RESEARCH ARTICLE

The characteristics and treatment outcomes of people with very late onset of problem drinking

Jennifer Seddon[1] | Sarah Wadd[2]

[1]Centre for Psychological Research, Oxford Brookes University, Oxford, UK

[2]Substance Misuse and Ageing Research Team, University of Bedfordshire, Luton, UK

Correspondence
Jennifer Seddon, Centre for Psychological Research, Oxford Brookes University, Oxford, UK.
Email: jseddon@brookes.ac.uk

Abstract

Background: The characteristics and outcomes of people who begin to experience problems with alcohol later in life are not well understood. This study examines whether people with a very late-onset of problem drinking, defined as occurring after the age of 60, differ in their use of alcohol, mental health functioning, and alcohol treatment outcomes from people with an earlier onset of problem drinking.

Method: Seven hundred eighty participants aged 50+ were categorized as either early onset (<25 years, $n = 119$, 15%), mid-onset (25–39 years, $n = 200$, 26%), late-onset (40–59 years, $n = 376$, 48%) or very late-onset problem drinkers (≥60 years, $n = 85$, 11%). Participants completed measures on alcohol use, mental health, and cognitive functioning.

Results: Eleven percent of participants had very late onset of problem drinking. After controlling for age as a covariate, age of onset of problem drinking was not associated with level of alcohol intake or cognitive functioning, but individuals with very late onset of problem drinking had significantly lower levels of depression and significantly better mental health well-being. Age of onset was not associated with treatment outcomes (i.e., change in alcohol use following treatment or treatment completion).

Conclusion: People who first experience problems with alcohol after the age of 60 may have better mental health functioning than people with an earlier age of problem drinking. The results suggest that the age of onset of problem drinking may be a poor predictor of alcohol use severity and treatment outcomes and older adults can benefit from alcohol treatment irrespective of the age problem drinking began.

KEYWORDS
age of onset, alcohol use, older adults

INTRODUCTION

Over 20% of older adults drink alcohol at hazardous or harmful levels (NHS Digial, 2019). Hazardous alcohol use is defined as a pattern of alcohol consumption that increases the risk of harmful consequences; harmful alcohol refers to alcohol use that results in adverse consequences to physical and mental health (Babor et al., 2001). In the UK, people aged 55–64 are more likely to exceed the recommended unit guidelines for alcohol than any other age group (National Statistics, 2020; Scottish Government, 2020; Welsh Government, 2019), and there are trends to indicate increasing alcohol use among older adults in other countries (Grant et al., 2017; Han

et al., 2017; Kelfve et al., 2014; Roche & Kostadinov, 2019). It is estimated that approximately a third of older people consuming alcohol at harmful or dependent levels are late-onset problem drinkers, that is, problem drinking began after the age of 40 (Blow et al., 2000; Dufour & Fuller, 1995; van den Berg et al., 2014).

Understanding and identifying the factors that may influence treatment outcomes for alcohol use is a key focus of research. Age of onset of problem drinking, that is, the age at which a person first experiences problems in relation to their drinking, has long been regarded as an important criterion in distinguishing between types of drinkers and in determining longer-term prognosis (Babor et al., 1992; Babor & Caetano, 2006; Leggio et al., 2009).

The factors that precipitate the onset of problem drinking are thought to differ by age. For older adults factors such as loss of sense of purpose, bereavement, and drinking to cope with physical and psychological problems have been found to be important (Emiliussen et al., 2017; Wadd, 2020). In contrast to those with early onset problem drinking, people with late onset problem drinking have been found to have a little familial or genetic predisposition to alcohol dependence (Johnson et al., 2000). The age a person begins to experience problems with alcohol has also been associated with differences in drinking characteristics and treatment outcomes, although much of this work has focused on the impact and correlates of early-onset of problem drinking. Research indicates that early onset of problem drinking is associated with higher levels of alcohol use and alcohol-related problems (Brennan & Moos, 1991; Chen et al., 2011; Hingson et al., 2006; Johnson et al., 2000; Wetterling et al., 2003), reduced treatment compliance and poorer long-term outcomes (Atkinson et al., 1990, 1993; Schonfeld & Dupree, 1991; Wetterling et al., 2003). Early onset of problem drinking is also considered more likely to be associated with a family history of alcohol use (Atkinson et al., 1985, 1990; Chen et al., 2011) and may be associated with different genetic markers (Chen et al., 2011). These studies indicate that the age of onset is a simple but important clinical marker.

Research examining the impact of age of onset of problem drinking has typically focused on people with early onset problem drinking, that is, people who begin to experience problems with alcohol use before the age of 25. Late onset of problem drinking has typically been defined in the literature as onset after the age of 40 or 45 years (Atkinson et al., 1985; Kist et al., 2014; van den Berg et al., 2014; Wetterling et al., 2003), although some studies have defined late onset from as young as 25 years (Chen et al., 2011; Joos et al., 2013). Such differences in the definition of late onset can make interpretation difficult, and the findings have little meaning for people who begin to experience problems with drinking much later in life.

Very late onset of problem drinking is defined as occurring after the age of 60 (Atkinson et al., 1990; Emiliussen et al., 2017). People with very late onset of problem drinking have been found to have greater life satisfaction and motivation for treatment (Schonfeld & Dupree, 1991) and there is some evidence to suggest that very late onset of problem drinking may be associated with reduced alcohol severity and greater treatment compliance (Atkinson et al., 1990). However, there is no available data in terms of treatment outcomes for people with very late onset of problem drinking. Given that data suggests increasing alcohol use among older adults (National Statistics, 2020; Scottish Government, 2020; Welsh Government, 2019), we need to better understand the characteristics and treatment outcomes of people who begin to drink problematically later in life.

The present study will examine if people with very late onset of problem drinking (i.e., aged ≥60 years) differ in their alcohol use, mental health functioning and treatment outcomes compared to those with an earlier age of onset. It was hypothesized that people with very late onset of problem drinking will present to treatment with lower levels of alcohol use, better mental health and cognitive functioning. Very late onset of problem drinking was also hypothesized to be associated with better treatment outcomes (defined as a greater reduction in alcohol use following treatment and a higher rate of treatment completion).

METHOD

Study design and setting

Data were collected as part of the Drink Wise Age Well (DWAW) programme. The DWAW programme operated in five areas across the UK (England: Sheffield and Devon, Scotland: Glasgow, Wales: Cwm Taf, and Northern Ireland: Western Health and Social Care Trust Area) and provided comprehensive support specifically designed to meet the needs of people aged 50+ who were experiencing alcohol problems. This included age-sensitive assessments (e.g., screening for cognitive impairment and assessing the risk of falls, elder abuse and alcohol-medication interactions), interventions adapted to the needs of older adults (e.g., adapted for cognitive impairment, focused on life-stage issues), as well as peer support groups for people aged 50+ (Seddon et al., 2019).

Measures

Age of onset of problem drinking

Participants were asked 'How old were you when you first experienced problems with your drinking?' Participants were categorized into one of the following four groups: early onset (<25 years), mid onset (25–39 years), late onset (40–59 years), and very late onset (≥60 years). Age ranges for early, mid, late, and very late onset were based on similar definitions in previous literature (Atkinson et al., 1990; Kist et al., 2014; Wetterling et al., 2003).

Alcohol use

Alcohol use was assessed using the Alcohol Use Disorders Identification Test (AUDIT). A score of 8 and above indicates hazardous use of alcohol, with scores of 20+ indicating a high level

of alcohol problems and possible dependence (Babor et al., 2001). The AUDIT demonstrates good reliability and internal consistency (Reinert & Allen, 2007) and has been validated for use among older adults (Gómez et al., 2006). Data on the number of drinking days in the past month, the number of units consumed on a typical drinking day, age of first use, and previous alcohol treatment were collected. Weekly alcohol unit intake was calculated by multiplying the number of days drinking in the past 28 by the number of units consumed on a typical drinking day and dividing by 4.

Mental health

Generalized anxiety disorder was assessed using the GAD-7, a seven-item self-report measure (Spitzer et al., 2006). Scores of 5–9, 10–14, and 15+ indicate mild, moderate, and severe levels of anxiety, respectively. The scale has been found to have high levels of sensitivity and specificity, as well as excellent internal consistency and good test–retest reliability (Spitzer et al., 2006).

Depression was assessed using the Patient Health Questionnaire (PHQ-9). The PHQ-9 is a nine-item self-report scale based on DSM-IV criteria (Kroenke et al., 2001). Using a cut-point of 10+ the PHQ-9 demonstrates high sensitivity and specificity for major depression. The measure also provides a grade of depressive symptom severity, with scores of 1–4, 5–9, 10–14, 15–19, and 20–27 indicating none, mild, moderate, moderate–severe, and severe depression respectively (Kroenke & Spitzer, 2002).

Mental health well-being was assessed using the 14-item Warwick-Edinburgh Mental Well-being Scale (WEMWBS). This scale focuses on the positive aspects of well-being and psychological functioning. The scale demonstrates a good level of content validity and high levels of internal consistency (Tennant et al., 2007).

Cognitive impairment

Cognitive impairment was assessed using the Montreal Cognitive Assessment (MoCA). The MoCA is a 30-item scale designed to detect cognitive impairment. It has been found to be effective in identifying cognitive impairment among people who use alcohol and drugs (Copersino et al., 2009, 2012), as well as being validated for use among older adults (Luis et al., 2009). A score of 26+ indicates normal cognitive function (Nasreddine et al., 2005). The scale has been found to demonstrate high-test–retest reliability, good internal consistency and high levels of sensitivity and specificity in detecting cognitive impairment (Nasreddine et al., 2005).

Ethical approval

Participants provided written consent for their anonymized data to be shared with the research team. Ethical approval was granted by the University of Bedfordshire's Research Ethics Committee.

Data analysis

Data were analyzed using SPSS version 22 statistical software. Cases with missing data were excluded from the analysis.

One-way ANOVA with post-hoc tests using bonferroni correction were used to examine if there were significant differences in age between participant groups. Chi-square was used to examine if there were differences in gender and treatment history between participants with very late onset of problem drinking compared to those with early, mid or late-onset.

One-way ANOVA with planned contrasts was used to explore if there were significant differences in alcohol use and mental health for people with very late onset problem drinking compared to those with early, mid, or late onset. These analyses were then re-run using ANCOVA to control for the effects of age. ANCOVA, controlling for the effect of age, was used to examine if there were differences in level of cognitive functioning.

Multiple logistic regression was used to examine if age of onset was associated with treatment outcome, defined here as change in alcohol use following treatment and treatment completion. Baseline alcohol use and gender were entered as covariates as they have been identified as being predictive of alcohol treatment outcome in previous research (Adamson et al., 2009). Age was entered as a covariate to control for differences in the ages of participants across the different age of onset groups. Change in alcohol use was calculated by subtracting the weekly alcohol unit scores at treatment discharge from scores at treatment entry; participants were categorized as having either increased/unchanged alcohol use, or decreased use.

RESULTS

Participants

A total of 780 participants completed assessment at treatment entry; 55.9% (n = 436) were male and 44.1% (n = 344) were female. The mean age was 59.74 (SD: 7.22, range 50–88 years).

In total, 15% (n = 119) of participants were classed as having early onset problem drinking (<25 years age), 26% (n = 200) were classed as having mid onset problem drinking (with an onset age between 25–39 years), 48% (n = 376) were classed as having late onset of problem drinking (with an onset age between 40 and 59 years), and 11% (n = 85) of participants were classed as having very late onset of problem drinking (with an onset age of ≥60 years). Mean AUDIT scores ranged from 19.41 to 25.26 across the four participant groups. See Table 1.

One-way ANOVA with post-hoc tests using bonferroni correction indicated there were significant differences in age between participant groups, $F(3, 776) = 96.131$, $p < 0.001$. Participants with very late onset were found to be significantly older than early ($p < 0.001$), mid ($p < 0.001$) and late onset participants ($p < 0.001$). Chi-square analysis indicated there were no significant differences in gender between participants with very late onset compared to those with

TABLE 1 Participant characteristics at entry to treatment.

	Early AUD onset (<25 years)	Mid-AUD onset (25–39 years)	Late AUD onset (40–59 years)	Very late AUD onset (≥60 years)	p (unadjusted)	p (adjusted for effect of age)
n, %	119, 15.3%	200, 25.6%	376, 48.2%	85, 10.9%	—	—
Gender (n, %)						
Male	87, 73.1%	116, 58%	186, 49.5%	47, 55.3%	0.91	—
Female	32, 26.9%	84, 42%	190, 50.5%	38, 44.7%		
Mean (SD)						
Age	58.11 (5.80)	58.34 (6.29)	58.58 (6.31)	70.48 (5.79)	<0.001	—
Age problem drinking onset	19.07 (2.89)	30.64 (3.77)	47.16 (5.84)	64.89 (5.13)	—	—
Alcohol use						
AUDIT score	25.26 (9.67)	24.46 (10.20)	22.51 (9.75)	19.41 (9.45)	<0.001	0.02
Weekly alcohol unit intake	85.84 (79.93)	77.06 (80.28)	79.36 (77.20)	54.61 (63.39)	0.036	0.69
Mental health						
Depression	12.79 (7.79)	13.25 (6.32)	10.91 (6.61)	7.22 (4.45)	<0.001	0.001
Anxiety	10.21 (6.71)	10.31 (6.29)	9.47 (6.24)	5.50 (4.59)	<0.001	0.18
Well-being	20.13 (6.04)	19.62 (5.94)	20.59 (6.54)	24.36 (4.89)	<0.001	0.02
Cognitive functioning	23.58 (5.46)	24.61 (3.77)	24.46 (4.09)	23.89 (4.80)	—	0.49

Note: Italics indicates non-significant using a significance of $p \leq 0.05$.

either early, mid or late onset, $\chi^2(1) = 0.014$, $p = 0.91$. There was a significant association between treatment history and age of onset, $\chi^2(1) = 28.34$, $p = <0.001$. This likely reflects the finding that compared to participants with very late onset, those with early, mid or late onset were 3.4 times more likely to have a history of alcohol treatment (95% CI 2.14–5.55).

Age of onset and alcohol use at treatment entry

One-way ANOVA with planned comparisons indicated there were significant differences between participant groups for AUDIT scores, $F(3, 373) = 7.227$, $p < 0.001$, and for weekly alcohol unit intake, $F(3, 755) = 2.861$, $p = 0.03$. Planned contrasts indicated that participants with very late onset had significantly lower AUDIT scores, $t(737) = -3.958$, $p < 0.001$, and significantly less weekly alcohol unit intake, $t(752) = -2.831$, $p = 0.005$, compared to participants with an earlier age of onset. Significant differences in AUDIT scores remained after controlling for age, $F(3, 736) = 3.175$, $p = 0.02$, with trend significance for lower AUDIT scores for participants with very late onset compared to those with early onset ($p = 0.052$). However, after controlling for age, differences in weekly alcohol unit intake failed to reach significance, $F(3, 751) = 0.480$, $p = 0.69$. See Table 1.

Age of onset and mental health at treatment entry

There were significant differences between participant groups for depression, $F(3, 188.96) = 20.297$, $p < 0.001$, anxiety, $F(3, 186.51) = 13.748$, $p < 0.001$, and mental health well-being, $F(3, 240.80) = 15.76$, $p < 0.001$. Planned contrasts indicated that participants with very late onset had significantly less depression, $t(94.57) = -7.232$, $p < 0.001$, less anxiety, $t(85) = -6.371$, $p < 0.001$, and better mental health well-being, $t(110.38) = 6.718$, $p < 0.001$. After controlling for the effect of age, significant differences remained for depression, $F(3, 511) = 5.479$, $p = 0.001$, with planned contrasts indicating participants with very late onset had significantly lower scores for depression than those with early onset ($p = 0.03$) and mid-onset ($p = 0.004$). Differences in anxiety were no longer significant after controlling for age, $F(3, 510) = 1.636$, $p = 0.18$. Significant differences remained for mental health well-being after controlling for age, $F(3, 667) = 3.478$, $p = 0.02$, with participants with very late onset having significantly better mental health well-being than those with early ($p = 0.02$), mid ($p = 0.002$), and late onset ($p = 0.02$).

ANCOVA controlling for the effects of age indicate there was no significant difference in cognitive functioning between participant groups, $F(3, 333) = 0.809$, $p = 0.49$, see Table 1.

Age of onset and treatment outcome

Logistic regression analysis controlling for age, gender, and alcohol use at treatment entry (i.e., weekly alcohol units) found no significant effect of age of onset on either change in alcohol use following treatment, or treatment completion. However, gender ($p = 0.03$) and alcohol use at treatment entry ($p < 0.001$) were found to significantly predict change in alcohol use, with females and those with greater alcohol use at treatment entry significantly more likely to have decreased their use of alcohol following treatment. Age ($p = 0.001$)

TABLE 2 Predictors of treatment outcome using logistic regression.

	B	SE	Odds ratio (95% CI)	p
Model 1: Change in alcohol use				
Constant	−0.764	1.367	0.466	0.576
Very late onset vs. early/mid/late onset	−0.211	0.434	0.810 (0.346–1.896)	0.627
Age	0.000	0.018	1.0 (0.965–1.037)	0.999
Gender	0.565	0.258	1.759 (1.060–2.919)	0.029
Alcohol use at entry	0.026	0.003	1.026 (1.019–1.033)	0.000
Model 2: Treatment discontinuation				
Constant	1.596	0.930	4.935	0.086
Very late onset vs. early/mid/late onset	0.323	0.363	1.382 (0.678–2.816)	0.373
Age	−0.053	0.016	0.948 (0.919–0.978)	0.001
Gender	0.302	0.180	1.352 (0.950–1.924)	0.094
Alcohol use at entry	0.002	0.001	1.002 (1.000–1.004)	0.045

and alcohol use at treatment entry ($p = 0.045$) were found to significantly predict treatment completion, with older adults significantly less likely to discontinue treatment, whilst those with higher levels of alcohol use at treatment entry were significantly more likely to discontinue alcohol treatment (see Table 2).

DISCUSSION

This study examines the characteristics and outcomes associated with very late onset of problem drinking. Late onset problem drinking has typically been defined as occurring after the age of 40 or 45 years (Atkinson et al., 1985; van den Berg et al., 2014; Wetterling et al., 2003), with very late onset problem drinking defined as occurring after the age of 60 (Atkinson et al., 1990; Emiliussen et al., 2017). In this study, 11% of participants had very late onset of problem drinking, highlighting that many people who need help for alcohol use will have developed alcohol problems for the first time in later life.

This study found people with very late onset of problem drinking to have significantly lower weekly alcohol unit intake and lower AUDIT scores compared to participants with an earlier age of problem drinking onset. After controlling for age, the differences in AUDIT score remained, however, differences in alcohol unit intake were not significant. Previous research has established a link between age of onset and the level of alcohol intake, with earlier age of onset associated with higher levels of alcohol use (Brennan & Moos, 1991; Chen et al., 2011; Wetterling et al., 2003). The results of the current study suggest that age of onset may not be associated with the level of alcohol use once age is controlled for. Previous studies have not always controlled for age (e.g., Atkinson et al., 1990; Brennan & Moos, 1991; Joos et al., 2013; Wetterling et al., 2003), although results are inconsistent among those that have, with some finding early onset to be associated with greater alcohol use and others finding no significant effect (Hingson et al., 2006; Schonfeld & Dupree, 1991). It is possible that age may be a potential confounder

in age of onset studies. The results of this study highlight the importance of controlling for age when examining the impact of age of drinking onset.

Only a small number of studies have examined the association between age of onset of problem drinking and mental health (Buydens-Branchey et al., 1989; Schonfeld & Dupree, 1991; Wetterling et al., 2003). Findings from these studies have been inconsistent, with some suggesting an association between age of onset and mental health functioning (Buydens-Branchey et al., 1989; Schonfeld & Dupree, 1991) while other studies have failed to find any significant effect (van den Berg et al., 2014, Wetterling et al., 2003). In this study, we found very late onset problem drinking to be associated with significantly lower levels of depression and anxiety, and significantly better mental health well-being. After controlling for the effect of age, the difference in anxiety was no longer significant, but significant differences for depression and mental health well-being remained. This suggests that very late onset of problem drinking is associated with better functioning for some aspects of mental health although we are unable to determine causality from this data. The large sample size in this study, the inclusion of a very late onset group, and the adjustment for the effect of age provides a more accurate understanding of the relationship between age of onset of problem drinking and mental health.

Age of onset of problem drinking was not associated with cognitive impairment in this study. This is in contrast to evidence which suggests cognitive functioning deteriorates in direct proportion to the duration of alcohol dependence (Parsons, 1998) as well as earlier research which has found poorer cognitive functioning for people who had an earlier age of problem drinking onset (Pishkin et al., 1985). However, more recent studies that have failed to find any significant effect of age of onset on cognitive function (Demir et al., 2002; Kist et al., 2014). It is possible that the MoCA used to screen for cognitive impairment in this study may not be sensitive enough to detect nuances in cognitive function between participants with different ages of problem drinking onset. However, it has also been proposed that cognitive impairment due to alcohol use in the

early years could have a ceiling effect, or that late-onset of problem drinking may accelerate cognitive deterioration, resulting in a similar cognitive profile irrespective of age of onset (Kist et al., 2014).

Previous research has suggested that people with an early onset of problem alcohol use may have poorer treatment outcomes (Schonfeld & Dupree, 1991). Age of onset of problem drinking in this study was not associated with change in alcohol use following treatment, or the likelihood of treatment completion. This is in line with previous research to suggest age of onset is not a reliable predictor of treatment outcome for alcohol use, especially compared to other individual factors (Adamson et al., 2009). The results of this study suggest that older adults can benefit from alcohol treatment irrespective of age of problem drinking onset, and age of onset of problem drinking may be a poor predictor of treatment outcome.

The results indicate that other individual factors such as age, gender, and level of alcohol use at treatment intake are important predictors of treatment outcome. These findings accord with previous research; older people have been found more likely to complete alcohol treatment compared to younger people (Fitzgerald & Mulford, 1992; Oslin et al., 2002), evidence suggests that older women have better treatment outcomes than older men (Satre et al., 2004), and baseline alcohol consumption and gender have been found to be key predictors of alcohol treatment outcome (Adamson et al., 2009).

To our knowledge, this study is the first to examine alcohol use, mental health functioning, and treatment outcomes of four groups of older adults with different ages of drinking onset. Unlike previous studies (Atkinson et al., 1990; Brennan & Moos, 1991; Joos et al., 2013; Wetterling et al., 2003) we controlled for the effect of age in the analysis, a potentially major confounding factor. The large sample size in this study enabled us to examine onset of problem drinking after the age of 60, something that is lacking from the current research literature. The study does have some limitations: age of onset was assessed using self-report and may be subject to recall bias, however, the use of broad age categories will have reduced the chance of misclassification. The study did not collect data on past or current physical health or substance use. The age of the study sample (i.e., 50+ years) means that participants with an earlier age of onset had a much longer duration of use than participants with very late onset problem alcohol use. Increased length of alcohol dependence has been associated with increased rates of mortality (Kendler et al., 2016). It is therefore possible that participants from the very late onset group therefore represented a 'healthier' group of participants, which may help to explain the findings of better mental health functioning for very late onset participants.

The results of this study suggest that people who first experience problems with alcohol after the age of 60 may have better mental health functioning compared to people with an earlier age of problem drinking. The results also highlight that older adults can benefit from alcohol treatment irrespective of age of onset, challenging the perception that people with early onset of problem alcohol use may not benefit from treatment as much as people who first experience problems with alcohol use much later in life.

CONFLICT OF INTEREST STATEMENT

The authors report no conflicts of interest.

ORCID

Jennifer Seddon https://orcid.org/0000-0001-9040-0902

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