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Alcohol consumption after health deterioration in older adults: a mixed-methods study.

Authors: Lucy Gavens[1] (MPH, PhD), Elizabeth Goyder[1] (FFPH, MD), Emma Hock[1] (MSc, PhD), Janet Harris[1] (MSW, PhD), Petra S. Meier[1] (MSc, PhD)

[1] School of Health and Related Research, University of Sheffield, Regent Court, 30 Regent Street, S1 4DA

Corresponding author: Dr Lucy Gavens

Correspondence address:

Lincolnshire County Council

Public Health Directorate

Room 3a, 3rd Floor, Orchard House Orchard Street

Lincoln LN1 1BA

Telephone: 01522 555145

Email: lucy.gavens@lincolnshire.gov.uk

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Abstract

Objective: To examine if and how older adults modify their drinking after health deterioration, and the factors that motivate changing or maintaining stable drinking behaviour.

Study Design: Explanatory follow-up mixed-methods research.

Methods: The association between health deterioration and changes in alcohol consumption was examined using secondary data from the English Longitudinal Study of Ageing, a biennial prospective cohort study of a random sample of adults aged 50 years and older living in England. Data were collected through a personal interview and self-completion questionnaire across three waves between 2004 and 2009. The sample size (response rate) across the three waves was 8,781 (49.9%), 7,168 (40.3%) and 6,623 (37.3%). Chi-square was used to examine associations between diagnosis with a long-term condition or a worsening of self-rated health (e.g. from good to fair or fair to poor) and changes in drinking frequency (e.g. everyday, 5-6 days per week, etc.) and volume (ethanol consumed on a drinking day) between successive waves. In-depth interviews with 19 older adults recently diagnosed with an LTC were used to explore the factors that influenced change or maintenance in alcohol consumption over time. A purposive sampling strategy was used to recruit a diverse sample of current and former drinkers from voluntary and community organisations in the North of England. An inductive approach was used to analyse the data, facilitating the development of an *a posteriori* framework for understanding drinking change.

Results: There was no significant relationship between health deterioration and changes in drinking volume over time. There was however a significant association between health deterioration and changes in drinking frequency between successive waves ($\chi2=15.24$, $p<0.001$ and $\chi2=17.28$, $p<0.001$). For example, of participants reporting health deterioration between the first two waves, 47.6% had stable drinking frequency, 23.4% increased their drinking frequency and 29% reported decreased drinking frequency. In comparison, of participants reporting no health deterioration, 52.7% reported stable frequency, 20.8% increased frequency and 26.4% decreased frequency. In qualitative interviews, older adults described a wide range of factors influencing drinking behaviour changes: knowledge gained from talking to healthcare professionals, online and in the media; tangible negative experiences that were attributed to drinking; mood and emotions (e.g. joy); the cost of alcohol; pub closures; and changes in social roles and activities. Health was just one part of a complex mix of factors that influenced drinking among older adults.

Conclusion: Patterns of drinking change after health deterioration in older adults are diverse, including stable, increasing and decreasing alcohol consumption over time. Whilst health motivations to change drinking influence behaviour in some older adults, social and financial motivations to drink are also important in later life and thus a holistic approach is required to influence behaviour.

Introduction

Alcohol consumption is a leading risk factor for chronic disease and injury, with an estimated 3·8% deaths and 4·6% disability-adjusted life-years attributable to alcohol globally (1). In England in 2012-13 there were over 1 million alcohol-related hospital admissions (2) and in the UK in 2013 there were 8,416 alcohol-related deaths (3). Average alcohol consumption in the UK is 9.7 litres per capita aged 15 years and older (4), although rates of abstention from alcohol increase whilst mean drinking volume and heavy episodic drinking decrease with increasing chronological age (5). Broad population level trends of declining consumption with increasing age may hide varying subgroup changes in alcohol consumption, as longitudinal studies from Europe, the USA and Australasia that explore alcohol consumption over time in older adults illustrate heterogeneity of drinking (6-11). As such, it is important to examine individual level changes in consumption in older adults to understand how drinking changes and why in this population.

Explanations proposed for reduced drinking with increasing age include decreasing socialisation (12), a decline in income upon retirement (13) that makes alcohol less affordable, ageing associated bodily changes that increase the risk of experiencing adverse health outcomes from consuming a given level of alcohol (e.g. increased body fat and body water and inefficiency of liver enzymes (14-16)) and ill health and premature mortality (12). Individuals with deteriorating health may disengage from drinking settings due to poorer health (e.g. nursing home admission), be prescribed alcohol-incompatible medications, or receive advice to drink less from healthcare professionals (17-20). In England 71% adults aged 65 years and older report at least one long-term condition (LTC) (21), and alcohol can worsen the symptoms of LTCs (22), influence self-care behaviours (23) and interact with medications (24).

When people experience problems with their health (e.g. diagnosis with an LTC or hospitalisation) they are more likely to reduce their alcohol intake or abstain (7, 11, 25, 26). However, drinking behaviour is not always modified in response to ill health, with reports of stable alcohol consumption or even increased drinking, for example where alcohol is used to help manage chronic pain or heart disease (27, 28). Recent

cross-sectional research in England did not identify comorbidity (with a range of LTCs) to be associated with alcohol consumption in older adults (29).

Whilst previous research contributes to our understanding of alcohol consumption behaviour change after health deterioration in older adults, it may have limited generalisability to the UK as much of the research originates from the USA where levels of drinking among older adults are lower and abstention rates are higher (30). Further, previous research has not used qualitative methods to examine the factors that older adults identify as motivating their alcohol consumption behaviour after changes in health. The aim of the current research was to examine if and how older adults modify their drinking after health deterioration, and the factors that motivate changing or maintaining stable drinking over time. This will inform the development of health-promoting interventions to prevent alcohol-related harm in our ageing population.

Methods

An explanatory follow-up mixed-methods study (31) was developed to explore alcohol consumption behaviour following health deterioration (diagnosis with a long-term condition or worsening of self-rated health) in older adults (32). Phase 1 examined the association between health deterioration and alcohol consumption using the English Longitudinal Study of Ageing (ELSA) to develop an understanding of how drinking behaviour changes over time. Phase 2 used in-depth interviews to explore the motivations underlying drinking stability and change among individual drinkers. Ethical approval was granted by the School of Health and Related Research Ethics Committee at the University of Sheffield.

Phase 1

ELSA is a prospective cohort study of adults aged 50 years and older living in private households in England. The ELSA sample was recruited from respondents to the Health Survey for England (HSE) in 1998, 1999, and 2001, who were born before 1st March 1952. The HSE is an annual cross-sectional survey of households selected using a multi-stage stratified probability sample drawn from the Postcode Address file, which has 99% coverage in England (33). ELSA data are recorded biennially on a range of demographic, financial and

health variables. Data are collected by the National Centre for Social Research through a personal interview and self-completion questionnaire (34). For the current study, data from Waves 2 (2004-5), 3 (2006-7) and 4 (2008-9) were downloaded in SPSS format from the Economic and Social Data Service. Sample sizes (response rates) respectively are 8,781 (49.9%), 7,168 (40.3%) and 6,623 (37.3%).

ELSA measures a range of doctor-diagnosed LTCs (has a doctor ever told you that you have any of the following conditions? Yes, no, do not know) and self-rated health (on a 5-point ordinal scale). People who responded 'yes' to diagnosis of an LTC (that was not also reported in a previous wave) or who reported a lower level of self-rated health compared with a previous wave, were identified as having experienced health deterioration. Eighteen LTCs were grouped into cardiovascular disease (CVD), non-CVD (e.g. diabetes and cancer) and psychiatric conditions. The CVD and non-CVD categories were further subdivided into 'first' and 'additional' diagnoses, as it was hypothesised participants for whom the diagnosis was a first LTC might modify their drinking differently to those who already had one or more LTC.

Alcohol consumption was measured using quantity and frequency of drinking, which is a common approach to measuring alcohol intake in self-report surveys (35, 36). Past 12-month frequency (almost every day, 5-6 days/week, 3-4 days/week, 1-2 day/week, 1-2 times/month, once every couple of months, 1-2 times/year, not at all) was measured at all three waves, as well as drinking volume (measured in alcohol units where 1 unit is equal to 8g of ethanol) on the heaviest drinking day in the past week (Waves 2 and 3) or total volume in the past week (Wave 4). As the raw volume measure was not directly comparable across the waves participants were categorised into four drinking groups (one group that did not drink and 3 equally sized drinker groups) and change was defined as movement between these groups in successive waves. Drinking frequency change was defined as any movement between survey categories in successive waves.

Data were analysed using SPSS 19 (37). The Hot Deck method was used to impute missing alcohol data to enable all case analysis. Hot deck imputation involves replacing missing values with the value of a participant with similar characteristics that are predictive of non-response but not of substantial interest to the research questions (38). 5,891 complete cases were included for analysis. The chi-square test was used

to examine associations between health deterioration and drinking change between successive waves. A p-value of <0.05 was considered significant and a Bonferroni correction was applied to the significance level to account for the increased likelihood of a type I error with multiple testing (39). Odds ratios were calculated to determine the strength of association for health variables that were significantly associated with drinking change using the chi-square test.

Phase 2

In-depth interviews were conducted with nineteen older adults aged between 59 and 80 years who had been diagnosed with cardiovascular disease, diabetes or a musculoskeletal condition in the two years prior to interview. Eligible participants were current or former drinkers; life-time abstainers were excluded. A purposive sampling strategy was used to recruit a diverse sample of older adults from voluntary and community organisations in and around the city of Sheffield in England between September 2011 and January 2012. Recruitment was to the point of saturation with respect to drinking behaviour change over time, where new interviews no longer added anything to the overall story (40).

Semi-structured interviews lasting between 30 and 75 minutes focused on participants drinking behaviour. A topic guide shaped the interview process and included prompts to explore the participant's health, factors perceived to affect health, current and past alcohol consumption, and motivations to drink alcohol. Written informed consent was obtained from all participants. Data were audio recorded, transcribed verbatim and anonymised at the point of transcription. Analysis began whilst data collection was on-going to enable the use of emerging themes to refine questions for future interviews (41, 42). An inductive approach was used to identify, analyse and report patterns in data, facilitating the development of an *a posteriori* framework for understanding drinking change.

Familiarisation with the data led to the identification of initial codes, facilitated by markers such as repetition and similarities and differences in and across interviews (43). Codes were refined and clustered into themes. Capability Opportunity Motivation – Behaviour (COM-B) (see Figure 1) (44) was identified as a useful framework for organising the emerging findings. Critical analysis of themes using constant

comparison and deviant-case analysis (45) helped to improve confidence in the validity of conclusions drawn from the data and the authors discussed themes regularly to achieve consensus. The analysis process was monitored against a checklist for good thematic analysis (46).

INSERT FIGURE 1 ABOUT HERE

Results

Phase 1

A total of 6,376 adults aged 50 years and older completed three waves of ELSA and were eligible for inclusion in the current analysis. 55.5% of participants were female, 68.3% were married and 52.4% retired (see Table 1). At baseline, 45.3% reported having CVD, 47.7% a non-CVD LTC, and 5.8% a psychiatric condition. 7.6% reported abstention across the 3 waves included in this study and were excluded from the analysis of drinking change over time. At baseline, women were significantly more likely to abstain than men (OR 1.61 95%CI 1.29-2.02), as were participants aged 70 and older (OR 2.06 95%CI 1.57-2.69), whilst participants in higher managerial and professional jobs were significantly more likely to drink compared with the routine social class (OR 3.83 95%CI 2.23-6.57). All subsequent analysis relates to participants who reported drinking at one or more Waves between 2004 and 2009 (n=5,891).

INSERT TABLE 1 ABOUT HERE.

At baseline, the majority of older adults reported drinking every week. Drinking '1 or 2 days a week' was the most common frequency (29.8% women and 26.2% men), although 24.7% men and 15.3% women reported drinking 'almost every day'. Among past 7-day drinkers, 58.8% men and 60.9% women exceeded UK drinking guidelines of 32g ethanol in a day for men and 24g ethanol in a day for women.

Drinking change between successive waves

Drinking stability was common between successive waves, with around half of respondents reporting the same drinking frequency or a similar drinking volume over time (Table 2). Of older adults who changed their alcohol consumption, slightly more men and women reported decreased drinking frequency between

most successive waves than reported increased drinking frequency. The reverse was true for change in drinking volume.

INSERT TABLE 2 ABOUT HERE.

Health deterioration between successive waves

Between Waves 2 and 3, 2,369 participants reported health deterioration, 39.0% men and 41.2% women. Diagnosis of a new LTC was reported by 2,081 participants and 867 reported a decline in self-rated health; 288 reported a new diagnosis and a worsening of self-rated health (see Table 3). Between Waves 3 and 4, 1,886 participants reported health deterioration, 30.4% men and 33.4% women. Diagnosis of a new LTC was reported by 1,682 participants and 647 reported a decline in self-rated health; 259 reported a new diagnosis and a worsening of self-rated health (see Table 4).

INSERT TABLE 3 ABOUT HERE.

INSERT TABLE 4 ABOUT HERE.

Relationship between health deterioration and drinking

Compared to older adults reporting stable health over time, older adults reporting any health deterioration (LTC diagnosis or self-rated health) were significantly more likely to report either increasing (OR 1.25, CI 1.09-1.42) or decreasing drinking (OR 1.22, CI 1.08-1.38) frequency at Waves 2-3 and decreasing drinking frequency (OR 1.28, CI 1.12-1.45) at Waves 3-4. Examining subcategories of health deterioration, there were no significant associations between change in drinking frequency and specific types of LTC (CVD, non-CVD, psychiatric) (see Tables 3 and 4). However, participants reporting a decrease in self-rated health were significantly more likely than those reporting no health deterioration to have increasing (OR 1.59, CI 1.31-1.94) or decreasing (1.68, CI 1.40-2.02) drinking frequency at Waves 2-3 and increasing (OR 1.54, CI 1.22-1.92) or decreasing (OR 2.37, CI 1.93-2.91) frequency at Waves 3-4. No significant relationships were identified between health deterioration and change in drinking volume between successive waves.

Phase 1 identified that older adults report varied patterns of drinking following health deterioration. Some older adults decreased their consumption, some increased, and others reported no change over time. Given the diversity of patterns of change identified in ELSA, a qualitative study was conducted to explore the factors that influence alcohol consumption in older adults who have been diagnosed with an LTC.

Phase 2

Ten men and nine women aged between 59 and 70 years of age recruited from areas of differing levels of deprivation (47) were interviewed. For six participants the LTC for which they were recruited was their first LTC diagnosis and for 13 an additional diagnosis. Participant alcohol consumption ranged from current abstention to high-level (>64g ethanol) daily drinking. Participants reported varied alcohol consumption behaviour after health deterioration including stable, increasing and decreasing drinking.

A range of health, social and financial factors influenced drinking behaviour in over time. The drivers of drinking behaviour were analysed using a COM-B framework (44):

- psychological capability: having the knowledge and understanding required to make a decision about behaviour and possessing the necessary cognitive and behavioural skills to enact change.
- reflective motivation: the reasoning process that balances positive and negative knowledge, understanding and emotion around a given behaviour and so drives behaviour change.
- automatic motivation: subconscious motivations to undertake a given behaviour.
- social opportunity: social and cultural factors that influence behaviour.
- physical opportunity: environmental factors that influence behaviour.

Psychological capability

Participants who decreased, or considered decreasing, their drinking behaviour described knowledge of the interaction between health and alcohol consumption. Particularly salient were conversations with healthcare professionals (HCPs) about their health and alcohol consumption, initiated variably by the HCP or patient in response to a new diagnosis, test results or prescription medications, for example:

> She told me did the doctor, she said you know, stop it, don't drink, see if that gets the enzymes down in the liver. (M6, decreased)

Participants also read a diverse range of medical information (e.g. websites, the media):

> We're very aware, or we think that we're aware, through reading or television, of what we should be doing… we're quite well educated and quite well read and we've got a fair idea of what we should be doing or what the latest idea is. (F3, increased)

However, there was also a view that conscious avoidance of the topic of alcohol consumption with HCPs was a good tactic to avoid being encouraged to change behaviour among older adults with stable or increasing consumption over time:

> I wondered whether the doctor would say anything about drinking but none of them ever did. I suppose I took the easy way out there, I thought carry on my lifestyle if I can. (M2, stable)

This highlights the importance of HCPs discussing alcohol consumption with older adults.

Reflective motivation

Drinking was influenced by reflective processes, for example evaluating knowledge and planning activity within personal belief systems. Many participants perceived that their drinking would not interact with their health or medication, for example *'I don't need it, so… I don't think it can affect my health at all'* (M3, stable) and *'I always take [the tablets] first thing in the morning so I'm unlikely to have had a drink, you know, until the evening'* (M10, decreased). Some prioritised other behaviours (e.g. exercise or diet) over their drinking, for example: *'I'm more concerned with eating healthily than with drinking'* (M7, stable).

Test results presented a stronger challenge to beliefs than abstract knowledge shared during conversation. However, some participants demonstrated selective reflection, for example:

> My liver is fine… I have blood tests fairly regular and they've all come back fine… so as far as I'm concerned my drinking's not doing my liver any harm. (M5, increased)

Thus stable or increased drinking was justified based on a narrow consideration of just one scenario of risk, overlooking the impact of alcohol consumption on other health conditions.

Personal negative experiences could transform abstract risks into tangible consequences, for example:

> It was when I started on the morphine that I cut right down… I went all dizzy and fell over. So I'm limiting meself now. I sometimes have two and a half if I'm in a good conversation, but it's never any more than two and a half. (M4, decreased)

Participants who attributed negative health consequences to their personal alcohol consumption described these experiences as leading to long-term reductions in drinking.

Automatic motivation

Drinking habits or routines made sustained reductions in drinking challenging because *'[alcohol] just creeps back in'* (F1, increased) to daily life. Drinking was often considered an ordinary part of daily life and was normalised within social groups. Associative learning also influenced long-term drinking. Participants used alcohol to relieve stress and cope with challenging personal circumstances, learned by having a drink after a stressful event and finding it helped them relax.

Participants also described emotions that influenced their drinking, including joy, sadness and fear.

> And, as I say, about five nights, four or five nights a week I'll have two tots of whiskey with water and I enjoy it... (M3, stable)
>
> If I wasn't so depressed as I am I probably wouldn't drink as much. (F4, increased)
>
> Through fear... If somebody tells you to stand on your head and that you wouldn't ever have another heart attack by doing that, you'd do it. (F2, decreased)

These are examples of how innate disposition can influence and be influenced by drinking. Acknowledging the role of habit, context and emotions on alcohol consumption in older adults is thus important to facilitate change, to develop realistic targets and provide additional support where needed.

Physical and social opportunity

Social opportunities to drink had changed over time. Participants described changes in family and friends drinking practices and life events that exerted downward pressures on consumption:

> My wife has cut back on her drinking and quite often if she's not having a drink I'll say well I'll not bother either. (M10, decreased)
>
> We used to go dancing once a week and I'd have two or three vodka and tonics, that was it when he died… everything stopped. (F7, decreased)

Pub closures and fears around neighbourhood safety after dark also led to reduced drinking:

> I only go out at dinnertime because at night I don't feel very safe to be honest… Those young'uns can be a bit intimidating. (M4, decreased)

> That's one of, you know, me changes what cut me down in me drink… we haven't got a pub on the estate now, only the little club. (M1, decreased)

And there was a view that alcohol has become increasingly expensive in pubs, forcing a reduction in consumption.

In contrast, some participants stated that affordability and opportunities to socialise supported stable or increasing consumption. There was a view that alcohol has become more affordable over time as prices have decreased relative to disposable income:

> Alcohol is very cheap now… When we were younger alcohol was, was much more expensive and we didn't have the money. (F3, increased)

Reduced childcare responsibilities were also perceived to have increased opportunities to engage in social activities that include drinking.

Drinking in the pub was the main social activity for some participants, with the pub viewed as a good place to *'interact with blokes… banter with the lads'* (M2, stable), a place where *'there's always plenty of people there to talk to'* (M4, decreased). Whilst usually volitional, there was a view that peer pressure could influence frequency of drinking in this setting:

> I mean if I didn't go out the bloody phone would ring 'we're waiting for you, are you coming over?'… You can't make an excuse because they know that there's no reason you can't go. (M6, decreased)

This peer pressure influenced some older adults to drink more than they would have liked given their health deterioration.

In summary, drivers of change can be understood within the COM-B framework, and include:

- Psychological capability: knowledge obtained through conversations with HCPs and through engaging with medical information from other sources (such as website, the media and books).
- Reflective motivation: personal belief systems around healthy behaviour and the experience of tangible negative consequences of drinking influenced how knowledge was interpreted and used.

- Automatic motivation: alcohol consumption is a routine behaviour associated with emotion (e.g. joy, sadness and fear) and used to relax or cope with challenging personal situations.
- Physical opportunity: pub closures, anxiety about going out in certain neighbourhoods after dark and the changing cost of alcohol.
- Social opportunity: life circumstances (e.g. bereavement), changing familial roles and social networks built around the pub.

Discussion

Motivations for drinking behaviour stability and change in older adults who have experienced health deterioration are complex, including factors in the health, psychological, social, and financial domains. Stable drinking was the more common pattern of alcohol consumption over time in both the quantitative and qualitative samples, with drinking often identified as a habitual behaviour. Many older adults did not cite health among the factors that influence their alcohol consumption. This may provide some explanation for why many ELSA respondents maintained stable or increased their drinking over time following health deterioration. However, some older adults did describe modifying their behaviour either in direct response to a diagnosis, in response to advice from HCPs or a tangible negative experiences they attributed to alcohol. Psychological, social and financial factors also exerted positive and negative pressures on alcohol consumption over time. Factors across these four domains interact, leading to a conscious or subconscious balancing of the costs and benefits of drinking within individual older adults.

A recent US survey that examined why older unhealthy drinkers make changes, or not, to their drinking identified a range of drivers including environment and circumstances (48). The current research extends this previous work by exploring salient drivers of alcohol consumption through in-depth interviews with older adults. In order to modify alcohol consumption in older adults a holistic approach should be adopted that recognises the psychological benefits (49) and social context (50) in which drinking occurs.

Key strengths of this research are the use of a large, nationally representative longitudinal dataset to examine drinking change over time and the use of a mixed methods approach, which has allowed for deeper exploration of the factors that influence drinking change in older adults. Potential limitations to the current research are fourfold. Due to non-response bias and loss to follow-up the ELSA dataset may not be representative of the population; but, data were weighted and missing data imputed to enable complete case analysis. Secondly, the use of derived drinking volume categories rather than unit change; however, we conducted a sensitivity analysis using unit change on the heaviest drinking day between Waves 2-3 and also found no significant associations between health deterioration and drinking volume change using this measure. Thirdly, only one current abstainer was interviewed so the qualitative findings may provide only a limited understanding of what motivates abstinence following health deterioration in older adults. Finally, as older adults were asked to discuss their motivations for drinking during the interview and some of their behaviour change will have occurred outside of the conscious decision making process, motivations may have been subject to a degree of post-hoc rationalisation. Despite these limitations, this data provides useful insights into the largely unexamined field of alcohol consumption in older adults.

A number of implications emerge from our findings. Older adults generally had a limited understanding of the relationship between health and drinking, particularly the ways in which alcohol may affect their long-term conditions or interact with medications. Given that many older adults are drinking at potentially harmful levels (51), we need a mechanism for improving knowledge in this population as increased knowledge may motivate behaviour change. Without adequate knowledge on the potential interactions between LTCs, prescribed medications and alcohol, older adults cannot be expected to modify their drinking behaviour. Second, there was a group of participants who were justifying high levels of alcohol consumption, either because a healthcare practitioner had not mentioned their drinking (the assumption being it was therefore not relevant) or by adopting a narrow scenario of risk (related to just one health outcome). This highlights the importance of fostering clinical environments in which discussing alcohol consumption with older adults is normal. The delivery of brief advice to older adults in a general practice setting has been successful in reducing higher-level drinking among non-dependent older adults in the US

(52) and creating environments in which drinking is discussed with older adults can be linked to recommendations made elsewhere that healthcare professionals should be able to engage older adults sensitively in alcohol brief interventions (53). Finally, COM-B is a useful framework for understanding drinking behaviour change among older adults and the associated Behaviour Change Wheel may provide a useful starting point for the development of targeted interventions to reduce drinking in this population.

Conclusion

Patterns of drinking change after health deterioration in older adults are diverse, including stable, increasing and decreasing alcohol consumption over time. Motivations for drinking behaviour stability and change in older adults who have experienced health deterioration are complex, including factors in the health, psychological, social, and financial domains. Behaviour is influenced by the balance of costs and benefits of drinking across these four domains and thus intervention development should adopt a holistic approach to alcohol consumption change in older adults.

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