dugravot, A., Akbaraly, T., Britton, A., Kivimäki, M. & Singh-Manoux, A. 2018. Alcohol consumption and risk of dementia: 23 year follow-up of Whitehall II cohort study. *BMJ (Online)*, 362.
- Seddon, J., Wadd, S., Elliott, L. & Madoc-Jones, I. 2021. Cognitive impairment and treatment outcomes amongst people attending an alcohol intervention service for those aged 50+. *Advances in Dual Diagnosis*, 14, 58-69.

Alcohol brief interventions for cognitive impairment

- Shulman, M., Campbell, A., Pavlicova, M., Hu, M.-C., Aharonovich, E. & Nunes, E. V. 2018. Cognitive functioning and treatment outcomes in a randomized controlled trial of internet-delivered drug and alcohol treatment. *The American Journal on Addictions*, 27, 509-515.
- Slot, R., A. M. Sikkema, S., Berkhof, J., Brodaty, H., Buckley, R., Cavedo, E., Dardistis, E., Guillo-Benarous, F., Hampel, H., Kockan, N., Lista, S., Luck, T., Maruffe, P., Molinue, J. L., Kornhuber, J., Reisberg, B., Riedel-Heller, S., Risacher, S. L., Roehrn, S., Sachdev, P. S., Scarme, N., Scheltensa, P., Shulman, M. B., Saykin, A. J., Verfailliea, S. C. J., Vissera, J., Vosx, S. J. B., Wagner, M., Wolfsgruber, S. & Jessen, F. 2018. Subjective cognitive decline and rates of incident Alzheimer's disease and non-Alzheimer's disease dementia.
- Sterne Jac, S. J., Page Mj, Elbers Rg, Blencowe Ns, Boutron I, Cates Cj, Cheng H-Y, Corbett Ms, Eldridge Sm, Hernán Ma, Hopewell S, Hróbjartsson a, Junqueira Dr, Jüni P, Kirkham Jj, Lasserson T, Li T, Mcaleenan a, Reeves Bc, Shepperd S, Shrier I, Stewart La, Tilling K, White Ir, Whiting Pf, Higgins Jpt. 2019. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ*, 366.
- Strandberg, A. Y., Trygg, T., Pitkälä, K. H. & Strandberg, T. E. 2018. Alcohol consumption in midlife and old age and risk of frailty. *Age and Ageing*, 47, 248-254.
- Tan, G. J., Tan, M. P., Luben, R. N., Wareham, N. J., Khaw, K. T. & Myint, P. K. 2021. The relationship between alcohol intake and falls hospitalization: Results from the EPIC-Norfolk. *Geriatrics and Gerontology International*.
- Thake, A., Wadd, S., Edwards, K. & Randall-James, J. 2015. Identifying and responding to alcohol misuse in memory clinics: current practice, barriers and facilitators. *Advances in Dual Diagnosis*, 8, 65-77.
- Van Gils, Y., Franck, E., Dierckx, E., Van Alphen, S. P. J., Saunders, J. B. & Dom, G. 2021. Validation of the AUDIT and AUDIT-C for Hazardous Drinking in Community-Dwelling Older Adults. *International journal of environmental research and public health*, 18.
- Wadd, S., Randall, J., Thake, A., Edwards, K., Galvani, S., McCabe, L. & Coleman, A. 2013. Alcohol Misuse and Cognitive Impairment in Older People.
- Wadd, S., Seddon, J., McCann, M., Dutton, M., Elliott, L., Trevena, P., Adnum, L., Madoc-Jone, I., Wilson, F., Donnelly, M. & Close, C. 2020. 2015 to 2020 Evaluation of the Drink Wise Age Well Programme. *Drink Wise Age Well Programme report*.
- Wimo, A., Seeher, K., Cataldi, R., Cyhlarova, E., Dielemann, J. L., Frisell, O., Guerchet, M., Jönsson, L., Malaha, A. K., Nichols, E., Pedroza, P., Prince, M., Knapp, M. & Dua, T. 2023. The worldwide costs of dementia in 2019. *Alzheimer's & Dementia*, 19, 2865-2873.
- Winblad, B., Palmer, K., Kivipelto, M., Jelic, V., Fratiglioni, L., Wahlund, L. O., Nordberg, A., Bäckman, L., Albert, M., Almkvist, O., Arai, H., Basun, H., Blennow, K., De Leon, M., Decarli, C., Erkinjuntti, T., Giacobini, E., Graff, C., Hardy, J., Jack, C., Jorm, A., Ritchie, K., Van Duijn, C., Visser, P. & Petersen, R. C. 2004. Mild cognitive impairment – beyond controversies, towards a consensus: report of the International Working Group on Mild Cognitive Impairment. *Journal of Internal Medicine*, 256, 240-246.
- World Health Organization (WHO), 2007. WHO Global Report on Falls Prevention in Older Age. *Ageing Life Course, Family and Community Health, WHO*.
- World Health Organization (WHO), 2017. Global action plan on the public health response to dementia 2017-2025. Geneva: World Health Organization.
- World Health Organization (WHO), 2024. *Alcohol: Key Facts* [Online]. Available: <https://www.who.int/news-room/fact-sheets/detail/alcohol> [Accessed 09/03/2025 2025].
- Wortzel, H. S. & Arciniegas, D. B. 2012. Treatment of Post-Traumatic Cognitive Impairments. *Current Treatment Options in Neurology*, 14, 493-508.
- Yao, L., Hou, L., Lao, Y., Luo, W., Lu, Z., Chen, J. & Liu, Y. 2020. Effect of alcohol intake on the development of mild cognitive impairment into dementia A protocol for systematic review and dose-response meta-analysis Study Protocol Systematic Review Medicine ® OPEN 1. *Medicine*, 99.
- Zanjani, F., Allen, H., Schoenberg, N., Martin, C. & Clayton, R. 2018. Acceptability of intervention materials to decrease risk for alcohol and medication interactions among older adults. *Evaluation and program planning*, 67, 160-166.

Alcohol brief interventions for cognitive impairment

Systematic review of modifications to alcohol screening and brief interventions for older adults with cognitive impairment

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Abstract

Purpose:

Older adults with cognitive impairment who drink too much alcohol risk further cognitive decline and other alcohol-related harms. We reviewed the literature to synthesise existing knowledge about modifications to alcohol screening and brief interventions for people with cognitive impairment and their effectiveness.

Design:

We carried out a systematic review (PROSPERO: CRD42022378827). We included studies of older adults with cognitive impairment that examined alcohol screening or brief interventions applied to or modified for this group. A narrative synthesis was conducted.

Findings:

Four studies (5 papers) were found that met the review inclusion criteria. Alcohol screening tools and brief interventions were reported to be acceptable and feasible in older people with cognitive impairment (2 studies). No studies of effectiveness of alcohol screening or brief interventions for people with cognitive impairment were identified.

Originality:

This original systematic review found no studies exploring the effectiveness of alcohol screening or brief interventions modified for people with cognitive impairment though studies indicated they are considered feasible and acceptable in this population.

Research implications:

Research should focus on the development of modified interventions that should be tested rigorously to tackle the large and growing burden of cognitive impairment globally.

Key words: Alcohol-related disorders, cognition, cognitive dysfunction, alcohol screening, alcohol brief intervention, systematic review.

1. Introduction

Dementia, an umbrella term for a group of largely progressive diseases that affect memory, other cognitive functions and behaviour, is a significant public health issue (World Health Organization (WHO), 2017) and the number of people with dementia worldwide is expected to reach 152.8 million by 2050 (Nichols et al., 2022).

In addition to the substantial human cost, the estimated financial cost of dementia in the UK is currently £42 billion (Alzheimer's Society, 2024). Worldwide, the cost of dementia is expected to rise to an estimated US\$ 2.8 trillion by 2030 (Patterson, 2018, Wimo et al., 2023, Alzheimer's Disease International, 2021).

Mild cognitive impairment (MCI - impairment that can be identified in diagnostic tests, but where activities of daily living are not severely affected) and subjective cognitive decline (SCD) are very common in older people (Winblad et al., 2004, Röhr et al., 2020) and both are linked to a higher likelihood of further cognitive decline and dementia (Slot et al., 2018, Lopez et al., 2012, Glodzik-Sobanska et al., 2007, Dufouil et al., 2005).

Drinking above low risk levels is associated with an increased risk of cognitive impairment and progression to dementia (Rehm et al., 2019, Cooper et al., 2015, Bos et al., 2017, Yao et al., 2020), and in England, 40% of men and 19% of women aged 65-74 drink above low risk levels (above 14 units (112g of ethanol) per week consistent with the UK Low Risk Drinking Guidelines) (Department of Health, 2016, NHS England, 2024). Using prevalence estimates for MCI, SCD and at-risk drinking, we have estimated there to be 927,484 older people in the UK at an additional, preventable, risk of further cognitive decline or dementia due to alcohol consumption. These estimate calculations can be found in <supplementary materials 1>.

Drinking above 14 units of alcohol per week is associated with an increased risk of dementia, and the risk increases with higher consumption (Sabia et al., 2018). Chronic heavy alcohol consumption is causally associated with cognitive impairment through a number of pathways, including nutritional deficiencies, liver and cerebrovascular disorders, brain injury and direct neurotoxic effects of alcohol (Heirene et al., 2018). In addition to older adults drinking above low risk levels being more likely to experience cognitive decline (Rehm et al., 2019, Lao et al., 2021, Cooper et al., 2015, Bos et al., 2017), they also experience higher levels of frailty

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(Strandberg et al., 2018), a greater risk of falls (Tan et al., 2021, Ortolá et al., 2017, WHO, 2007), and harm as a consequence of interactions between medication and alcohol (Zanjani et al., 2018). With 24% of the population projected to be aged 65 and above by 2043 (Lewis, 2010), addressing alcohol consumption in this age group is a public health priority.

The World Health Organization and Lancet Commission have identified alcohol as a key modifiable risk factor in the development of dementia and recommend interventions to reduce drinking in older adults with and without MCI (WHO, 2017, Livingston et al., 2024). The need for appropriate alcohol interventions has been further highlighted in a recent national consensus on dementia risk reduction policy in England (Demnitz-King et al., 2026).

The UK clinical guidelines for alcohol treatment (Department of Health and Social Care, 2025) recommend that staff in all health and social care settings (1) use validated screening tools in order to identify people whose health is at risk from their alcohol consumption and (2) deliver alcohol brief interventions to people who drink above low risk guidelines but are not alcohol dependent. The international evidence base indicates that alcohol brief interventions, typically delivered by non-specialists outside of alcohol treatment settings, are effective in reducing alcohol consumption (Kaner et al., 2018). However, older adults experiencing cognitive impairment present specific challenges both when identifying at-risk alcohol consumption and when addressing at-risk alcohol consumption through the delivery of alcohol brief interventions. Cognitive impairment can affect multiple cognitive domains, including memory, attention, language, executive function and processing speed (Winblad et al., 2004, Roberts and Knopman, 2013) and is also related to a number of behavioural changes, including apathy and disinhibition (Musa Salech et al., 2022) that can have a negative impact on engagement with interventions such as alcohol brief interventions. These multifaceted impairments may affect an individual's ability to engage in both the process of alcohol screening (for example, memory impairments may lead to issues with accurate recall of recent alcohol consumption (Wadd et al., 2013)) and with engagement in brief interventions (for example, problems with planning, evaluation of evidence and decision making, as well as retention of information, may affect the effectiveness of alcohol brief interventions

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that rely on providing feedback on current drinking and associated risks, eliciting benefits of reducing alcohol, identifying alcohol reduction goals and providing a choice of strategies to support reduction (Department of Health and Social Care, 2025)). Modifications may therefore be required for both screening and brief interventions to be effective in this population. At present, no guidance is available regarding alcohol screening and brief interventions in people with cognitive impairment.

2. Objectives

This systematic review attempted to synthesise the current evidence about the effectiveness of alcohol screening to identify at-risk drinking and brief interventions to reduce alcohol intake among people with cognitive impairment by addressing the following review questions:

1. How has alcohol screening been modified for older adults with cognitive impairment?
2. What is the content of alcohol brief interventions modified for older adults with cognitive impairment?
3. How effective are (i) alcohol screening tools and (ii) brief interventions modified for older adults with cognitive impairment in (i) identifying at-risk alcohol consumption and (ii) reducing alcohol consumption in older at-risk drinkers with cognitive impairment?

3. Methods

The review protocol was registered on the PROSPERO international prospective register of systematic reviews: CRD42022378827. The review was conducted using Covidence, a web-based collaboration software platform that streamlines the production of systematic reviews (www.covidence.org). Reporting was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 checklist (Page et al., 2021).

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Inclusion criteria

Papers were included if they involved:

Participants: Adults aged 50+ with cognitive impairment that was not due to traumatic brain injury, stroke or learning disability from birth, including SCD, MCI, and dementia and, for studies of brief interventions, drinking above low risk levels (>14 units (112g) of alcohol per week). Preliminary searches indicated that some papers relating to interventions for older adults with cognitive impairment included patients aged 50 and above; therefore, 50 was chosen for greater inclusivity of studies. Papers relating to traumatic brain injury, stroke or learning disability from birth were excluded due to the significant differences in aetiology and progression compared to SCD, MCI and dementia.

Interventions: Alcohol screening or alcohol brief interventions with any modifications made for people experiencing cognitive impairment. Screening and/or interventions delivered in any setting were included. Alcohol screening included any tools used to identify at-risk drinking. In line with Kaner et al.'s (Kaner et al., 2018) Cochrane review of brief alcohol interventions, brief interventions were defined as time limited brief advice or brief life-style counselling delivered in non-specialist (i.e., non-alcohol treatment) settings.

Comparators: Studies including any comparators were considered, including those with no comparator.

Outcomes: For review questions 1 and 2, all papers with the relevant participants and intervention were included, regardless of outcomes. For review question 3, we were interested in the outcome of reduced alcohol consumption.

Primary research studies of any research design and systematic or scoping reviews published between January 2000 and January 2023 in the English language were included.

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Search strategy and data sources

A search strategy for PubMed, Cochrane Library, EBSCO CINAHL Plus, EBSCO MEDLINE, PsycINFO, and Web of Science was implemented between 06/12/2022 and 13/01/2023, combining alcohol-related terms, screening and intervention and cognition terms. The search strategy is included in <supplementary materials 2>.

Reference lists of included papers were screened for potentially relevant studies.

Study selection and data extraction

Study selection was completed by two researchers (PC and MG) using Covidence software. Covidence identified and removed duplicate studies. Guidance on study selection was developed for both the title and abstract screening phase and the full paper review phase. Due to the high number of papers identified through the search strategy, title and abstract screening was split between PC and MG and the third reviewer (LF) checked a random 10% of papers to ensure agreement on the decision made. Two reviewers (PC and MG) conducted the full text screening of all studies and any disagreements on study inclusion were taken to the third reviewer (LF) for discussion and decision on whether to include them.

Data extraction

Data were extracted from reports by the lead author (PC). The reports and extracted data were reviewed by all authors and changes or additions to the included extracted materials were made.

Quality assessment

Quality was assessed using the Critical Appraisal Skills Programme (CASP) Qualitative Studies Checklist (Programme, 2023a) for qualitative studies, CASP Diagnostic Test Study Checklist (Programme, 2023b) for tool validation studies, and the Cochrane Risk of Bias (RoB 2) tool for randomised controlled trials (Sterne JAC, 2019). To assess quality of surveys and cross-sectional analyses, the AXIS tool was used (Downes et al., 2016).

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Data synthesis

A narrative synthesis was conducted following the guidance of Popay et al. (2006). Synthesis involved tabulation, textual descriptions and concept mapping. We tabulated study data with details of country, setting, aims, design, participants, intervention description, modifications for people with cognitive impairment, and results.

A conceptual map of modifications to screening and interventions for people with cognitive impairment was developed to guide how the reports were grouped for synthesis. Similarities and differences between studies were then explored through aims, study populations and descriptions of interventions.

4. Results

Study selection

The search was completed on 13th January 2023 and found 21,199 references (including 5 through reference list searches), of which 10,673 were duplicates, leaving 10,526 to screen. Of these, 328 reports were retrieved for full text screening. The majority of reports (n=193) were excluded at full text screening stage because they either did not include people with cognitive impairment or did not describe whether any participants had cognitive impairment.

Two reports were published protocols of relevant studies that were not yet completed (Hoy et al., 2022, Paula et al., 2021) . At the time of publication of this review, these published protocols did not report any results and therefore had no data to be included.

A list of excluded papers is available upon request.

Five reports of four studies were included in the review. Figure 1 shows the PRISMA flow diagram and Table 1 contains descriptions of the included studies.

Objective 1: How has alcohol screening been modified for people with cognitive impairment?

Four studies (five papers) included the use of alcohol screening tools (Philpot et al., 2003, Randall-James et al., 2015, Thake et al., 2015, Ettner et al., 2014, Duru et al., 2015). Table 2 includes a summary list of modifications and suggested modifications to alcohol screening from the included papers. Philpot et al. (2003) examined test characteristics (i.e. sensitivity, specificity and positive predictive value) of screening tools to identify problem alcohol use in people aged 65 and older attending a community mental health service in London, UK, of whom 68% had cognitive impairment; these tools were CAGE (mnemonic of Cut down, Annoyed, Guilty, Eye-opener) and the Alcohol Use Disorders Identification Test (AUDIT). Whilst the authors did not look at modifications to existing screening tools or processes, they sought to identify which tool is most effective in older adults, including those with cognitive impairment, and investigated the most appropriate cut scores to identify an alcohol use disorder in this population. They concluded that the AUDIT and AUDIT-5 were more accurate at identifying AUD in this population than the CAGE and that a cut score of 4/5 on the AUDIT was recommended for this population.

Randall-James et al. (2015) examined feasibility and acceptability of alcohol screening tools within a single English memory assessment service (MAS) using qualitative interviews with service users with cognitive impairment. Thake et al. (2015) examined current practice, barriers and facilitators of alcohol screening tools in multiple MAS in England and Wales from the perspective of service providers and professionals using a survey and focus groups. These two studies made suggestions about modifications based on their findings. Randall-James et al. (2015) suggested that recall may be improved by providing drink diaries and measuring cups before administering screening tools, and accuracy may be improved by using interpersonal skills to develop rapport, repeating, offering confirmatory statements, following up on questions to ensure shared understanding, and involving informants, for example, carers or family members. Randall-James et al. (2015) assessed these modifications in terms of feasibility and acceptability, finding them both feasible and acceptable, but not in terms of effectiveness. They identified some key challenges to screening for at-risk alcohol consumption in this population, including the need to build a trusting relationship, difficulties with

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completing drinking diaries, issues with using informants to gather information and the need for education for staff. Thake et al. (2015) in their study of practitioner views, found that the use of validated alcohol screening tools was rare (one out of thirty-five sites). Like Randall-James et al. (2015), they also suggested that involving informants may improve detection of alcohol problems in MAS, but may, conversely, cause respondents to underreport alcohol consumption due to stigma and relationship dynamics. Observations of the home environment were also suggested. Thake et al. (2015) made recommendations and identified challenges, such as staff knowledge and skills, perceived denial of problems by services users and insufficient resources, but the authors did not assess the modifications in their study.

One study (two reports) described an alcohol screening tool that was used to identify study participants and inform the content of the brief intervention (Duru et al., 2015, Ettner et al., 2014). This study described a screening tool that included a question about memory problems: the Comorbidity Alcohol Risk Evaluation Tool (CARET) (Ettner et al., 2014, Duru et al., 2015). The tool explores a range of comorbidities and assigns a level of alcohol consumption that corresponds to at-risk drinking for people with that comorbidity. This tool includes one item that refers to memory problems: "Alcohol use and comorbidities in the past 12 months: option e: Memory problems, heartburn, stomach pain, nausea, vomiting, or feel sad/blue in the past 12 months" people who select this item are considered at-risk drinkers if they drink: 5 (US standard) drinks per day at any frequency, 4 drinks per day at least 2 times per month, or 3 drinks per day at least 2 times per week. The inclusion of an item relating to memory problems had two impacts: (1) it provided a specific level of alcohol consumption at which drinking was considered at risk if individuals also had memory problems and (2) following screening, it prompted the provision of a 'forgetfulness tip sheet' to people drinking at risky levels who also experienced memory problems. It should be noted that the inclusion of memory as a comorbidity is part of the original tool and its inclusion alongside other comorbidities within the same item limits its specificity to a population of people with cognitive impairment.

Objective 2: What is the content of alcohol brief interventions modified for people with cognitive impairment?

Two studies (three reports) examined alcohol brief interventions (Thake et al., 2015, Duru et al., 2015, Ettner et al., 2014). Table 3 includes a summary of modifications and suggested modifications to brief interventions.

One qualitative study examined barriers and facilitators of alcohol brief interventions (as well as screening tools) in MAS in England and Wales from the perspective of service providers and professionals (Thake et al., 2015). The authors suggested that modifications to MAS to enable this type of service to respond to at-risk drinking would require better training and skills among professionals, more time in consultations and clear and resourced pathways for ongoing care (Thake et al., 2015).

Another study examined the effectiveness (Ettner et al., 2014) and active ingredients (Duru et al., 2015) of a brief intervention for people aged 60+ in a randomised controlled trial (RCT) (the Project Senior Health and Alcohol Risk Education (SHARE) study) in the United States. Patients with severe cognitive impairment (assessed by the treating physician) were excluded and levels of mild to moderate cognitive impairment amongst the study population were not reported. After screening using the CARET, participants identified as at-risk drinkers received a personalised report, a booklet on alcohol and ageing, and “tip sheets” according to specific circumstances. Participants identified as having “memory problems” were provided with the “forgetfulness tip sheet”. Physicians were prompted to discuss the report with the patient during subsequent routine visits. The tip sheet included reasons for forgetfulness, including ageing, anxiety, depression, medications, Alzheimer’s Disease along with activities to help, serious signs to look out for and places to access help. However, it did not include any information on the link between alcohol and memory problems or suggest any specific support for at-risk drinkers with memory problems. Clinicians and health educators had subsequent tailored interactions with participants, through three contacts, including: assessment and feedback, negotiation and goal setting, behavioural change skills, self-help resources, and follow-up and reinforcement, so it is likely that there were further modifications for those with memory problems, but these were not described in the reports.

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Objective 3: How effective are (i) alcohol screening tools and (ii) brief interventions modified for people with cognitive impairment in (i) identifying at-risk alcohol consumption and (ii) reducing alcohol consumption in older at-risk drinkers with cognitive impairment?

Alcohol screening tools

No studies specifically examined the effectiveness of alcohol screening tools modified for people with CI. In the Project SHARE Study, the screening tool included a question about memory problems (Ettner et al., 2014, Duru et al., 2015), but there was no specific evaluation of the effectiveness of using this question in this context. Philpot et al. (2003) compared the CAGE, AUDIT and an abbreviated version of the AUDIT (AUDIT-5) in a population with high levels of CI and found the AUDIT and AUDIT-5 to be superior to the CAGE. Thake et al. (2015) and Randall-James et al. (2015) suggested modifications, but it was not within the scope of either study to test them.

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The trial in the US of the Project SHARE alcohol brief intervention found that it reduced at-risk drinking (56% versus 67%, $p \leq 0.01$) and usual number of drinks per week (9.5 (intervention) versus 11.6 (control), $p \leq 0.01$) at 12 months (Ettner et al., 2014). The authors did not report its effectiveness specifically in people with cognitive impairment. The associated report suggested that keeping a drinking diary AND making a drinking agreement, and a discussion with a physician during the 12 month follow up were likely to be active ingredients of the intervention, but whether specific elements were more effective for people with CI was not reported (Duru et al., 2015). Thake et al. (2015) made suggestions for modifications, but it was not within the scope of the study to test them.

Risk of bias in assessing evidence of effectiveness in included studies

A summary of our quality assessments is provided in <supplementary materials 3>. The study designs of the included studies were heterogeneous, and none specifically assessed effectiveness of modifications to

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screening tools or alcohol brief interventions in people with cognitive impairment, so assessing risk of bias was not relevant.

The qualitative studies in British MAS by Randall-James et al. (2015) and Thake et al. (2015) were of moderate to good quality and provided useful evidence to support development of modified screening tools and brief interventions, but no evidence of effectiveness.

The study by Philpot et al. (2003) about test characteristics was moderate quality.

The Project SHARE RCT was good quality and provided evidence to support development of brief interventions for people with cognitive impairment, but no direct evidence of effectiveness in this group (Ettner et al., 2014).

5. Discussion

This review found a very limited evidence base relating to modifications to alcohol screening and brief interventions for older adults with cognitive impairment, with no studies exploring the effectiveness of modifications, although there was some evidence of feasibility and acceptability of screening and brief intervention in memory services that serve this population. This evidence, in combination with the high prevalence of at-risk drinking in people aged 65 and older in the UK, indicates that this is a key area for intervention development.

From this review, the AUDIT was a more effective screening tool than CAGE at identifying at-risk drinkers in older populations including those with cognitive impairment; however, the recommendation of using a cut score of 4/5 in this population has implications for its utility in clinical practice as a single upper cut score is often used to aid clinical decision making (Office for Health Improvement and Disparities, 2020). Whilst modifications to administering the AUDIT in people with cognitive impairment were suggested (Randall-James et al., 2015, Thake et al., 2015), the effectiveness of these modifications has not been tested. Both papers suggested using informants to gather accurate data on alcohol consumption; however, larger numbers of

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people living alone, including a higher proportion of older adults (Office for National Statistics, 2025), means that this may not always be feasible in practice.

Project SHARE showed promising results for an alcohol brief intervention for older adults delivered in primary care services. However, whilst it is likely that the sample included some older adults with mild cognitive impairment, this was not measured and therefore any results for this population remain unknown. Cognition was included as a possible comorbidity; however, it was not the focus of the intervention and the link between alcohol consumption and cognition was not illustrated in the “tip sheet”.

Research into alcohol and other drug interventions delivered over longer time periods and in specialist services, have identified potential modifications to alcohol interventions for people with cognitive impairment that could be useful in informing the design of a brief intervention modified for older adults with cognitive impairment. Modifications in the literature include changes to training and information provision (e.g. staff training on alcohol and cognitive impairment, providing information on the link between alcohol and cognitive impairment to patients), changes to intervention delivery (e.g. written records, multi-format materials, single goal focus, detailed plans and steps, flexible length and pace, practising skills rather than focussing on concepts) and pragmatic facilitators (e.g. ways to identify staff, using prompts and reminders for appointments) (Seddon et al., 2021, Wadd et al., 2020, Collings et al., 2022). These modifications largely mirror modifications to (non-alcohol specific) treatments for people with cognitive impairment caused by brain injury, which often focus on adaptive (e.g. reducing distractions, timing sessions to maximise cognitive capacity, reducing complexity of tasks) and compensatory (e.g. assistive technologies, such as electronic planners and reminders, timers, alarms and notebooks) modifications (Wortzel and Arciniegas, 2012, Gallagher et al., 2019), as well as making links between the cause of cognitive impairment and the impairment itself explicit (Gallagher et al., 2019). Given the evidence in these related fields, some of these modifications could be applied to an alcohol brief intervention to be tested in future research, especially highlighting the link between alcohol consumption and cognitive impairment, the simplification of materials, focussing on one

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goal and the use of a suite of options for reminders and prompts that are appropriate to the individual (as described by Bogner et al., 2021).

Furthermore, since cognitive impairment can affect a range of cognitive functions that go beyond memory problems (Winblad et al., 2004, Roberts and Knopman, 2013), brief interventions for this group could include modifications that meet the needs of people struggling with specific cognitive functions. For example, a future brief intervention to be tested through research might be preceded by both alcohol and cognitive screening, with a tailored intervention offered that is specific to the individual's needs.

It has been suggested that computer-based interventions may have benefits for people with cognitive impairment, including flexibility of pace and the ability to repeat tasks and there is modest evidence from computer-based alcohol and other drug interventions, that people with cognitive impairment did as well as those without cognitive impairment (Shulman et al., 2018, Carroll et al., 2011). However, these studies included predominantly younger age groups experiencing problems with drugs and/or alcohol, so the usefulness of computer-based interventions for older adults with cognitive impairment remains unclear. Preliminary evidence of a personalised smartphone intervention for middle and older age at-risk drinkers indicates acceptability and feasibility in this age group, but limited effectiveness (Bolt et al., 2026), highlighting the need for further robust evidence of this type of intervention.

Two protocol papers were found that have no currently published findings. Paula et al. (Paula et al., 2021) reported their protocol for an RCT testing a 15-minute alcohol intervention delivered by non-specialist community workers in Brazil to at-risk drinkers aged 60 and older. Although there was no specific mention of modifications for cognitive impairment, the authors will be measuring cognitive function at baseline and follow-up. Hoy et al. (Hoy et al., 2022) reported their protocol for an RCT testing a brief internet-delivered alcohol intervention to at-risk drinkers aged 60 to 75 years in Australia and cite their study aim is to evaluate whether the intervention is effective in reducing alcohol consumption and cognitive decline in older at-risk drinkers.

5.1 Limitations

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Very few papers were found that met the study criteria, demonstrating an urgent need for more research in this area. The papers identified by this review were heterogenous in terms of study aims, populations, interventions and methods used. It was therefore not possible to conduct any quantitative synthesis of findings.

Many studies (e.g. (Andersen et al., 2020, van Gils et al., 2021)) and reviews (e.g. (Purser and Lemieux, 2022)) examining alcohol screening and interventions for older adults excluded people with any cognitive impairment, and, in studies where people with mild or moderate cognitive impairment were said to be included, there was no indication that modifications had been made for this population and results for people with and without cognitive impairment were not reported (Levkoff et al., 2004, Oslin et al., 2006) making any evaluation of their effectiveness in this population impossible. A previous review of broader alcohol interventions for older adults found no studies that also reported cognitive or dementia outcomes (Kelly et al., 2018). Considering the prevalence of cognitive impairment in older age groups and the likely need for modified delivery of interventions, their exclusion from research into alcohol screening and brief intervention research is of concern.

No evidence was identified on the effectiveness of alcohol screening and brief interventions modified for older adults with cognitive impairment, but we did find important learning that can inform the development of such an intervention. This must be used to build interventions to tackle alcohol consumption as a contributing factor to the large and growing global burden of cognitive impairment.

6. Clinical Implications

The number of older adults is increasing along with the prevalence of cognitive impairment and at-risk drinking. The research presented in this review suggests that screening for at-risk drinking and delivering brief interventions is feasible and acceptable in non-alcohol specialist settings, such as memory assessment clinics; however, there is a lack of robust evidence about how screening tools and brief interventions should be modified for people with cognitive impairment. Future research might focus on developing an intervention

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modified in collaboration with service users and clinicians and using examples from the wider cognitive impairment literature shared above, and to test it with people who experience cognitive impairment and drink at risky levels, through a randomised controlled trial with alcohol consumption outcome measures.

Acknowledgements

Declaration of interest statement

Data availability statement

Data sharing not applicable – no new data generated. Data sharing is not applicable to this article as no new data were created or analysed in this study.

Tables and figures

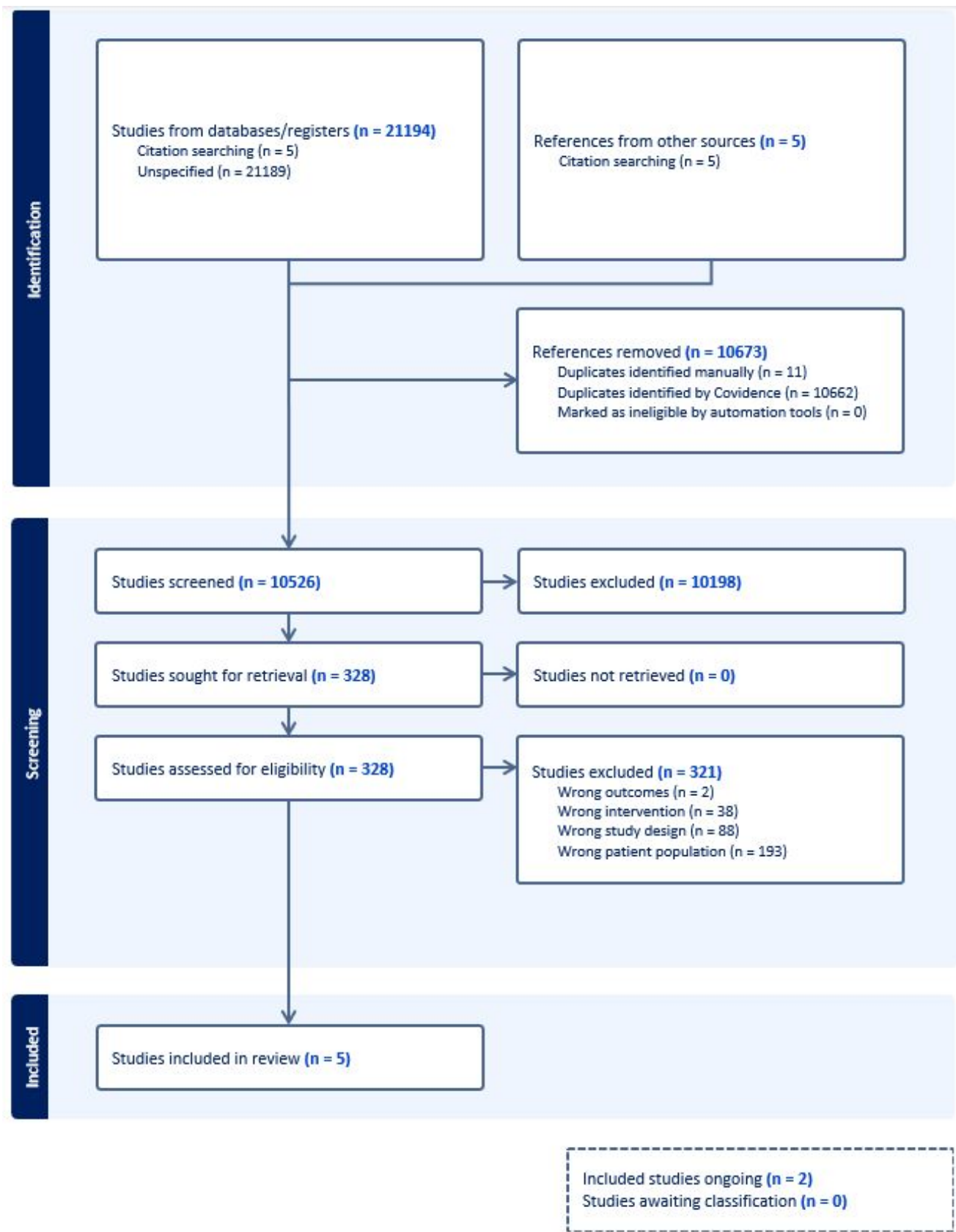


Figure 1: Paper inclusion flow diagram

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Table I: Study aims, design, setting, and description of participants

First author, year	Aims	Study design	Setting	Participants
Randall-James et al. (Randall-James et al., 2015)	To examine the feasibility and acceptability of screening older adults with cognitive impairment (CI) for alcohol misuse in Memory Assessment Service (MAS)	Qualitative interview study	A single MAS, UK	10 MAS service users aged 65+ with a diagnosis of dementia or mild CI
Thake et al. (Thake et al., 2015)	To examine, in MAS <ul style="list-style-type: none"> practice of alcohol screening and intervention barriers to and facilitators of alcohol screening and intervention 	Cross-sectional survey and qualitative focus groups	Several MAS, UK	35 MAS professionals completed survey 12 MAS professionals took part in focus groups
Philpot et al. (Philpot et al., 2003)	To compare CAGE and AUDIT screening alcohol problems in older adults against three 'gold standards': <ul style="list-style-type: none"> Royal College of Psychiatrists drinking guidelines (21 men/14 women units/week) criteria for hazardous drinking (42 men/28 women units/week) clinical case identification 	Diagnostic test study	Community older adult mental health service, UK	128 adults aged 65+ referred to community mental health team; 54% diagnosed with dementia; 63 (of 104 with Mini Mental State Examination (MMSE) score available) were cognitively impaired (scored ≤ 23).
Ettner et al. (Ettner et al., 2014)	To examine the effectiveness of a patient-provider brief educational intervention (Project SHARE) in reducing at-risk drinking among older adults	Cluster randomised controlled trial (RCT)	Primary care, USA	1186 adults aged 60+, identified as at-risk drinkers through the Comorbidity Alcohol Risk Evaluation Tool (CARET). Average age 71. Number with CI not provided
Duru et al. (Duru et al., 2015)	To identify the active ingredients of Project SHARE			

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Table II: Modifications to alcohol screening tools

First author, year	Summary of modifications
Randall-James et al. (Randall-James et al., 2015)	Modifications suggested: <ul style="list-style-type: none">• drinking diary and measuring cup provided 1 week prior to assessment• using interpersonal skills to develop rapport• repeating and offering confirmatory statements• following up on questions to ensure shared understanding• involving informants, for example, carers, family members or friends.
Thake et al. (Thake et al., 2015)	Modifications to screening suggested: <ul style="list-style-type: none">• involving informants in assessing alcohol consumption• observations of the home environment
Philpot et al. (Philpot et al., 2003)	AUDIT and AUDIT-5 performed much better in people with CI than CAGE in terms of sensitivity, specificity and positive predictive value, regardless of the gold standard used. Receiver operating curve indicated that lower cut points are required to identify at-risk drinking in older adult mental health services: AUDIT: score of 4/5 to indicate at-risk drinking, CAGE: score of 0/1 to indicate at-risk drinking.
Ettner et al. (Ettner et al., 2014) Duru et al. (Duru et al., 2015)	The CARET screening tool includes a question to identify people with memory problems along with other comorbidities.

Table III: Modifications to alcohol brief interventions

First author, year	Summary of modifications
Thake et al. (Thake et al., 2015)	Modifications to interventions suggested: <ul style="list-style-type: none">• training for MAS professionals• more time for consultations• resourced referral pathways for specialist support
Ettner et al. (Ettner et al., 2014) Duru et al. (Duru et al., 2015)	The specific modification to the intervention was a "forgetfulness tip sheet" provided to participants who reported memory problems. The forgetfulness tip sheet outlined: <ul style="list-style-type: none">• common causes of forgetfulness• activities to improve memory• serious symptoms to be aware of• services where people could access help The tip sheet did not mention alcohol or the link between alcohol and cognition.

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References

- Alzheimer's Disease International, 2021. *Dementia Statistics* [Online]. Available: <https://www.alzint.org/about/dementia-facts-figures/dementia-statistics/> [Accessed 08 January 2026].
- Alzheimer's Society & Carnell Farrar, 2024. The economic impact of dementia. Module 1: Annual costs of dementia May 2024. Accessed at: <https://www.alzheimers.org.uk/sites/default/files/2024-05/the-annual-costs-of-dementia.pdf> on 08/01/2026
- Andersen, K., Behrendt, S., Bilberg, R., Bogenschütz, M. P., Braun, B., Buehringer, G., Ekstrøm, C. T., Mejlidal, A., Petersen, A. H. & Nielsen, A. S. 2020. Evaluation of adding the community reinforcement approach to motivational enhancement therapy for adults aged 60 years and older with DSM-5 alcohol use disorder: a randomized controlled trial. *Addiction (Abingdon, England)*, 115, 69-81.
- Bogner, J., Corrigan, J. D., Peng, J., Kane, C. & Coxe, K. 2021. Comparative effectiveness of a brief intervention for alcohol misuse following traumatic brain injury: A randomized controlled trial. *Rehabilitation Psychology*, 66, 345-355.
- Bolt, G. L., Rowland, B., Piercy, H., Bradshaw, J., Lubman, D. I. & Manning, V. 2026. AAT-App+: A double-blind, pilot randomised controlled trial of a novel personalised smartphone intervention to reduce hazardous and harmful alcohol consumption among middle-older adults. *Addictive Behaviors*, 173.
- Bos, I., Vos, S. J., Frölich, L., Kornhuber, J., Wiltfang, J., Maier, W., Peters, O., Rütger, E., Engelborghs, S., Niemantsverdriet, E., De Roeck, E. E., Tsolaki, M., Freund-Levi, Y., Johannsen, P., Vandenberghe, R., Lleó, A., Alcolea, D., Frisoni, G. B., Galluzzi, S., Nobili, F., Morbelli, S., Drzezga, A., Didic, M., Van Berckel, B. N., Salmon, E., Bastin, C., Dauby, S., Santana, I., Baldeiras, I., De Mendonça, A., Silva, D., Wallin, A., Nordlund, A., Coloma, P. M., Wientzek, A., Alexander, M., Novak, G. P., Gordon, M. F., Wallin, Å. K., Hampel, H., Soininen, H., Herukka, S.-K., Scheltens, P., Verhey, F. R. & Visser, P. J. 2017. The frequency and influence of dementia risk factors in prodromal Alzheimer's disease. *Neurobiology of aging*, 56, 33-40.
- Department of Health and Social Care, 2025. Clinical guidelines for alcohol treatment. In: Department of Health and Social Care. (ed.). UK: GOV.UK.
- Carroll, K. M., Kiluk, B. D., Nich, C., Babuscio, T. A., Brewer, J. A., Potenza, M. N., Ball, S. A., Martino, S., Rounsaville, B. J. & Lejuez, C. W. 2011. Cognitive Function and Treatment Response in a Randomized Clinical Trial of Computer-Based Training in Cognitive-Behavioral Therapy. *Substance Use & Misuse*, 46, 23-34.
- Collings, S., Allan, J. & Munro, A. 2022. Improving treatment for people with cognitive impairment and substance misuse issues: Lessons from an inclusive residential treatment program pilot in Australia. *Disability and Health Journal*, 15, 101295.
- Cooper, C., Sommerlad, A., Lyketsos, C. G. & Livingston, G. 2015. Modifiable predictors of dementia in mild cognitive impairment: A systematic review and meta-analysis. *American Journal of Psychiatry*, 172, 323-334.
- Critical Appraisal Skills Programme, 2023a. *CASP Qualitative Studies Checklist* [Online]. Available: <https://casp-uk.net/casp-tools-checklists/> [Accessed 28/10/2023 2023].
- Critical Appraisal Skills Programme, 2023b. *CASP Diagnostic Study Checklist* [Online]. Available: <https://casp-uk.net/casp-tools-checklists/> [Accessed 29/10/2023 2023].
- Demnitz-King, H., Banerjee, S., Cooper, C., Kenten, C., Phillips, R., Zabihi, S., Birks, Y., Brayne, C., Browning, S., Carroll, C., Charlesworth, G., Coupland, C. A., Denning, T., Dobson, R., Foote, I. F., Foster, S., Fox, C., Howard, R., Isaacs, J. D., Jaffry, U., Koychev, I., Livingston, G., Llewellyn, D. J., Oakley, R., Opazo Bretón, M., Orrell, M., Noyce, A. J., Pouncey, T., Rait, G., Ranson, J., Rauf, M., Raymont, V., Sampson, E. L., Schott, J. M., Smith, D., Tai, X. Y., Thomson, A., Walsh, S., Williams, D. M., Mukadam, N., Marshall, C. R., Carr, G., Giebel, C., Harrison-Dening, K., Hunter, R. M. & Lang, I. 2026. The Nottingham consensus on dementia risk reduction policy: recommendations from a modified Delphi process. *Nature Reviews Neurology*.
- Department of Health, 2016. UK Chief Medical Officers' Low Risk Drinking Guidelines. 11-11.
- Downes, M. J., Brennan, M. L., Williams, H. C. & Dean, R. S. 2016. Development of a critical appraisal tool to assess the quality of cross-sectional studies (AXIS). *BMJ Open*, 6, e011458.
- Dufouil, C., Fuhrer, R. & Alperovitch, A. 2005. Subjective cognitive complaints and cognitive decline: Consequence or predictor? The epidemiology of vascular aging study. *Journal of the American Geriatrics Society*, 53, 616-621.

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Duru, O. K., Xu, H., Moore, A. A., Mirkin, M., Ang, A., Tallen, L., Tseng, C.-H. & Ettner, S. L. 2015. Examining the Impact of Separate Components of a Multicomponent Intervention Designed to Reduce At-Risk Drinking Among Older Adults: The Project SHARE Study. *Alcoholism, clinical and experimental research*, 39, 1227-1235.

Ettner, S. L., Xu, H., Duru, O. K., Ang, A., Tseng, C.-H., Tallen, L., Barnes, A., Mirkin, M., Ransohoff, K. & Moore, A. A. 2014. The effect of an educational intervention on alcohol consumption, at-risk drinking, and health care utilization in older adults: the Project SHARE study. *Journal of studies on alcohol and drugs*, 75, 447-457.

Gallagher, M., Mcleod, H. J. & Mcmillan, T. M. 2019. A systematic review of recommended modifications of CBT for people with cognitive impairments following brain injury. *Neuropsychological Rehabilitation*, 29, 1-21.

Glodzik-Sobanska, L., Reisberg, B., De Santi, S., Babb, J. S., Pirraglia, E., Rich, K. E., Brys, M. & De Leon, M. J. 2007. Subjective memory complaints: Presence, severity and future outcome in normal older subjects. *Dementia and Geriatric Cognitive Disorders*, 24, 177-184.

Heirene, R., John, B. & Roderique-Davies, G. 2018. *Identification and evaluation of neuropsychological tools used in the assessment of alcohol-related cognitive impairment: A systematic review*.

Hoy, N., Newton, N., Kochan, N. A., Sunderland, M., Baillie, A., Chapman, C., Winter, V., Sachdev, P., Teesson, M. & Mewton, L. 2022. Rethink My Drink: study protocol for a 12-month randomised controlled trial comparing a brief internet-delivered intervention to an online patient information booklet in reducing risky alcohol consumption among older adults in Australia. *Addiction (Abingdon, England)*, 117, 815-825.

Kaner, E. F. S., Beyer, F. R., Muirhead, C., Campbell, F., Pienaar, E. D., Bertholet, N., Daeppen, J. B., Saunders, J. B. & Burnand, B. 2018. Effectiveness of brief alcohol interventions in primary care populations. *Cochrane Database of Systematic Reviews*.

Kelly, S., Olanrewaju, O., Cowan, A., Brayne, C. & Lafortune, L. 2018. Interventions to prevent and reduce excessive alcohol consumption in older people: a systematic review and meta-analysis. *Age and ageing*, 47, 175-184.

Lao, Y., Hou, L., Li, J., Hui, X., Yan, P. & Yang, K. 2021. Association between alcohol intake, mild cognitive impairment and progression to dementia: a dose-response meta-analysis. *Aging Clinical and Experimental Research*, 33, 1175-1185.

Levkoff, S. E., Chen, H., Coakley, E., Herr, E. C. M., Oslin, D. W., Katz, I., Bartels, S. J., Maxwell, J., Olsen, E., Miles, K. M., Constantino, G. & Ware, J. H. 2004. Design and sample characteristics of the PRISM-E multisite randomized trial to improve behavioral health care for the elderly. *Journal of aging and health*, 16, 3-27.

Lewis, A. 2010. Housing an ageing population. *Housing, Care and Support*, 72, 9-27.

Livingston, G., Huntley, J., Liu, K. Y., Costafreda, S. G., Selbæk, G., Alladi, S., Ames, D., Banerjee, S., Burns, A., Brayne, C., Fox, N. C., Ferri, C. P., Gitlin, L. N., Howard, R., Kales, H. C., Kivimäki, M., Larson, E. B., Nakasujja, N., Rockwood, K., Samus, Q., Shirai, K., Singh-Manoux, A., Schneider, L. S., Walsh, S., Yao, Y., Sommerlad, A. & Mukadam, N. 2024. Dementia prevention, intervention, and care: 2024 report of the Lancet standing Commission. *The Lancet*, 404, 572-628.

Lopez, O. L., Becker, J. T., Chang, Y. F., Sweet, R. A., Dekosky, S. T., Gach, M. H., Carmichael, O. T., Mcdade, E. & Kuller, L. H. 2012. Incidence of mild cognitive impairment in the Pittsburgh Cardiovascular Health Study-Cognition Study. *Neurology*, 79, 1599-1606.

Musa Salech, G., Lillo, P., Van Der Hiele, K., Méndez-Orellana, C., Ibáñez, A. & Slachevsky, A. 2022. Apathy, Executive Function, and Emotion Recognition Are the Main Drivers of Functional Impairment in Behavioral Variant of Frontotemporal Dementia. *Frontiers in Neurology*, 12.

NHS England, 2024. *Health Survey for England, 2022 Part 1* [Online]. Available: <https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2022-part-1> [Accessed 22/08/2024 2024].

Nichols, E., Steinmetz, J. D., Vollset, S. E., Fukutaki, K., Chalek, J., Abd-Allah, F., Abdoli, A., Abualhasan, A., Abu-Gharbieh, E., Akram, T. T., Al Hamad, H., Alahdab, F., Alanezi, F. M., Alipour, V., Almustanyir, S., Amu, H., Ansari, I., Arabloo, J., Ashraf, T., Astell-Burt, T., Ayano, G., Ayuso-Mateos, J. L., Baig, A. A., Barnett, A., Barrow, A., Baune, B. T., Béjot, Y., Bezabhe, W. M. M., Bezabih, Y. M., Bhagavathula, A. S., Bhaskar, S., Bhattacharyya, K., Bijani, A., Biswas, A., Bolla, S. R., Boloor, A., Brayne, C., Brenner, H., Burkart, K., Burns, R. A., Cámara, L. A., Cao, C., Carvalho, F., Castro-De-Araujo, L. F. S., Catalá-López, F., Cerin, E., Chavan, P. P., Cherbuin, N., Chu, D.-T., Costa, V. M., Couto, R. a. S., Dadrás, O., Dai, X., Dandona, L., Dandona, R., De La Cruz-Góngora, V., Dhamnetiya, D., Dias Da Silva, D., Diaz, D., Douiri, A., Edvardsson, D., Ekholuenetale, M., El Sayed, I., El-Jaafary, S. I., Eskandari, K., Eskandarieh, S., Esmaeilnejad, S., Fares, J., Faro, A., Farooque, U., Feigin, V. L., Feng, X., Fereshtehnejad, S.-M., Fernandes, E., Ferrara, P., Filip, I., Fillit, H., Fischer, F., Gaidhane, S., Galluzzo, L.,

Alcohol brief interventions for cognitive impairment

- Ghashghaee, A., Ghith, N., Gialluisi, A., Gilani, S. A., Glavan, I.-R., Gnedovskaya, E. V., Golechha, M., Gupta, R., Gupta, V. B., Gupta, V. K., Haider, M. R., Hall, B. J., Hamidi, S., Hanif, A., Hankey, G. J., Haque, S., Hartono, R. K., Hasaballah, A. I., Hasan, M. T., Hassan, A., et al. 2022. Estimation of the global prevalence of dementia in 2019 and forecasted prevalence in 2050: an analysis for the Global Burden of Disease Study 2019. *The Lancet Public Health*, 7, e105-e125.
- Office for Health Improvement and Disparities, O. 2020. *Guidance on the 5 alcohol use screening tests* [Online]. Available: <https://www.gov.uk/government/publications/alcohol-use-screening-tests/guidance-on-the-5-alcohol-use-screening-tests#:~:text=4%20or%20below%20then%20this,a%20wide%20variety%20of%20settings>. [Accessed 30/01/2026 2026].
- Office for National Statistics, 2025. *Families and households in the UK: 2024* [Online]. ONS website. Available: <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/bulletins/familiesandhouseholds/2024#cite-this-statistical-bulletin> [Accessed 02/02/2026 2026].
- Ortolá, R., García-Esquinas, E., Galán, I., Guallar-Castillón, P., López-García, E., Banegas, J. R. & Rodríguez-Artalejo, F. 2017. Patterns of alcohol consumption and risk of falls in older adults: a prospective cohort study. *Osteoporosis International*.
- Oslin, D. W., Grantham, S., Coakley, E., Maxwell, J., Miles, K., Ware, J., Blow, F. C., Krahn, D. D., Bartels, S. J., Zubritsky, C., Olsen, E., Kirchner, J. E. & Levkoff, S. 2006. PRISM-E: comparison of integrated care and enhanced specialty referral in managing at-risk alcohol use. *Psychiatric services (Washington, D.C.)*, 57, 954-958.
- Page, M. J., Bossuyt Pm, Boutron I, Hoffmann Tc, Mulrow Cd, Et Al. 2021. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. . *BMJ*, 372.
- Patterson, C. 2018. World Alzheimer Report 2018. In: INTERNATIONAL, A. S. D. (ed.). London, UK.
- Paula, T. C. S., Chagas, C., Noto, A. R., Formigoni, M. L. O. S., Pereira, T. V. & Ferri, C. P. 2021. Brief interventions for older adults (BIO) delivered by non-specialist community health workers to reduce at-risk drinking in primary care: a study protocol for a randomised controlled trial. *BMJ open*, 11, e043918-e043918.
- Philpot, M., Pearson, N., Petratou, V., Dayanandan, R., Silverman, M. & Marshall, J. 2003. Screening for problem drinking in older people referred to a mental health service: a comparison of CAGE and AUDIT. *Aging & mental health*, 7, 171-175.
- Popay, J. R., Helen; Sowden, Amanda; Petticrew, Mark; Arai, Lisa; Rodgers, Mark; Britten, Nicky; Roen, Katrina; Duffy, Steven 2006. Guidance on the Conduct of Narrative Synthesis in Systematic Reviews: A product from the ESRC Methods Programme
- Purser, G. L. & Lemieux, C. M. 2022. Brief alcohol interventions with older adults: a systematic review of literature. *Journal of Social Work Practice in the Addictions*, 22, 120-136.
- Randall-James, J., Wadd, S., Edwards, K. & Thake, A. 2015. Alcohol Screening in People With Cognitive Impairment: An Exploratory Study. *Journal of Dual Diagnosis*, 11, 65-74.
- Rehm, J., Hasan, O. S. M., Black, S. E., Shield, K. D. & Schwarzingier, M. 2019. Alcohol use and dementia: A systematic scoping review 11 Medical and Health Sciences 1117 Public Health and Health Services. *Alzheimer's Research and Therapy*, 11, 1-12.
- Roberts, R. & Knopman, D. S. 2013. Classification and Epidemiology of MCI. *Clinics in Geriatric Medicine*, 29, 753-772.
- Röhr, S., Pabst, A., Riedel-Heller, S. G., Jessen, F., Turana, Y., Handajani, Y. S., Brayne, C., Matthews, F. E., Stephan, B. C. M., Lipton, R. B., Katz, M. J., Wang, C., Guerchet, M., Preux, P. M., Mbelesso, P., Ritchie, K., Ancelin, M. L., Carrière, I., Guaita, A., Davin, A., Vaccaro, R., Kim, K. W., Han, J. W., Suh, S. W., Shahar, S., Din, N. C., Vanoh, D., Van Boxtel, M., Köhler, S., Ganguli, M., Jacobsen, E. P., Snitz, B. E., Anstey, K. J., Cherbuin, N., Kumagai, S., Chen, S., Narazaki, K., Ng, T. P., Gao, Q., Gwee, X. Y., Brodaty, H., Kochan, N. A., Trollor, J., Lobo, A., López-Antón, R., Santabábara, J., Crawford, J. D., Lipnicki, D. M. & Sachdev, P. S. 2020. Estimating prevalence of subjective cognitive decline in and across international cohort studies of aging: A COSMIC study. *medRxiv*, 1-14.
- Sabia, S., Fayosse, A., Dumurgier, J., Dugravot, A., Akbaraly, T., Britton, A., Kivimäki, M. & Singh-Manoux, A. 2018. Alcohol consumption and risk of dementia: 23 year follow-up of Whitehall II cohort study. *BMJ (Online)*, 362.
- Seddon, J., Wadd, S., Elliott, L. & Madoc-Jones, I. 2021. Cognitive impairment and treatment outcomes amongst people attending an alcohol intervention service for those aged 50+. *Advances in Dual Diagnosis*, 14, 58-69.

Alcohol brief interventions for cognitive impairment

Shulman, M., Campbell, A., Pavlicova, M., Hu, M.-C., Aharonovich, E. & Nunes, E. V. 2018. Cognitive functioning and treatment outcomes in a randomized controlled trial of internet-delivered drug and alcohol treatment. *The American Journal on Addictions*, 27, 509-515.

Slot, R., A. M. Sikkema, S., Berkhof, J., Brodaty, H., Buckley, R., Cavedo, E., Dardistis, E., Guillo-Benarous, F., Hampel, H., Kockan, N., Lista, S., Luck, T., Maruffe, P., Molinue, J. L., Kornhuber, J., Reisberg, B., Riedel-Heller, S., Risacher, S. L., Roehrn, S., Sachdev, P. S., Scarnea, N., Scheltensa, P., Shulman, M. B., Saykin, A. J., Verfailliea, S. C. J., Vissera, J., Vosx, S. J. B., Wagner, M., Wolfsgruber, S. & Jessen, F. 2018. Subjective cognitive decline and rates of incident Alzheimer's disease and non-Alzheimer's disease dementia.

Sterne Jac, S. J., Page Mj, Elbers Rg, Blencowe Ns, Boutron I, Cates Cj, Cheng H-Y, Corbett Ms, Eldridge Sm, Hernán Ma, Hopewell S, Hróbjartsson a, Junqueira Dr, Jüni P, Kirkham Jj, Lasserson T, Li T, Mcaleenan a, Reeves Bc, Shepperd S, Shrier I, Stewart La, Tilling K, White Ir, Whiting Pf, Higgins Jpt. 2019. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ*, 366.

Strandberg, A. Y., Trygg, T., Pitkälä, K. H. & Strandberg, T. E. 2018. Alcohol consumption in midlife and old age and risk of frailty. *Age and Ageing*, 47, 248-254.

Tan, G. J., Tan, M. P., Luben, R. N., Wareham, N. J., Khaw, K. T. & Myint, P. K. 2021. The relationship between alcohol intake and falls hospitalization: Results from the EPIC-Norfolk. *Geriatrics and Gerontology International*.

Thake, A., Wadd, S., Edwards, K. & Randall-James, J. 2015. Identifying and responding to alcohol misuse in memory clinics: current practice, barriers and facilitators. *Advances in Dual Diagnosis*, 8, 65-77.

Van Gils, Y., Franck, E., Dierckx, E., Van Alphen, S. P. J., Saunders, J. B. & Dom, G. 2021. Validation of the AUDIT and AUDIT-C for Hazardous Drinking in Community-Dwelling Older Adults. *International journal of environmental research and public health*, 18.

Wadd, S., Randall, J., Thake, A., Edwards, K., Galvani, S., McCabe, L. & Coleman, A. 2013. Alcohol Misuse and Cognitive Impairment in Older People.

Wadd, S., Seddon, J., McCann, M., Dutton, M., Elliott, L., Trevena, P., Adnum, L., Madoc-Jone, I., Wilson, F., Donnelly, M. & Close, C. 2020. 2015 to 2020 Evaluation of the Drink Wise Age Well Programme. *Drink Wise Age Well Programme report*.

Wimo, A., Seeher, K., Cataldi, R., Cyhlarova, E., Dielemann, J. L., Frisell, O., Guerchet, M., Jönsson, L., Malaha, A. K., Nichols, E., Pedroza, P., Prince, M., Knapp, M. & Dua, T. 2023. The worldwide costs of dementia in 2019. *Alzheimer's & Dementia*, 19, 2865-2873.

Winblad, B., Palmer, K., Kivipelto, M., Jelic, V., Fratiglioni, L., Wahlund, L. O., Nordberg, A., Bäckman, L., Albert, M., Almkvist, O., Arai, H., Basun, H., Blennow, K., De Leon, M., Decarli, C., Erkinjuntti, T., Giacobini, E., Graff, C., Hardy, J., Jack, C., Jorm, A., Ritchie, K., Van Duijn, C., Visser, P. & Petersen, R. C. 2004. Mild cognitive impairment – beyond controversies, towards a consensus: report of the International Working Group on Mild Cognitive Impairment. *Journal of Internal Medicine*, 256, 240-246.

World Health Organization (WHO), 2007. WHO Global Report on Falls Prevention in Older Age. *Ageing Life Course, Family and Community Health, WHO*.

World Health Organization (WHO), 2017. Global action plan on the public health response to dementia 2017-2025. Geneva: World Health Organization.

World Health Organization (WHO), 2024. *Alcohol: Key Facts* [Online]. Available: <https://www.who.int/news-room/fact-sheets/detail/alcohol> [Accessed 09/03/2025 2025].

Wortzel, H. S. & Arciniegas, D. B. 2012. Treatment of Post-Traumatic Cognitive Impairments. *Current Treatment Options in Neurology*, 14, 493-508.

Yao, L., Hou, L., Lao, Y., Luo, W., Lu, Z., Chen, J. & Liu, Y. 2020. Effect of alcohol intake on the development of mild cognitive impairment into dementia A protocol for systematic review and dose-response meta-analysis Study Protocol Systematic Review Medicine ® OPEN 1. *Medicine*, 99.

Zanjani, F., Allen, H., Schoenberg, N., Martin, C. & Clayton, R. 2018. Acceptability of intervention materials to decrease risk for alcohol and medication interactions among older adults. *Evaluation and program planning*, 67, 160-166.

Table II: Modifications to alcohol screening tools

First author, year	Summary of modifications
Randall-James et al. (Randall-James et al., 2015)	Modifications suggested: <ul style="list-style-type: none"> • drinking diary and measuring cup provided 1 week prior to assessment • using interpersonal skills to develop rapport • repeating and offering confirmatory statements • following up on questions to ensure shared understanding • involving informants, for example, carers, family members or friends.
Thake et al. (Thake et al., 2015)	Modifications to screening suggested: <ul style="list-style-type: none"> • involving informants in assessing alcohol consumption • observations of the home environment
Philpot et al. (Philpot et al., 2003)	AUDIT and AUDIT-5 performed much better in people with CI than CAGE in terms of sensitivity, specificity and positive predictive value, regardless of the gold standard used. Receiver operating curve indicated that lower cut points are required to identify at-risk drinking in older adult mental health services: AUDIT: score of 4/5 to indicate at-risk drinking, CAGE: score of 0/1 to indicate at-risk drinking.
Ettner et al. (Ettner et al., 2014) Duru et al. (Duru et al., 2015)	The CARET screening tool includes a question to identify people with memory problems along with other comorbidities.

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Table III: Modifications to alcohol brief interventions

First author, year	Summary of modifications
Thake et al. (Thake et al., 2015)	Modifications to interventions suggested: <ul style="list-style-type: none">• training for MAS professionals• more time for consultations• resourced referral pathways for specialist support
Ettner et al. (Ettner et al., 2014) Duru et al. (Duru et al., 2015)	The specific modification to the intervention was a “forgetfulness tip sheet” provided to participants who reported memory problems. The forgetfulness tip sheet outlined: <ul style="list-style-type: none">• common causes of forgetfulness• activities to improve memory• serious symptoms to be aware of• services where people could access help The tip sheet did not mention alcohol or the link between alcohol and cognition.

Alcohol brief interventions for cognitive impairment: Supplementary Materials 1

Estimated number of at-risk drinkers with mild cognitive impairment (MCI) or subjective cognitive decline (SCD) in the UK

There are no exact figures for the number of UK at-risk drinkers affected by MCI or SCD currently available, though we have conservatively estimated that there are 690,000 people at an additional, preventable, risk of further cognitive decline or dementia due to alcohol consumption. This figure was estimated, based on the following calculations:

1. The number of people aged 65 and over in the UK is estimated to be ~~12.5million~~ 13,161,666 [1].
2. Therefore, we estimate ~~750,000~~ 789,700 over 65s to have MCI, based upon Sachdev et al.'s [2] more conservative estimate of 6% prevalence.
3. We estimate a further ~~2,847,492~~ 2.7 million to experience SCD, based upon Rohr et al.'s estimate of 25% of cognitively unimpaired older adults experiencing SCD [2]. This figure is calculated from:

$$25\% \times (\text{No. adults aged 65 plus} - (\text{no. older adults with dementia} + \text{no. older adults with MCI}))$$

$$25\% \times (12,500,000 - (13,161,666 - (944,982,000 + 789,700))) = 2,701,500$$
2,847,492
 Note that 944,982,000 is the total estimate of people living with dementia in the UK at present [3] and therefore will be an overestimate of people aged 65+ living with dementia. Therefore the number of cognitively unimpaired people aged 65+ may be under-estimated, making the SCD estimate conservative.
4. Thus, we estimate there to be ~~2,847,492~~ 2.7 million people experiencing SCD and ~~789,700~~ 750,000 with MCI: a total of ~~3,450,000~~ 3,637,192 with MCI or SCD.
5. If we apply a 2025.5% prevalence of at-risk drinking (estimated prevalence is ~~38% of men and 17% of women~~ 29% of people aged 65-74 and ~~25% of men and 10% of women~~ 22% of people aged 75+ [4]) to our population of 3,637,192, this would mean ~~690,000~~ 927,484 people in the UK with MCI or SCD are at an additional, preventable, risk of further cognitive decline or dementia due to alcohol consumption.

This calculation was first published on Open Science Framework in 2022: <https://osf.io/j3fxm>

References

1. Office for National Statistics. Estimates of the population for the UK, England, ~~and~~ Wales, Scotland and Northern Ireland. ~~Population Estimates. Mid-2024 edition of this dataset. 2021~~ 2024. Estimates of the population for the UK, England, Wales, Scotland, and Northern Ireland - Office for National Statistics <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwales/scotlandandnorthernireland>. Accessed ~~27-Jul-2022~~ 08 January 2026.
2. Röhr S, Pabst A, Riedel-Heller SG, Jessen F, Turana Y, Handajani YS, et al. Estimating prevalence of subjective cognitive decline in and across international cohort studies of aging: A COSMIC study. medRxiv. 2020;:1–14.3.
3. ~~Luengo-Fernandez R, Landeiro F~~ Alzheimer's Society & Carnell Farrar (2024). Costs and projections in the UK and globally The economic impact of dementia. Alzheimer's Research UK Dementia Statistics Hub. 2024. Statistics about dementia - Dementia Statistics Hub <https://www.dementiastatistics.org/statistics/cost-and-projections-in-the-uk-and-globally-3/>. Accessed ~~22-Jul-2022~~ 08 Jan 2026.
4. ~~Bankiewicz U, Robinson C, Neave~~ ANHS England. Health survey for England ~~2019~~ 2022: Adults' health-related behaviours. 2020 Part 1: Data tables. Health Survey for England, 2022

Alcohol brief interventions for cognitive impairment: Supplementary Materials 1

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[Part 1: Data tables - NHS England Digital . Accessed 08 Jan 2026.](#)
<https://files.digital.nhs.uk/D4/93337C/HSE19-Adult-health-behaviours-rep.pdf>.

5. Sachdev PS, Lipnicki DM, Kochan NA, Crawford JD, Thalamuthu A, Andrews G, et al. The prevalence of mild cognitive impairment in diverse geographical and ethnocultural regions: The COSMIC Collaboration. PLoS One. 2015;10. doi:10.1371/journal.pone.0142388.

Advances in Dual Diagnosis

Alcohol brief interventions for cognitive impairment

Systematic review of modifications to alcohol screening and brief interventions for older adults with cognitive impairment

Word count: 5810

To submit to: Advances in Dual Diagnosis

Alcohol brief interventions for cognitive impairment

Abstract

Purpose:

People with cognitive impairment who drink too much alcohol risk further cognitive decline and other alcohol-related harms. We reviewed the literature to synthesise existing knowledge about modifications to alcohol screening and brief interventions for people with cognitive impairment and their effectiveness.

Design:

We carried out a systematic review (PROSPERO: CRD42022378827). We included studies of people with cognitive impairment that examined alcohol screening or brief interventions applied to or modified for this group. A narrative synthesis was conducted.

Findings:

Four studies (5 papers) were found that met the review inclusion criteria. Alcohol screening tools and brief interventions were reported to be acceptable and feasible in older people with cognitive impairment (2 studies). We found no evidence of effectiveness of alcohol screening or brief interventions for people with cognitive impairment.

Originality:

This original systematic review found no evidence of effectiveness of alcohol screening or brief interventions modified for people with cognitive impairment though they are considered feasible and acceptable in this population.

Research implications:

Research should focus on the development of modified interventions that should be tested rigorously to tackle the large and growing burden of cognitive impairment globally.

Key words: Alcohol-related disorders, cognition, cognitive dysfunction, alcohol screening, alcohol brief intervention, systematic review.

1. Introduction

Alcohol is the seventh leading risk factor for deaths worldwide (Griswold et al., 2018) with approximately 2.6 million deaths caused by alcohol consumption in 2019 (World Health Organization (WHO), 2024). In England, 40% of men and 19% of women aged 65-74 drink above low risk levels (above 14 units (112g of ethanol) per week consistent with the UK Low Risk Drinking Guidelines (Department of Health (DoH), 2016, NHS England, 2024).

Older adults drinking above low risk levels are more likely to experience cognitive decline (Rehm et al., 2019, Lao et al., 2021, Cooper et al., 2015, Bos et al., 2017), higher levels of frailty (Strandberg et al., 2018), a greater risk of falls (Tan et al., 2021, Ortolá et al., 2017, WHO, 2007), and harm as a consequence of interactions between medication and alcohol (Zanjani et al., 2018). With 24% of the population projected to be aged 65 and above by 2043 (Lewis, 2010), addressing alcohol consumption in this age group is a public health priority.

Mild cognitive impairment (MCI - impairment that can be identified in diagnostic tests, but where limitations to daily living are limited) and subjective cognitive decline (SCD) are very common in older people (Winblad et al., 2004, Röhr et al., 2020). Both MCI and SCD are linked to a higher likelihood of further cognitive decline and dementia (Slot et al., 2018, Lopez et al., 2012, Glodzik-Sobanska et al., 2007, Dufouil et al., 2005). Drinking above low risk levels is associated with an increased risk of cognitive impairment (CI) and progression to dementia (Rehm et al., 2019, Cooper et al., 2015, Bos et al., 2017, Yao et al., 2020). We have estimated there to be 690,000 people in the UK at an additional, preventable, risk of further cognitive decline or dementia due to alcohol consumption. These estimate calculations can be found in <supplementary materials 1>.

The estimated cost of dementia in the UK is currently £42 billion (Alzheimer's Society, 2024). Worldwide, the cost of dementia is estimated at \$1 trillion and is expected to double by 2023 (Patterson, 2018). The World Health Organization (WHO) has identified alcohol as a key modifiable risk factor in the development of dementia and recommends interventions to reduce drinking in older adults with and without MCI (WHO, 2017).

There is evidence suggesting that alcohol brief interventions, typically delivered by non-specialists outside of alcohol treatment settings, are effective in reducing alcohol consumption (Kaner et al., 2018). However, older adults

Alcohol brief interventions for cognitive impairment

experiencing CI present specific challenges when addressing at-risk alcohol consumption, including issues with recall, retention of information and difficulties working with abstract ideas (Wadd et al., 2013). Modifications may therefore be required for brief interventions to be effective in this population. At present, no guidance is available regarding alcohol screening and brief interventions in people with CI.

2. Objectives

This systematic review attempted to synthesise the current evidence about the effectiveness of brief interventions to reduce alcohol intake among people with CI by addressing the following review questions:

1. What is the content of alcohol screening and brief interventions modified for people with cognitive impairment?
2. How effective are alcohol screening tools and brief interventions modified for people with cognitive impairment in reducing alcohol consumption in older at-risk drinkers with cognitive impairment?

3. Methods

The review protocol was registered on the PROSPERO international prospective register of systematic reviews: CRD42022378827. The review was conducted using Covidence, a web-based collaboration software platform that streamlines the production of systematic reviews (www.covidence.org). Reporting was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 checklist (Page, 2021).

Inclusion criteria

Papers were included if they involved:

Participants: Adults aged 50+ with CI that was not due to traumatic brain injury, stroke or learning disability from birth, including SCD, MCI, and dementia and, for studies of brief interventions, drinking above low risk levels (>14 units (112g) of alcohol per week). Preliminary searches indicated that some papers relating to interventions for older adults

Alcohol brief interventions for cognitive impairment

with cognitive impairment included patients aged 50 and above; therefore, 50 was chosen for greater inclusivity of studies.

Interventions: Alcohol screening or brief interventions with any modifications made for people experiencing cognitive impairment. Interventions delivered in any setting were included. Alcohol screening included any tools used to identify at-risk drinking. In line with Kaner et al.'s (Kaner et al., 2018) Cochrane review of brief alcohol interventions, brief interventions were defined as time limited brief advice or brief life-style counselling delivered in non-specialist (i.e., non-alcohol treatment) settings.

Comparators: Studies including any comparators were considered, including those with no comparator.

Outcomes: For review question 1, all papers with the relevant participants and intervention were included, regardless of outcomes. For review question 2, we were interested in the outcome of reduced alcohol consumption.

Primary research studies of any research design and systematic or scoping reviews published between January 2000 and January 2023 in the English language were included.

Search strategy and data sources

A search strategy for PubMed, Cochrane Library, EBSCO CINAHL Plus, EBSCO MEDLINE, PsycINFO, and Web of Science was implemented between 06/12/2022 and 13/01/2023, combining alcohol-related terms, screening and intervention and cognition terms. The search strategy is included in <supplementary materials 2>.

Reference lists of included papers were screened for potentially relevant studies.

Study selection and data extraction

Study selection was completed by two researchers (PC and MG) using Covidence software. Covidence identified and removed duplicate studies. Guidance on study selection was developed for both the title and abstract screening phase and the full paper review phase. Due to the high number of papers identified through the search strategy, title and abstract screening was split between PC and MG and the third reviewer (LF) checked a random 10% of papers to ensure agreement on the decision made. Two reviewers (PC and MG) conducted the full text screening of all studies

1 Alcohol brief interventions for cognitive impairment
2 and any disagreements on study inclusion were taken to the third reviewer (LF) for discussion and decision on whether
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4 to include them.
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8 **Data extraction**
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11 Data were extracted from reports by the lead author (PC). The reports and extracted data were reviewed by all authors
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13 and changes or additions to the included extracted materials were made.
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17 **Quality assessment**
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21 Quality was assessed using the Critical Appraisal Skills Programme (CASP) Qualitative Studies Checklist (CASP, 2023b)
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23 for qualitative studies, CASP Diagnostic Test Study Checklist (CASP, 2023a) for tool validation studies, and the Cochrane
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25 Risk of Bias (RoB 2) tool for randomised controlled trials (Sterne , 2019). To assess quality of surveys and cross-sectional
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27 analyses, the AXIS tool was used (Downes et al., 2016).
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31 **Data synthesis**
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34 A narrative synthesis was conducted following the guidance of Popay et al. (2006). Synthesis involved tabulation,
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36 textual descriptions and concept mapping. We tabulated study data with details of country, setting, aims, design,
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38 participants, intervention description, modifications for people with CI, and results.
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41 A conceptual map of modifications to screening and interventions for people with CI was developed to guide how the
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43 reports were grouped for synthesis. Similarities and differences between studies were then explored through aims,
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45 study populations and descriptions of interventions.
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4. Results

Study selection

The search was completed on 13th January 2023. It found 21,199 references (including 5 through reference list searches), of which 10,673 were duplicates, leaving 10,526 to screen. Of these, 328 reports were retrieved for full text screening. The majority of reports (n=193) were excluded at full text screening stage because they either did not include people with CI or did not describe whether any participants had CI.

Two reports were published protocols of relevant studies that were not yet completed (Hoy et al., 2022, Paula et al., 2021). These published protocols did not report any results and therefore had no data to be included.

A list of excluded papers is available upon request.

Five reports of four studies were included in the review. **Error! Reference source not found.** shows the PRISMA flow diagram.

Aims, design, interventions and study populations of included studies

Aims, designs and study populations of the included studies are described in Table I.

Studies of screening tools in people with cognitive impairment

Three studies examined alcohol screening tools (Philpot et al., 2003, Randall-James et al., 2015, Thake et al., 2015). Philpot et al. (2003) examined test characteristics (i.e. sensitivity, specificity and positive predictive value) of screening tools to identify problem alcohol use in people aged 65 and older attending a community mental health service in London, UK, of whom 68% had CI; these tools were CAGE (mnemonic of Cut down, Annoyed, Guilty, Eye-opener) and the Alcohol Use Disorders Identification Test (AUDIT). Randall-James et al. (Randall-James et al., 2015) examined feasibility and acceptability of alcohol screening tools within a single English memory assessment service (MAS) using qualitative interviews with service users with CI. Thake et al. (Thake et al., 2015) examined current practice, barriers and facilitators of alcohol screening tools in multiple MAS in England and Wales from the perspective of service

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providers and professionals using a survey and focus groups. One study (two reports) described an alcohol screening tool that was used to identify study participants and inform the content of the brief intervention (Duru et al., 2015, Ettner et al., 2014).

Studies of brief interventions for people with at-risk drinking and cognitive impairment

Two studies (three reports) examined alcohol brief interventions (Thake et al., 2015, Duru et al., 2015, Ettner et al., 2014). None of the identified reports were of studies aiming to test the effectiveness of brief interventions modified for older adults with CI.

One qualitative study examined barriers and facilitators of alcohol brief interventions (as well as screening tools) in MAS in England and Wales from the perspective of service providers and professionals (Thake et al., 2015). Another examined the effectiveness (Ettner et al., 2014) and active ingredients (Duru et al., 2015) of a brief intervention for people aged 60+ in a randomised controlled trial (RCT) (the Project Senior Health and Alcohol Risk Education (SHARE) study) in the United States. Patients with severe cognitive impairment (assessed by the treating physician) were excluded. Levels of mild to moderate cognitive impairment amongst the study population were not reported. After screening using the Comorbidity Alcohol Risk Evaluation Tool (CARET), participants identified as at-risk drinkers received a personalised report, a booklet on alcohol and ageing, and “tip sheets” according to specific circumstances. Participants identified as having “memory problems” were provided with the “forgetfulness tip sheet”. Physicians were prompted to discuss the report with the patient during subsequent routine visits. Patients received three contacts from health educators, including: assessment and feedback, negotiation and goal setting, behavioural change skills, self-help resources, and follow-up and reinforcement.

Risk of bias in assessing evidence of effectiveness in included studies

A summary of our quality assessments is provided in <supplementary materials 3>. The study designs of the included studies were heterogeneous, and none specifically assessed effectiveness of modifications to screening tools or alcohol brief interventions in people with CI, so assessing risk of bias was not relevant.

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The qualitative studies in British MAS by Randall-James et al. (Randall-James et al., 2015) and Thake et al. (Thake et al., 2015) were of moderate to good quality and provided useful evidence to support development of modified screening tools and brief interventions, but no evidence of effectiveness.

The study by Philpot et al. about test characteristics was moderate quality (Philpot et al., 2003).

The Project SHARE RCT was good quality and provided evidence to support development of brief interventions for people with CI, but no direct evidence of effectiveness in this group (Ettner et al., 2014).

Results of included studies

Modifications to tools and interventions for people with cognitive impairment

The components of modifications are shown in Table II and **Error! Reference source not found..**

Modifications to alcohol screening tools

One study described a screening tool that included a question about memory problems: the CARET (Ettner et al., 2014, Duru et al., 2015). The tool explores a range of comorbidities and assigns a level of alcohol consumption that corresponds to at-risk drinking for people with that comorbidity; for example, people who drink alcohol and have experienced memory problems, heartburn, stomach pain, nausea, vomiting, or feel sad/blue in the past 12 months are considered at-risk drinkers if they drink: 5 (US standard) drinks per day at any frequency, 4 drinks per day at least 2 times per month, or 3 drinks per day at least 2 times per week.

The two qualitative studies made suggestions about modifications based on their findings. Randall-James et al. (Randall-James et al., 2015) in their study of people attending MAS suggested that recall may be improved by providing drink diaries and measuring cups before administering screening tools, and accuracy may be improved by using interpersonal skills to develop rapport, repeating, offering confirmatory statements, following up on questions to ensure shared understanding, and involving informants, for example, carers or family members. Randall-James et al. (Randall-James et al., 2015) assessed these modifications in terms of feasibility and acceptability, but not in terms of effectiveness. Thake et al. (Thake et al., 2015) in their study of practitioner views, also suggested that involving

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informants may improve detection of alcohol problems in MAS, but may, conversely, cause respondents to underreport alcohol consumption. Observations of the home environment were also suggested. Thake et al. (Thake et al., 2015) made recommendations but did not assess them in their study.

Modifications to alcohol brief interventions

Thake et al. (2015) suggested that modifications to MAS to enable this type of service to respond to at-risk drinking would require better training and skills among professionals, more time in consultations and clear and resourced pathways for ongoing care.

In the Project SHARE Study, as part of the brief intervention, the researchers mailed a paper-based 'forgetfulness tip sheet' to those who reported memory problems at screening (Ettner et al., 2014, Duru et al., 2015). The tip sheet included reasons for forgetfulness, including ageing, anxiety, depression, medications, Alzheimer's Disease along with activities to help, serious signs to look out for and places to access help. However, it did not include any information on the link between alcohol and memory problems or suggest any specific support for at-risk drinkers with memory problems. Clinicians and health educators had subsequent tailored interactions with participants, so it is likely that there were further modifications for those with memory problems, but these were not described in the reports.

Effectiveness of alcohol screening tools and brief interventions modified for people with cognitive impairment

Reference source not found. shows the results of the studies.

Alcohol screening tools

No studies specifically examined the effectiveness of alcohol screening tools modified for people with CI. In the Project SHARE Study, the screening tool included a question about memory problems (Ettner et al., 2014, Duru et al., 2015), but there was no specific evaluation of the effectiveness of using this question in this context.

Philpot et al. (2003) compared the CAGE, AUDIT and an abbreviated version of the AUDIT (AUDIT-5) in a population with high levels of CI and found the AUDIT and AUDIT-5 to be superior to the CAGE.

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Alcohol brief interventions

The trial in the US of the Project SHARE alcohol brief intervention found that it reduced at-risk drinking at 12 months (56% versus 67%, $p \leq 0.01$) (Ettner et al., 2014). The authors did not report its effectiveness specifically in people with CI. The associated report suggested that keeping a drinking diary AND making a drinking agreement, and a discussion with a physician during the 12 month follow up were likely to be active ingredients of the intervention, but whether specific elements were more effective for people with CI was not reported (Duru et al., 2015).

5. Discussion

This review found no evidence of effectiveness of modifications to alcohol screening and brief interventions for older adults with CI, although there was some evidence of feasibility and acceptability of screening and brief intervention in memory services that serve this population. This evidence, in combination with the high prevalence of at-risk drinking in people aged 65 and older in the UK, indicates that this is a key area for intervention development.

From this review, the AUDIT was a more effective screening tool than CAGE at identifying at-risk drinkers in older populations including those with CI, but whilst modifications to administering the AUDIT in people with CI were suggested (Randall-James et al., 2015, Thake et al., 2015), we found no evidence that the effectiveness of these modifications had been tested.

Project SHARE showed promising results for an alcohol brief intervention for older adults delivered in primary care services. However, whilst it is likely that the sample included some older adults with mild cognitive impairment, this was not measured and therefore any results for this population remain unknown. Cognition was included as a possible comorbidity; however, it was not the focus of the intervention and the link between alcohol consumption and cognition was not illustrated in the "tip sheet".

Research into alcohol and other drug interventions delivered over longer time periods and in specialist services, have identified potential modifications to alcohol interventions for people with CI that could be useful in informing the design of a brief intervention modified for older adults with CI. Modifications in the literature include changes to training and information provision (e.g. staff training on alcohol and cognitive impairment, providing information on

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the link between alcohol and CI to patients), changes to intervention delivery (e.g. written records, multi-format materials, single goal focus, detailed plans and steps, flexible length and pace, practising skills rather than focussing on concepts) and pragmatic facilitators (e.g. ways to identify staff, using prompts and reminders for appointments) (Seddon et al., 2021, Wadd et al., 2020, Collings et al., 2022).

It has been suggested that computer-based interventions may have benefits for people with CI, including flexibility of pace and the ability to repeat tasks and there is modest evidence from computer-based alcohol and other drug interventions, that people with CI did as well as those without CI (Shulman et al., 2018, Carroll et al., 2011). However, these studies included predominantly younger age groups experiencing problems with drugs and/or alcohol, so the usefulness of computer-based interventions for older adults with CI remains unclear.

Two protocol papers were found that had no currently published findings. Paula et al. (Paula et al., 2021) reported their protocol for an RCT testing a 15-minute alcohol intervention delivered by non-specialist community workers in Brazil to at-risk drinkers aged 60 and older. Although there was no specific mention of modifications for CI, the authors will be measuring cognitive function at baseline and follow-up. Hoy et al. (Hoy et al., 2022) reported their protocol for an RCT testing a brief internet-delivered alcohol intervention to at-risk drinkers aged 60 to 75 years in Australia and cite their study aim is to evaluate whether the intervention is effective in reducing alcohol consumption and cognitive decline in older at-risk drinkers.

5.1 Limitations

Very few papers were found that met the study criteria, demonstrating an urgent need for more research in this area. The papers identified by this review were heterogenous in terms of study aims, populations, interventions and methods used. It was therefore not possible to conduct any quantitative synthesis of findings.

Many studies examining alcohol screening and interventions for older adults excluded people with any CI (e.g. (Andersen et al., 2020, van Gils et al., 2021)), and, in studies where people with mild or moderate CI were said to be included, there was no indication that modifications had been made for this population and results for people with and without CI were not reported (Levkoff et al., 2004, Oslin et al., 2006) making any evaluation of their effectiveness in this population impossible. Considering the prevalence of CI in older age groups and the likely need for modified

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delivery of interventions, their exclusion from research into alcohol screening and brief intervention research is of concern.

No evidence was identified on the effectiveness of alcohol screening and brief interventions modified for older adults with CI, but we did find important learning that can inform the development of such an intervention. This must be used to build interventions to tackle the large and growing global burden of CI.

6. Clinical Implications

The number of older adults is increasing along with the prevalence of CI and at-risk drinking. The research presented in this review suggests that screening for at-risk drinking and delivering brief interventions is feasible and acceptable in non-alcohol specialist settings, such as memory assessment clinics; however, there is a lack of robust evidence about how screening tools and brief interventions should be modified for people with CI. Next steps are to develop a suitably modified intervention and to test it with people who experience CI and drink at risky levels.

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References

Andersen, K., Behrendt, S., Bilberg, R., Bogenschutz, M. P., Braun, B., Buehringer, G., Ekstrøm, C. T., Mejlidal, A., Petersen, A. H. & Nielsen, A. S. 2020. Evaluation of adding the community reinforcement approach to motivational enhancement therapy for adults aged 60 years and older with DSM-5 alcohol use disorder: a randomized controlled trial. *Addiction (Abingdon, England)*, 115, 69-81.

Alzheimer's Society, 2024. The economic impact of dementia. London, Alzheimer's Society

Bos, I., Vos, S. J., Frölich, L., Kornhuber, J., Wiltfang, J., Maier, W., Peters, O., Rütger, E., Engelborghs, S., Niemantsverdriet, E., De Roeck, E. E., Tsolaki, M., Freund-Levi, Y., Johannsen, P., Vandenberghe, R., Lleó, A., Alcolea, D., Frisoni, G. B., Galluzzi, S., Nobili, F., Morbelli, S., Drzezga, A., Didic, M., Van Berckel, B. N., Salmon, E., Bastin, C., Dauby, S., Santana, I., Baldeiras, I., De Mendonça, A., Silva, D., Wallin, A., Nordlund, A., Coloma, P. M., Wientzek, A., Alexander, M., Novak, G. P., Gordon, M. F., Wallin, Å. K., Hampel, H., Soininen, H., Herukka, S.-K., Scheltens, P., Verhey, F. R. & Visser, P. J. 2017. The frequency and influence of dementia risk factors in prodromal Alzheimer's disease. *Neurobiology of aging*, 56, 33-40.

Carroll, K. M., Kiluk, B. D., Nich, C., Babuscio, T. A., Brewer, J. A., Potenza, M. N., Ball, S. A., Martino, S., Rounsaville, B. J. & Lejuez, C. W. 2011. Cognitive Function and Treatment Response in a Randomized Clinical Trial of Computer-Based Training in Cognitive-Behavioral Therapy. *Substance Use & Misuse*, 46, 23-34.

Collings, S., Allan, J. & Munro, A. 2022. Improving treatment for people with cognitive impairment and substance misuse issues: Lessons from an inclusive residential treatment program pilot in Australia. *Disability and Health Journal*, 15, 101295.

Cooper, C., Sommerlad, A., Lyketsos, C. G. & Livingston, G. 2015. Modifiable predictors of dementia in mild cognitive impairment: A systematic review and meta-analysis. *American Journal of Psychiatry*, 172, 323-334.

Critical Appraisal Skills Programme (CASP), 2023a. *CASP Diagnostic Study Checklist* [Online]. Available: <https://casp-uk.net/casp-tools-checklists/> [Accessed 29/10/2023 2023].

Critical Appraisal Skills Programme (CASP), 2023b. *CASP Qualitative Studies Checklist* [Online]. Available: <https://casp-uk.net/casp-tools-checklists/> [Accessed 28/10/2023 2023].

Department Of Health (DoH), 2016. UK Chief Medical Officers' Low Risk Drinking Guidelines. 11-11.

Downes, M. J., Brennan, M. L., Williams, H. C. & Dean, R. S. 2016. Development of a critical appraisal tool to assess the quality of cross-sectional studies (AXIS). *BMJ Open*, 6, e011458.

Dufouil, C., Fuhrer, R. & Alperovitch, A. 2005. Subjective cognitive complaints and cognitive decline: Consequence or predictor? The epidemiology of vascular aging study. *Journal of the American Geriatrics Society*, 53, 616-621.

Duru, O. K., Xu, H., Moore, A. A., Mirkin, M., Ang, A., Tallen, L., Tseng, C.-H. & Ettner, S. L. 2015. Examining the Impact of Separate Components of a Multicomponent Intervention Designed to Reduce At-Risk Drinking Among Older Adults: The Project SHARE Study. *Alcoholism, clinical and experimental research*, 39, 1227-1235.

Ettner, S. L., Xu, H., Duru, O. K., Ang, A., Tseng, C.-H., Tallen, L., Barnes, A., Mirkin, M., Ransohoff, K. & Moore, A. A. 2014. The effect of an educational intervention on alcohol consumption, at-risk drinking, and health care utilization in older adults: the Project SHARE study. *Journal of studies on alcohol and drugs*, 75, 447-457.

Glodzik-Sobanska, L., Reisberg, B., De Santi, S., Babb, J. S., Pirraglia, E., Rich, K. E., Brys, M. & De Leon, M. J. 2007. Subjective memory complaints: Presence, severity and future outcome in normal older subjects. *Dementia and Geriatric Cognitive Disorders*, 24, 177-184.

Griswold, M. et al. 2018. Alcohol use and burden for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet*, 392, 1015-35.

Hoy, N., Newton, N., Kochan, N. A., Sunderland, M., Baillie, A., Chapman, C., Winter, V., Sachdev, P., Teesson, M. & Mewton, L. 2022. Rethink My Drink: study protocol for a 12-month randomised controlled trial comparing a brief internet-delivered intervention to an online patient information booklet in reducing risky alcohol consumption among older adults in Australia. *Addiction (Abingdon, England)*, 117, 815-825.

Kaner, E. F. S., Beyer, F. R., Muirhead, C., Campbell, F., Pienaar, E. D., Bertholet, N., Daepfen, J. B., Saunders, J. B. & Burnand, B. 2018. Effectiveness of brief alcohol interventions in primary care populations. *Cochrane Database of Systematic Reviews*.

Lao, Y., Hou, L., Li, J., Hui, X., Yan, P. & Yang, K. 2021. Association between alcohol intake, mild cognitive impairment and progression to dementia: a dose–response meta-analysis. *Aging Clinical and Experimental Research*, 33, 1175-1185.

Alcohol brief interventions for cognitive impairment

- Levkoff, S. E., Chen, H., Coakley, E., Herr, E. C. M., Oslin, D. W., Katz, I., Bartels, S. J., Maxwell, J., Olsen, E., Miles, K. M., Constantino, G. & Ware, J. H. 2004. Design and sample characteristics of the PRISM-E multisite randomized trial to improve behavioral health care for the elderly. *Journal of aging and health*, 16, 3-27.
- Lewis, A. 2010. Housing an ageing population. *Housing, Care and Support*, 72, 9-27.
- Lopez, O. L., Becker, J. T., Chang, Y. F., Sweet, R. A., Dekosky, S. T., Gach, M. H., Carmichael, O. T., Mcdade, E. & Kuller, L. H. 2012. Incidence of mild cognitive impairment in the Pittsburgh Cardiovascular Health Study-Cognition Study. *Neurology*, 79, 1599-1606.
- NHS England, 2024. *Health Survey for England, 2022 Part 1* [Online]. Available: <https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2022-part-1> [Accessed 22/08/2024 2024].
- Ortolá, R., García-Esquinas, E., Galán, I., Guallar-Castillón, P., López-García, E., Banegas, J. R. & Rodríguez-Artalejo, F. 2017. Patterns of alcohol consumption and risk of falls in older adults: a prospective cohort study. *Osteoporosis International*.
- Oslin, D. W., Grantham, S., Coakley, E., Maxwell, J., Miles, K., Ware, J., Blow, F. C., Krahn, D. D., Bartels, S. J., Zubritsky, C., Olsen, E., Kirchner, J. E. & Levkoff, S. 2006. PRISM-E: comparison of integrated care and enhanced specialty referral in managing at-risk alcohol use. *Psychiatric services (Washington, D.C.)*, 57, 954-958.
- Page Mj, M. J., Bossuyt Pm, Boutron I, Hoffmann Tc, Mulrow Cd, Et Al. 2021. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. . *BMJ*, 372.
- Patterson, C. 2018. World Alzheimer Report 2018. In: INTERNATIONAL, A. S. D. (ed.). London, UK.
- Paula, T. C. S., Chagas, C., Noto, A. R., Formigoni, M. L. O. S., Pereira, T. V. & Ferri, C. P. 2021. Brief interventions for older adults (BIO) delivered by non-specialist community health workers to reduce at-risk drinking in primary care: a study protocol for a randomised controlled trial. *BMJ open*, 11, e043918-e043918.
- Philpot, M., Pearson, N., Petratos, V., Dayanandan, R., Silverman, M. & Marshall, J. 2003. Screening for problem drinking in older people referred to a mental health service: a comparison of CAGE and AUDIT. *Aging & mental health*, 7, 171-175.
- Popay, J. R., Helen; Sowden, Amanda; Petticrew, Mark; Arai, Lisa; Rodgers, Mark; Britten, Nicky; Roen, Katrina; Duffy, Steven 2006. Guidance on the Conduct of Narrative Synthesis in Systematic Reviews. In: PROGRAMME, A. P. F. T. E. M. (ed.).
- Randall-James, J., Wadd, S., Edwards, K. & Thake, A. 2015. Alcohol Screening in People With Cognitive Impairment: An Exploratory Study. *Journal of Dual Diagnosis*, 11, 65-74.
- Rehm, J., Hasan, O. S. M., Black, S. E., Shield, K. D. & Schwarzing, M. 2019. Alcohol use and dementia: A systematic scoping review 11 Medical and Health Sciences 1117 Public Health and Health Services. *Alzheimer's Research and Therapy*, 11, 1-12.
- Röhr, S., Pabst, A., Riedel-Heller, S. G., Jessen, F., Turana, Y., Handajani, Y. S., Brayne, C., Matthews, F. E., Stephan, B. C. M., Lipton, R. B., Katz, M. J., Wang, C., Guerchet, M., Preux, P. M., Mbelesso, P., Ritchie, K., Ancelin, M. L., Carrière, I., Guaita, A., Davin, A., Vaccaro, R., Kim, K. W., Han, J. W., Suh, S. W., Shahar, S., Din, N. C., Vanoh, D., Van Bortel, M., Köhler, S., Ganguli, M., Jacobsen, E. P., Snitz, B. E., Anstey, K. J., Cherbuin, N., Kumagai, S., Chen, S., Narazaki, K., Ng, T. P., Gao, Q., Gwee, X. Y., Brodaty, H., Kochan, N. A., Trollor, J., Lobo, A., López-Antón, R., Santabábara, J., Crawford, J. D., Lipnicki, D. M. & Sachdev, P. S. 2020. Estimating prevalence of subjective cognitive decline in and across international cohort studies of aging: A COSMIC study. *medRxiv*, 1-14.
- Seddon, J., Wadd, S., Elliott, L. & Madoc-Jones, I. 2021. Cognitive impairment and treatment outcomes amongst people attending an alcohol intervention service for those aged 50+. *Advances in Dual Diagnosis*, 14, 58-69.
- Shulman, M., Campbell, A., Pavlicova, M., Hu, M.-C., Aharonovich, E. & Nunes, E. V. 2018. Cognitive functioning and treatment outcomes in a randomized controlled trial of internet-delivered drug and alcohol treatment. *The American Journal on Addictions*, 27, 509-515.
- Slot, R., A. M. Sikkes, S., Berkhof, J., Brodaty, H., Buckley, R., Cavedo, E., Dardistis, E., Guillo-Benarous, F., Hampel, H., Kockan, N., Lista, S., Luck, T., Maruffe, P., Molinue, J. L., Kornhuber, J., Reisberg, B., Riedel-Heller, S., Risacher, S. L., Roehrn, S., Sachdev, P. S., Scarme, N., Scheltensa, P., Shulman, M. B., Saykin, A. J., Verfaillie, S. C. J., Vissera, J., Vosx, S. J. B., Wagner, M., Wolfsgruber, S. & Jessen, F. 2018. Subjective cognitive decline and rates of incident Alzheimer's disease and non-Alzheimer's disease dementia.
- Sterne, S. J., Page Mj, Elbers Rg, Blencowe Ns, Boutron I, Cates Cj, Cheng H-Y, Corbett Ms, Eldridge Sm, Hernán Ma, Hopewell S, Hróbjartsson a, Junqueira Dr, Jüni P, Kirkham Jj, Lasserson T, Li T, Mcleenan a, Reeves Bc,

Alcohol brief interventions for cognitive impairment

Shepperd S, Shrier I, Stewart La, Tilling K, White Ir, Whiting Pf, Higgins Jpt. 2019. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ*, 366.

Strandberg, A. Y., Trygg, T., Pitkälä, K. H. & Strandberg, T. E. 2018. Alcohol consumption in midlife and old age and risk of frailty. *Age and Ageing*, 47, 248-254.

Tan, G. J., Tan, M. P., Luben, R. N., Wareham, N. J., Khaw, K. T. & Myint, P. K. 2021. The relationship between alcohol intake and falls hospitalization: Results from the EPIC-Norfolk. *Geriatrics and Gerontology International*.

Thake, A., Wadd, S., Edwards, K. & Randall-James, J. 2015. Identifying and responding to alcohol misuse in memory clinics: current practice, barriers and facilitators. *Advances in Dual Diagnosis*, 8, 65-77.

Van Gils, Y., Franck, E., Dierckx, E., Van Alphen, S. P. J., Saunders, J. B. & Dom, G. 2021. Validation of the AUDIT and AUDIT-C for Hazardous Drinking in Community-Dwelling Older Adults. *International journal of environmental research and public health*, 18.

Wadd, S., Randall, J., Thake, A., Edwards, K., Galvani, S., McCabe, L. & Coleman, A. 2013. Alcohol Misuse and Cognitive Impairment in Older People.

Wadd, S., Seddon, J., McCann, M., Dutton, M., Elliott, L., Trevena, P., Adnum, L., Madoc-Jone, I., Wilson, F., Donnelly, M. & Close, C. 2020. 2015 to 2020 Evaluation of the Drink Wise Age Well Programme. *Drink Wise Age Well Programme report*.

Winblad, B., Palmer, K., Kivipelto, M., Jelic, V., Fratiglioni, L., Wahlund, L. O., Nordberg, A., Bäckman, L., Albert, M., Almkvist, O., Arai, H., Basun, H., Blennow, K., De Leon, M., Decarli, C., Erkinjuntti, T., Giacobini, E., Graff, C., Hardy, J., Jack, C., Jorm, A., Ritchie, K., Van Duijn, C., Visser, P. & Petersen, R. C. Mild cognitive impairment - Beyond controversies, towards a consensus: Report of the International Working Group on Mild Cognitive Impairment. *Journal of Internal Medicine*, 2004. 240-246.

World Health Organization (WHO), 2007. WHO Global Report on Falls Prevention in Older Age. *Ageing Life Course, Family and Community Health, WHO*.

World Health Organization (WHO), 2017. Global action plan on the public health response to dementia 2017-2025. Geneva: World Health Organization.

World Health Organization (WHO), 2024. *Alcohol: Key Facts* [Online]. Available: <https://www.who.int/news-room/fact-sheets/detail/alcohol> [Accessed 09/03/2025 2025].

Yao, L., Hou, L., Lao, Y., Luo, W., Lu, Z., Chen, J. & Liu, Y. 2020. Effect of alcohol intake on the development of mild cognitive impairment into dementia A protocol for systematic review and dose-response meta-analysis Study Protocol Systematic Review Medicine ® OPEN 1. *Medicine*, 99.

Zanjani, F., Allen, H., Schoenberg, N., Martin, C. & Clayton, R. 2018. Acceptability of intervention materials to decrease risk for alcohol and medication interactions among older adults. *Evaluation and program planning*, 67, 160-166.

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Table I: Study aims, design, setting, and description of participants

First author, year	Aims	Study design	Setting	Participants
Randall-James et al. (37)	To examine the feasibility and acceptability of screening older adults with cognitive impairment (CI) for alcohol misuse in Memory Assessment Service (MAS)	Qualitative interview study	A single MAS, UK	10 MAS service users aged 65+ with a diagnosis of dementia or mild CI
Thake et al. (38)	To examine, in MAS <ul style="list-style-type: none"> practice of alcohol screening and intervention barriers to and facilitators of alcohol screening and intervention 	Cross-sectional survey and qualitative focus groups	Several MAS, UK	35 MAS professionals completed survey 12 MAS professionals took part in focus groups
Philpot et al. (36)	To compare CAGE and AUDIT screening alcohol problems in older adults against three 'gold standards': <ul style="list-style-type: none"> Royal College of Psychiatrists drinking guidelines (21 men/14 women units/week) criteria for hazardous drinking (42 men/28 women units/week) clinical case identification 	Diagnostic test study	Community older adult mental health service, UK	128 adults aged 65+ referred to community mental health team; 54% diagnosed with dementia; 63 (of 104 with Mini Mental State Examination (MMSE) score available) were cognitively impaired (scored ≤ 23).
Ettner et al. (40)	To examine the effectiveness of a patient-provider brief educational intervention (Project SHARE) in reducing at-risk drinking among older adults	Cluster randomised controlled trial (RCT)	Primary care, USA	1186 adults aged 60+, identified as at-risk drinkers through the Comorbidity Alcohol Risk Evaluation Tool (CARET). Average age 71. Number with CI not provided
Duru et al. (39)	To identify the active ingredients of Project SHARE			

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Table II: Modifications to alcohol screening tools and interventions

First author, year	Tool/intervention	Modifications
Randall-James et al. (37)	Alcohol screening tools	Modifications suggested <ul style="list-style-type: none">• drinking diary and measuring cup provided 1 week prior to assessment• using interpersonal skills to develop rapport• repeating and offering confirmatory statements• following up on questions to ensure shared understanding• involving informants, for example, carers, family members or friends.
Thake et al. (38)	Alcohol screening tools and brief interventions	Modifications to screening suggested <ul style="list-style-type: none">• involving informants in assessing alcohol consumption• observations of the home environment Modifications to interventions suggested <ul style="list-style-type: none">• training for MAS professionals• more time for consultations• resourced referral pathways for specialist support
Ettner et al. (40) Duru et al. (39)	Alcohol screening and brief intervention	A question to identify people with memory problems was included in the CARET screening tool. The specific modification to the intervention was a "forgetfulness tip sheet" provided to participants who reported memory problems. The forgetfulness tip sheet outlined common causes of forgetfulness, activities to improve memory, serious symptoms to be aware of and services where people could access help. The tip sheet did not mention alcohol or the link between alcohol and cognition. Clinicians and health educators had subsequent tailored interactions with participants, so it is likely that there were further specific modifications for those with memory problems.

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Table III: Study results

First author, year	Summary of results
Randall-James et al. (37)	<p>Participants with CI could engage with and complete alcohol screening tools with help from professionals and without distress. Use of screening tools acceptable and feasible within memory clinic setting. Challenges could be overcome with the help of the person administering the tool.</p> <p>Other key findings</p> <ul style="list-style-type: none"> • education for professionals on the link between alcohol and CI needed • need for comprehensive assessment of service users • need to build a trusting relationship in order to obtain accurate information • drinking diaries may be challenging • informants may or may not increase accuracy of assessment of alcohol intake
Thake et al. (38)	<ul style="list-style-type: none"> • only one out of 35 MAS used a validated alcohol screening tool. • challenges of screening: perceived service-user misreporting, ageism ('the only pleasure left'), insufficient resources and training, family members present at interview may lead to underreporting. • facilitators of screening: information from home visits and/or family members. • challenges of delivering interventions: perceived service-user denial of problem, insufficient resources, challenge of delivering interventions to people with CI, staff knowledge and skills, alcohol interventions not within service remit and lack of services for onward referral.
Philpot et al. (36)	<p>AUDIT and AUDIT-5 performed much better in people with CI than CAGE in terms of sensitivity, specificity and positive predictive value, regardless of the gold standard used. Receiver operating curve indicated that lower cut points are required to identify at-risk drinking in older adult mental health services: AUDIT: score of 4/5 to indicate at-risk drinking, CAGE: score of 0/1 to indicate at-risk drinking.</p>
Ettner et al. (40)	<p>At-risk drinking (CARET) in the intervention group 56% versus control group 67% (12 months), $p \leq 0.01$</p> <p>Usual number of drinks per week intervention group 9.5 versus control group 11.6 (12 months), $p \leq 0.01$</p>
Duru et al. (39)	<p>Associated with lower odds of being an at-risk drinker at 12 months</p> <ul style="list-style-type: none"> • Keeping a drinking diary AND making a drinking agreement • Physician alcohol risk discussion

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Figures

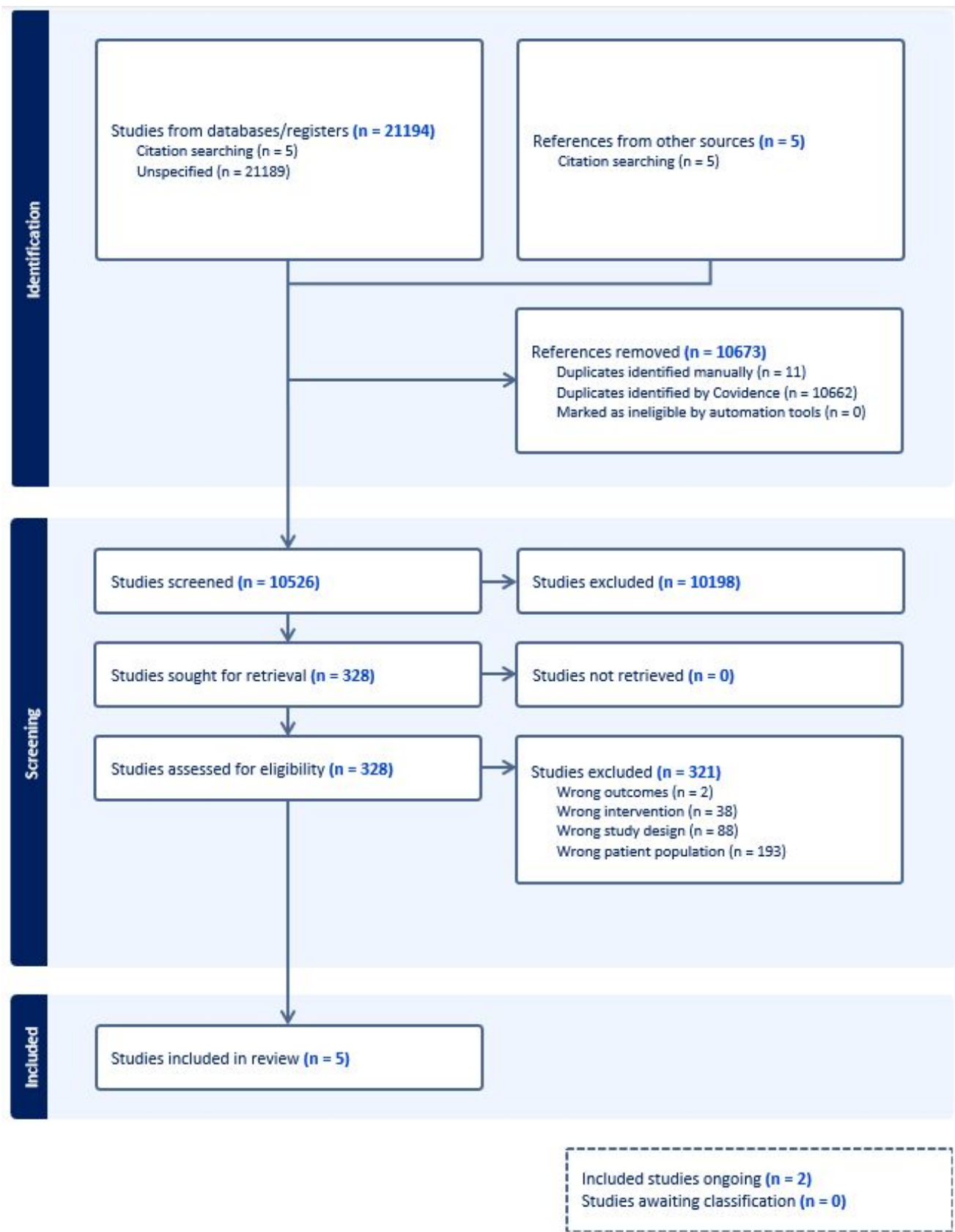


Figure 1: Paper inclusion flow diagram

Alcohol brief interventions for cognitive impairment

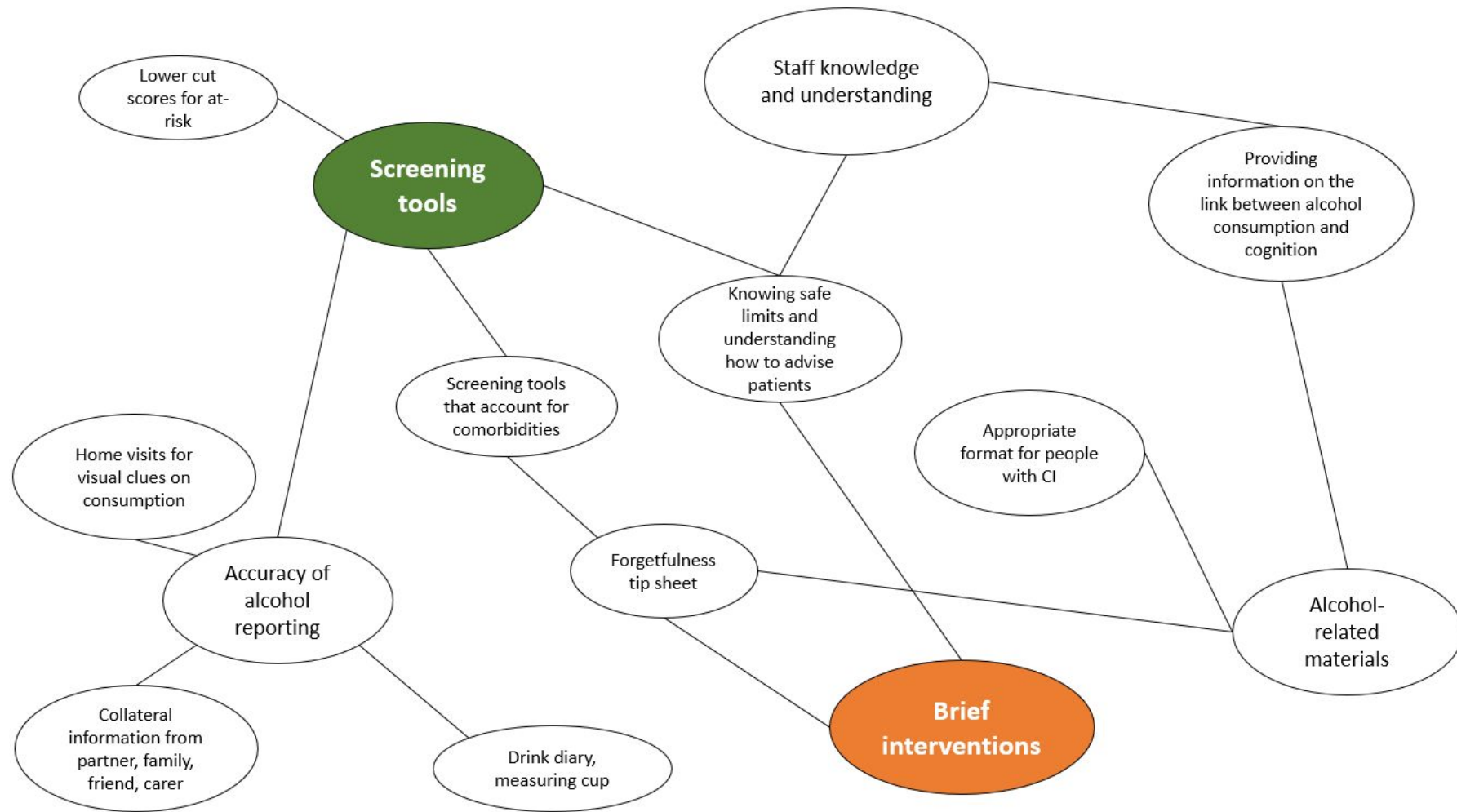


Figure 1: Conceptual mapping of modifications to alcohol screening and interventions for people with cognitive impairment