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Differences in alcohol use between younger and older people: Results from a general population study

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ABSTRACT

Background: Prevention of problematic alcohol use is mainly focused on younger adults, while heavy drinking in middle-aged and older adults might be more frequent with more impact on functioning and health care use. Therefore, alcohol use and alcohol disorder in both age groups was compared. To facilitate age-specific prevention, it was examined whether risk factors of heavy drinking and impact on functioning and health care use differs across the life-span.

Methods: Data of people (23–70 years) were used from the Netherlands Mental Health Survey and Incidence Study-2 (N = 4618), a general population-based cohort. Heavy alcohol use was defined as > 14 drinks/week for women and > 21 drinks/week for men. Alcohol disorder was defined as DSM-IV disorder of alcohol abuse and/or alcohol dependence. (Multinomial) logistic regression analyses were used to study risk factors of alcohol use and associations between alcohol use and health care use and functioning.

Results: The past-year prevalence of heavy alcohol was higher in older (55–70 years) compared to younger people (6.7% versus 3.8%), whereas alcohol disorder was less prevalent (1.3% versus 3.9%). Heavy alcohol use was associated with higher level of education in older adults compared to younger adults. Other characteristics of problematic alcohol use and its impact on functioning and health care use did not differ between age groups.

Conclusions: Heavy drinking is more prevalent among middle-aged and older people. Contrary to younger adults, prevention of heavy alcohol use in those aged 55–70 should focus on higher educated people.

1. Introduction

Problematic alcohol use, including both heavy drinking and alcohol disorder, has various negative outcomes, such as physical and mental health problems and increased risk of mortality (Comijs et al., 2012; O'Connell et al., 2003; Standridge et al., 2004). Older adults are more vulnerable to the negative effects of alcohol compared to younger adults due to biological changes like changes in metabolism, body fat and body fluid (Arndt and Schultz, 2015), as well as the increase of medication use with aging, on which alcohol use can have a negative effect (Kuerbis et al., 2014). In comparison to younger adults, there is a lack of data on effective policy and preventive approaches regarding problematic alcohol use in older adults (Anderson et al., 2012).

Currently, prevention and health promotion activities for older adults are mainly based on results in younger age groups (Anderson et al., 2012). A systematic review of qualitative studies on context, barriers and facilitators of drinking in older adults showed that alcohol use in older people, aged 55+, was related to social engagement, social isolation, illness, bereavement, routines, and maintaining identity (Kelly et al., 2018). Information on differences between younger and older adults in prevalence of problematic alcohol use and its risk factors may help tailoring of prevention to the older age group (Khadjesari et al., 2018), since there are interventions that can effectively reduce alcohol consumption in older adults (Armstrong-Moore et al., 2018; Riper et al., 2018).

As heavy drinking in later life is most prevalent in the youngest-old population aged 55 years up to 65–75 years (Anderson et al., 2012; Comijs et al., 2012; Statistics Netherlands, 2016), this Dutch

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population-based study focuses on the differences in drinking pattern between middle aged and older adults (55–70 years) compared to younger adults (23–45 years). The objectives of the present study are 1) to examine the past-year prevalence of problematic alcohol use in older versus younger persons and 2) to explore correlates of problematic alcohol use and especially whether these differ by age group. To our knowledge, this has not been studied in this way before. We hypothesize that heavy alcohol use and alcohol disorders are less prevalent in later life (Hasin and Grant, 2015; Sunderland et al., 2014) but more strongly associated with functional impairment (Sunderland et al., 2014) and health care use due to more impaired somatic health (Oslin et al., 2005).

2. Material and methods

For the current study, data from the third wave (T_2) of NEMESIS-2 were used, which is the most recent measurement. All participants aged 23–70 from this wave were included in the study. NEMESIS-2 is a psychiatric epidemiological cohort study of the Dutch general population. Recruitment at baseline (T_0) was based on a multistage, stratified random sampling of households between November 2007 and July 2009. Of each household, one person aged 18 to 65 years was randomly selected for a computer-assisted face-to-face interview. A total of 6646 persons were interviewed at baseline (T_0) (response rate 65.1%). A comprehensive description of the design has been provided previously (De Graaf et al., 2010). Follow-up assessments took place three years (T_1, n = 5303, response rate 80.4%, with those deceased excluded) (De Graaf et al., 2013) and six years after baseline (T_2, n = 4618, response rate 87.8%) (De Graaf et al., 2015, unpublished). The study was approved by a medical ethics committee. After having been informed about the study aims, respondents provided written informed consent at each wave.

2.1. Alcohol use and alcohol disorder

Alcohol use and alcohol disorder were assessed using the Composite International Diagnostic Interview (CIDI) version 3.0. The CIDI is a fully structured lay-administered diagnostic interview developed for the World Mental Health Survey Initiative (Kessler and Üstün, 2004). The CIDI 3.0 version used in NEMESIS-2 was an improvement of the Dutch one used in this initiative. The CIDI 3.0 has generally good validity for assessing DSM-IV alcohol disorders and other DSM-IV common mental disorders in comparison to blinded clinical reappraisal interviews (Haro et al., 2006). Alcohol disorder refers to alcohol abuse and /or alcohol dependence in the past 12 months.

Alcohol use was based on two CIDI-questions regarding frequency of use (at least 1 drink – every day, nearly every day, 3–4 days a week, 1–2 days a week, 1–3 days a month, or less than once a month) and number of drinks on typical drinking days in the past year. The total number of drinks per week (frequency by amount) was categorized as 1) none (0 drinks weekly), 2) mild (< 8 drinks weekly), 3) moderate (8–14 drinks weekly for women and 8–21 drinks weekly for men), and finally 4) heavy alcohol use (> 14 drinks weekly for women and > 21 drinks weekly for men according to international guidelines (British Medical Association, 1995; Haynes et al., 2005; Verdurmen et al., 2003).

2.2. Risk factors

Potential risk factors for problematic alcohol use have been identified based on previous studies and the biopsychosocial model and will be classified as sociodemographics (gender, age, education level, living situation, job status, and household income situation), physical health (smoking in the past month, physical activity (engaging at least 1 h per week in physical exercise/sport)), Body Mass Index (BMI), and any chronic physical disorder (presence of one or more of 17 chronic physical disorders treated or monitored by a medical doctor in the previous 12 months, assessed with a standard checklist which is comparable with international studies (Von Korff et al., 2005)), and mental health disorders (any 12-month mood disorder (major depression, dysthymia and bipolar disorder) and any 12 month anxiety disorder (panic disorder, agoraphobia without panic disorder, social phobia, specific phobia and generalized anxiety disorder), assessed by the CIDI).

2.3. Health care use

Health care use refers to at least one contact made in the general medical care or mental health care sector for emotional or addiction problems in the 12 months before T_2. General medical care includes general practitioners, mental health nurses, company doctors, social work, home care or district nurses, physiotherapists or haptonomists, medical specialists or other professionals working within this care sector. Mental health care includes psychiatrists, psychologists, psychotherapists, and part-time or full-time psychiatric treatment.

2.4. Role functioning

Role functioning in the past 4 weeks was assessed at T_2 with three subscales of the Medical Outcomes Study Short Form Health Survey (Ware and Sherbourne, 1992) – role emotional functioning, social functioning, and role physical functioning.

Role emotional functioning involves problems at work or in other daily activities as a result of emotional problems (3-item, 2-point scale; Cronbach's alpha = 0.87). Social functioning involves problems in one's normal social activities as a result of somatic or emotional problems (2-item, 6-point scale; Cronbach's alpha = 0.80). Role physical functioning involves problems at work or in other daily activities as a result of physical problems (4-item, 2-point scale; Cronbach's alpha = 0.90). These scales vary from 0 to 100. For the present study these were dichotomized into no impairment (100 = 0) and impaired role functioning (0–99 = 1), because of their skewed distribution.

2.5. Statistical analyses

All analyses were performed with STATA version 12.1 using weighted data to correct for differences in the response rates in several sociodemographic groups at all waves and differences in the probability of selection of respondents within households at baseline. In all analyses, district has been included as a stratum and the municipality code as a primary sampling unit. Robust standard errors were calculated in order to obtain correct 95% confidence intervals and p-values (Skinner et al., 1989).

First, past-year prevalence of alcohol use and alcohol disorder among two age groups were calculated (23–54 years and 55–70 years). Second, for the age group 55+, logistic regression analyses in case of alcohol disorder estimating aORs and multinomial logistic regression analyses in case of alcohol use (no alcohol use, mild alcohol use, moderate alcohol use, heavy alcohol use) estimating aRRRs were performed to examine to what extent problematic alcohol use is associated with sociodemographic characteristics, physical health and mental disorders. In the multinomial logistic regression analyses, mild alcohol use was chosen as reference category. Third, for the age group 55+ logistic regression analyses were performed to examine to what extent problematic alcohol use is associated with role functioning and service use.

To test for differences by age, interaction terms between age group (young versus old) and all determinants were calculated. Only statistically significant interaction terms will be reported in the results section. Two-tailed testing procedures were used with 0.05 alpha levels in the main analyses except the tests to calculate interactions between age group and risk factors on problematic alcohol use and between age group and problematic alcohol use on role functioning and service use, where alpha levels of 0.001 were used because of the larger number of

Table 1
Alcohol use and alcohol disorder across age groups in the general population (N = 4.618), in weighted column (c) and row (r) percentages.

	Total		Alcohol use[a]					Alcohol disorder[b]		
n (%)	4.618 (100)		None 995 (22.0)	Mild 2.630 (57.0)	Moderate 764 (16.3)	Heavy 229 (4.8)	*P value*	No 4.517 (97.0)	Yes 101 (3.0)	*P value*
	n	c %	r %	r %	r %	r %		r %	r %	
Age										
23-54 years mean 40.1 (SE .28)	2698	58.4	21.6	60.9	13.7	3.8		96.1	3.9	
≥ 55 years mean 62.4 (SE .14)	1920	41.6	23.0	49.2	21.2	6.7	< 0.0001	98.7	1.3	< 0.0001
Gender										
Female			30.7	56.5	8.8	4.0		97.9	2.1	
Male			13.3	57.3	23.9	5.6		96.1	3.9	
Education										
Primary education			44.0	38.3	21.5	14.8		95.7	4.3	
Lower secondary			25.8	5.8	57.1	64.0		97.2	2.8	
Higher secondary			21.5	16.3	16.1	17.6		96.5	3.5	
Higher professional, university			14.8	5.1	5.3	3.5		97.8	2.2	
Living situation										
Living with a partner			21.5	57.8	16.8	3.9		98.0	2.0	
Living without a partner			2.4	54.4	15.0	7.2		94.4	5.6	
Job status										
Paid job			18.2	61.0	16.5	4.3		96.8	3.2	
No paid job			31.9	46.4	15.8	6.0		97.5	2.5	
Income										
Enough income to live on			20.9	57.8	16.8	4.5		97.1	2.9	
Not enough income to live on			36.9	45.9	9.8	7.4		95.7	4.3	
Smoking										
Yes			17.8	50.7	22.2	9.3		94.2	5.8	
No			23.5	59.0	14.3	3.3		98.0	2.0	
Physical active										
Yes			17.7	61.5	17.0	3.8		96.7	3.3	
No			29.5	49.1	15.0	6.4		97.5	2.5	
Any chronic physical disorder										
Yes			26.3	52.6	15.8	5.3		98.0	2.0	
No			19.1	59.8	16.6	4.4		96.3	3.7	
Any mood disorder										
Yes			32.4	50.5	10.0	7.1		97.0	3.0	
No			21.5	57.2	16.6	4.7		97.0	3.0	
Any anxiety disorder										
Yes			32.7	53.8	7.7	5.8		94.3	5.7	
No			21.3	57.1	16.9	4.7		97.2	2.8	

[a] None = 0 drinks weekly, Mild < 8 drinks weekly, Moderate 8–14 drinks weekly for women and 8–21 drinks weekly for men, Heavy > 14 drinks weekly for women and > 21 drinks weekly for men.
[b] Based on a DSM-IV diagnosis of alcohol abuse and/or alcohol dependence.

tests.

3. Results

In the 12 months before the interview, 6.7% of the people aged 55–70 reported heavy alcohol use (Table 1). 1.3% met the criteria for a 12-month alcohol disorder. Compared to those aged 23–54, more heavy alcohol use but less alcohol disorders were found among the older age group. Further characteristics of heavy drinkers and people with alcohol disorder are shown in Table 1.

After adjusting for sociodemographic characteristics, risk factors for heavy alcohol use in people aged 55–70 were living without a partner, current smoking, being less physically active and having a 12-month anxiety disorder (Table 2). Testing interaction terms of each determinant with age group showed that only education had a differential effect by age group. In those aged 55–70 a higher education was associated with heavy drinking relative risk ratios (RRR = 17.94, t = 3.49, p = .001, 95% CI = 3.51; 91.69), while in those aged 23–54 a lower education was associated with heavy drinking.

Risk factors for alcohol disorder in the older age group were being male, being between 55–64 years of age (compared to 65+), living without a partner, having not enough income to live on and having no chronic physical disorder (Table 2). None of the interaction terms between age group and any of the determinants were significant, indicating no difference between age group with regard to the risk factors for alcohol disorders.

After adjusting for sociodemographic characteristics, physical health and mood and anxiety disorders, people aged 55–70 with heavy alcohol use or alcohol disorder were not more impaired in functioning compared to those with mild alcohol use or no alcohol disorder (Table 3). There was no difference in association between problematic alcohol use and functioning between both age groups, as the interaction terms with age were all non-significant.

After adjusting for sociodemographic characteristics, physical health, mood and anxiety disorders, older adults with heavy alcohol use did not use general medical nor mental health care services more often compared to mild users (Table 4). Interaction terms showed that the association between heavy alcohol use and general medical or mental health care use did not differ between age groups.

Due to the small number of people with alcohol disorder that used general medical or mental health care, no tests were performed for this group.

4. Discussion

In concordance with our hypothesis, alcohol disorder was less prevalent in middle-aged and older adults (55–70 year) compared to younger adults (23–54 year). Unexpectedly, heavy drinking was more prevalent in the older age group. Amongst reasons for this could be that 1) the older age group was brought up with a more tolerant view on

Table 2
Sociodemographic characteristics, physical health and mental disorders as correlates of alcohol use and alcohol disorder among respondents aged 55 years and older in the general population (n = 1.920), in weighted adjusted relative risk ratios (RRR) or odds ratios (OR). Results of multinomial logistic regression analyses regarding alcohol use and logistic regression analyses regarding alcohol disorder. The reference category in the multinomial logistic regression analyses is mild alcohol use.

	No alcohol use[a]		Moderate alcohol use[a]		Heavy alcohol use[a]		Alcohol disorder[a]	
	n (%)	aRRR[b] [95% CI]	n (%)	aRRR[b] [95% CI]	n(%)	aRRR[b] [95% CI]	n (%)	aOR[b] [95% CI]
Sociodemographic characteristics								
Female gender	592 (30.8)	**1.70** [1.23;2.33]**	269 (14.0)	**0.49*** [0.37;0.66]**	104 (5.4)	0.61 [0.36;1.02]	13 (0.7)	**0.36* [0.16;0.86]**
Age at interview								
55-64		1.18 [0.87;1.59]		0.93 [0.66;1.33]		1.12 [0.56;2.23]		**2.59* [1.12;5.98]**
65+		Ref		Ref		Ref		Ref
Education								
Primary education	753 (39.2)	ref	227 (11.8)	ref	84 (4.4)	ref	19 (1.0)	Ref
Lower secondary	503 (26.2)	0.75 [0.45;1.26]	399 (20.8)	1.66 [0.78;3.53]	134 (7.0)	1.90 [0.56;6.46]	31 (1.6)	2.02 [0.31;13.27]
Higher secondary	445 (23.2)	0.68 [0.38;1.22]	403 (21.0)	1.38 [0.63;3.01]	131 (6.8)	1.74 [0.55;5.51]	23 (1.2)	1.61 [0.20;13.00]
Higher professional, university	265 (13.8)	**0.40** [0.23;0.68]**	486 (25.3)	1.49 [0.71;3.15]	136 (7.1)	1.62 [0.60;4.38]	23 (1.2)	1.60 [0.46;5.58]
p for trend		**0.75*** [0.64;0.87]**		1.04 [0.89;1.23]		1.04 [0.88;1.24]		
Living without partner	609 (31.5)	**1.49** [1.11;2.01]**	265 (13.8)	0.74 [0.54;1.04]	196 (10.2)	**2.38*** [1.54;3.68][c]**	42 (2.2)	**2.29** [1.23;4.26]**
No paid job	522 (27.2)	1.37 [0.99;1.89]	372 (19.4)	1.02 [0.72;1.44]	121 (6.3)	1.11 [0.70;1.75]	21 (1.1)	1.16 [0.47;2.89]
Not enough income to live on	411 (21.4)	**1.78* [1.12;2.83]**	422 (22.0)	0.64 [0.29;1.42]	129 (6.7)	0.65 [0.29;1.50]	19 (1.0)	**2.62* [1.18;5.82]**
Physical health								
Smoking	396 (20.6)	0.97 [0.66;1.44]	499 (26.0)	**1.72** [1.19;2.48]**	228 (11.9)	**2.63*** [1.78;3.90]**	42 (2.2)	1.70 [0.74;3.89]
Physical active	305 (15.9)	**0.42*** [0.31;0.57]**	445 (23.2)	0.86 [0.66;1.13]	104 (5.4)	**0.51* [0.29;0.87]**	25 (1.3)	1.15 [0.43;3.08]
Body mass index		1.04 [0.99;1.07]		**0.96* [0.92;0.99]**		0.96 [0.91;1.02]		0.92 [0.84;1.00]
Any chronic physical disorder	515 (26.8)	**1.51* [1.09;2.09]**	380 (19.8)	1.01 [0.73;1.39]	127 (6.6)	1.25 [0.84;1.84]	15 (0.8)	**0.36** [0.18;0.71]**
Mental disorders								
Any mood disorder	820 (42.7)	2.13 [0.92;4.93]	253 (13.2)	1.03 [0.48;2.22]	186 (9.7)	1.77 [0.69;4.55]	77 (4.0)	2.14 [0.54;8.52]
Any anxiety disorder	1.004 (52.3)	**2.31** [1.29;4.14]**	86 (4.5)	0.41 [0.14;1.22]	180 (9.4)	**2.07* [1.02;4.20]**	63 (3.3)	2.34 [0.61;9.02]

Bold means significant at $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

[a] No alcohol use = 0 drinks weekly, Moderate alcohol use is 8–14 drinks weekly for women and 8–21 drinks weekly for men, Heavy alcohol use is > 14 drinks weekly for women and > 21 drinks weekly for men. Alcohol disorder is based on a DSM-IV diagnosis of alcohol abuse and/or alcohol dependence.

[b] Adjusted for sociodemographic characteristics (gender, age, education, living situation, job status, household income).

[c] For example: this result means that people aged 55+ living without a partner have a higher risk to be in the category heavy alcohol use than to be in the category mild alcohol use compared to people aged 55+ living with a partner.

Table 3
Alcohol use (disorder) categories as correlate of role functioning among respondents aged 55 years and older in the general population (n = 1.920), in weighted adjusted odds ratios (OR). Results of logistic regression analyses.

	Impaired role emotional functioning[a](n = 193; 11.0%)		Impaired social functioning[a](n = 687; 37.4%)		Impaired role physical functioning[a](n = 585; 31.7%)	
	n (%)	aOR[b] [95% CI]	n (%)	aOR[b] [95% CI]	n (%)	aOR[b] [95% CI]
Alcohol use[c]						
Mild	82 (9.5)	Ref	337 (36.7)	Ref	254 (28.6)	Ref
No	72 (19.2)	1.52 [0.95;2.43]	198 (50.4)	1.13 [0.80;1.58]	181 (43.1)	1.03 [0.71;1.49]
Moderate	24 (6.3)	0.71 [0.30;1.65]	111 (25.9)	0.70 [0.48;1.02]	105 (25.3)	1.04 [0.73;1.48]
Heavy	15 (9.4)	0.74 [0.34;1.60]	41 (34.2)	0.82 [0.47;1.44]	45 (36.1)	1.38 [0.77;2.46]
Alcohol disorder[d]						
No	188 (11.0)	Ref	677 (37.3)	Ref	574 (31.5)	Ref
Yes	5 (16.5)	0.86 [0.27;2.77]	10 (44.3)	1.31 [0.57;3.00]	11 (45.5)	2.00 [0.78;5.15]

[a] Measured with the Medical Outcomes Study Short Form Health Survey. Role emotional functioning involves problems at work or in other daily activities as a result of emotional problems. Role social functioning involves problems in one's normal social activities as a result of somatic or emotional problems. Role physical functioning involves problems at work or in other daily activities as a result of physical problems.

[b] Adjusted for sociodemographic characteristics (gender, age, education, living situation, job status, household income) as well as for physical health (current smoking, physical active, body mass index, any chronic physical disorder) and mental disorders (any mood disorder, any anxiety disorder).

[c] None = 0 drinks weekly, Mild < 8 drinks weekly, Moderate 8–14 drinks weekly for women and 8–21 drinks weekly for men, Heavy > 14 drinks weekly for women and > 21 drinks weekly for men.

[d] Based on a DSM-IV diagnosis of alcohol abuse and/or alcohol dependence.

Table 4
Alcohol use (disorder) categories as correlate of service use for mental health problems among respondents aged 55 years and older in the general population (n = 1.920), in weighted adjusted odds ratios (OR). Results of logistic regression analyses.

	General medical care (n = 151; 7.9%)		Mental health care (n = 103; 5.9%)	
	n (%)	aOR[a] [95% CI]	n (%)	aOR[a] [95% CI]
Alcohol use[b]				
Mild	52 (4.9)	Ref	38 (4.0)	Ref
No	54 (14.7)	**2.11*** **[1.18;3.79]**	35 (10.8)	1.48 [0.74;2.96]
Moderate	25 (6.1)	1.42 [0.79;2.52]	18 (4.7)	1.44 [0.72;2.91]
Heavy	20 (11.8)	2.00 [0.91;4.38]	12 (6.9)	1.08 [0.42;2.79]
Alcohol disorder[c]				
No	142 (7.6)	Ref	98 (5.7)	Ref
Yes	9 (30.3)	-[d]	5 (18.7)	-[d]

Bold means significant at $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

[a] adjusted for sociodemographic characteristics (gender, age, education, living situation, job status, household income) as well as for physical health (current smoking, physical active, body mass index, any chronic physical disorder) and mental disorders (any mood disorder, any anxiety disorder).

[b] None = 0 drinks weekly, Mild < 8 drinks weekly, Moderate 8–14 drinks weekly for women and 8–21 drinks weekly for men, Heavy > 14 drinks weekly for women and > 21 drinks weekly for men.

[c] Based on a DSM-IV diagnosis of alcohol abuse and/or alcohol dependence.

[d] No tests were performed due to small numbers.

alcohol, 2) they are unaware of the risks involved in their alcohol use and in the past were told that having just a few drinks is healthy, 3) they have more spare time to drink, and 4) they have less responsibilities regarding work or parenting (Bareham et al., 2019; Kelly et al., 2018).

Explanations for why heavy alcohol use is associated with higher education in older adults could be that they were more accustomed to using alcohol in their working and social life (social drinks) and had a higher income to purchase alcohol and continue their use after retirement (Bareham et al., 2019).

Suggestions for the finding that older heavy drinkers did not experience more impairment in functioning compared to mild older drinkers, and that the association differs from younger heavy drinkers, are that alcohol fulfills a social role for older adults, alcohol use is related to routines and they perceive themselves as responsible drinkers (Bareham et al., 2019; Kelly et al., 2018).

An explanation for the result that healthcare use of heavy drinkers did not differ between age groups could be that our sample was relatively young and that this effect is possibly more pronounced in the oldest old (75+), who are frailer, and thus alcohol use possibly has more physical impact (Arndt and Schultz, 2015; Kuerbis et al., 2014).

Focusing on the results of the older age group, the prevalence rates of alcohol disorder found in the current study were lower than found in previous studies (Castro-Costa et al., 2008; Grant et al., 2017; Pirkola et al., 2006; Sunderland et al., 2014). Regarding heavy drinking, the percentage found in the current study was also lower than those found in previous studies among people aged 55/65+ (Immonen et al., 2011; Merrick et al., 2008). This is probably due to different definitions of heavy alcohol use used in these other studies. Also, the rather conservative national standard for alcohol use in the Netherlands compared to other western countries may have played a part in this finding (Health Council of the Netherlands, 2015; International Alliance for Responsible Drinking (IARD), 2018). A recent report from the World Health Organization (2018) on alcohol showed that alcohol consumption per capita in the Netherlands is somewhat lower compared to other western countries like the United States of America, France, Finland, Belgium and Germany.

No significant sex difference was found in heavy alcohol use compared to mild use, whereas the majority of previous research indicates that older men drink more than older women (Castro-Costa et al., 2008; Immonen et al., 2011; Merrick et al., 2008). In contrast to the current study, no difference in number of drinks was found between men and women, while in the current study men were allowed to have more drinks before they were defined as heavy drinker. A previous Dutch study, which used the same definition for heavy drinking as the current study, showed that older women are more heavy drinkers than older men (Comijs et al., 2012). Together with the current results, this could implicate that the emancipation of women regarding alcohol use started earlier in the Netherlands (Slade et al., 2016).

Some of the most profound risk factors for heavy drinking found in the current study were not living with a partner and smoking. These were also found in previous studies (Blazer and Wu, 2009; Comijs et al., 2012; Immonen et al., 2011; Merrick et al., 2008). The association with anxiety disorder is in line with previous research that found that older adults who use substances for tension reduction are of greater risk for heavy alcohol use (Moos et al., 2009), that problem drinking increases the onset of psychiatric problems (Perreira and Sloan, 2001) and that older adults tend to use alcohol to self-medicate (Immonen et al., 2011). This also points out that in this group professionals should be careful with prescription of anxiolytics and other psychotropic drugs, since alcohol often interferes with the effects of these medications (Anderson et al., 2012; Kuerbis et al., 2014). The combination of the risk factors of smoking and, with a smaller effect, being physically inactive suggests that there is a group of 55–70-year-olds who have an unhealthy lifestyle. A broad and general approach on healthy living could possibly stimulate these older adults to decrease their alcohol use.

4.1. Strengths and limitations

Strengths are that NEMESIS-2 makes use of a nationwide, representative sample with a large group of respondents from 23 to 70 years of age. Standardized and diagnostic instruments were used to determine alcohol use (disorder). A lot of risk factors and confounders could be used in the analyses. Also, comparison to a younger age group could be made. Limitations of NEMESIS-2 are that people who do not speak the Dutch language sufficiently are underrepresented in the data. The same holds for people without a permanent residence or people who make use of inpatient care (general hospital, or clinic for mental health care or addiction care) for a longer period of time. The results cannot be generalized to these groups. Also, data on alcohol use are based on self-report, and alcohol use is often underreported by people (Comijs et al., 2012). The prevalence of heavy drinkers might therefore be an underestimation of the real percentage. Furthermore, the number of people with an alcohol disorder in the sample was very small. This could have led to non-significant results in determining risk factors and the association with service use. It is possible that the limited utility of the DSM-IV criteria for alcohol disorder in older adults may have added to the low prevalence found (Arndt and Schultz, 2015; Patterson and Jeste, 1999). For example, one criterion is an increased tolerance of alcohol, but older adults have a lowered tolerance due to changes in metabolism and increased medication use. Also, criteria for abuse like contact with judicial authorities and a decrease in social roles do not match the situation of older adults. Finally, data on the older old (older than 70 years) cannot be derived from NEMESIS-2. Therefore, results are not generalizable to the total population of older adults.

5. Conclusions

The current study offered unique contributions to the existing literature on alcohol use in older adults, suggesting that, in contrast to younger adults, preventive activities on heavy alcohol use in older adults should focus on the higher-educated. Preventive activities that have known benefit for people aged 55+ in reducing alcohol consumption are brief interventions (Armstrong-Moore et al., 2018) and internet interventions (Riper et al., 2018). Given the high prevalence of

heavy drinking in later life, implementing SBIRT (Screening, Brief Intervention, and Referral to Treatment) seems relevant for this older age group (Wamsley et al., 2018). However, more research is needed on effective components of these interventions for older adults and which interventions are best suited for whom.

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Contributors

MV – literature search, study design, interpretation of data, writing of manuscript. MtH – study design, statistical analysis and interpretation of data, writing and critical review of manuscript. SvD – statistical data analysis and interpretation, tables. ROV – study design, writing and critical review of manuscript. DR – critical review of manuscript.

BW – study design, critical review of manuscript. All authors have contributed to and approved the final article.

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