Increased alcohol use over the past 20 years among the oldest old in Sweden

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ABSTRACT
AIMS – Increased alcohol consumption among old people, reported in many countries, will likely present a major challenge to public health and policy in the future. In Sweden, current knowledge about old people’s alcohol consumption is incomplete because of limited historical data and a dearth of nationally representative studies. We describe the frequency of alcohol consumption among the oldest old in Sweden over a 20-year period by sex, age, education, living situation, mobility and Activities of Daily Living. METHODS – We used repeated cross-sectional survey data from the Swedish Panel Study of Living Conditions of the Oldest Old (SWEOLD), conducted in 1992, 2002 and 2011. The samples were nationally representative of the Swedish population aged 77+, with response rates of 95.4%, 84.4% and 86.2% (total n=2007). Self-reported consumption frequency was measured with the question “How often do you drink alcoholic beverages, such as wine, beer or spirits?” RESULTS – Frequency of alcohol consumption increased among the oldest old from 1992 to 2011. The proportion reporting no or less-than-monthly alcohol consumption decreased, whereas the proportion reporting weekly consumption increased. This was true for men, women and most age and educational groups. The period change in consumption frequency was not explained by changes in demographic factors, living situation or functional capacity during the study period. CONCLUSIONS – Alcohol use increased among the oldest old in Sweden during the 20-year study period. More liberal attitudes toward alcohol could contribute to the increased use. The increase in weekly alcohol consumers suggests an increase in the number of older risk consumers.

KEYWORDS – alcohol consumption, trends in consumption frequency, the oldest old, socio-demographic groups, nationally representative sample.

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Introduction
The populations of European countries and many countries outside Europe are aging rapidly. Because of declining mortality rates and decreasing fertility rates, the absolute and relative numbers of people over the age of 65 have increased. People 80 years and older are the fastest growing age group in Sweden. According to prognoses,

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they will constitute about 8% of the population within 20 years (Statistics Sweden, 2013). More people will have the opportunity to live an active life and maintain their lifestyle habits and living conditions even at advanced ages. The age group 80 years and older thus makes up an important group in society, with needs and preferences that sometimes differ from those of previous cohorts. In this article, we will explore and discuss one such preference that is important to health and public policy, alcohol consumption and specifically alcohol consumption among the oldest old in Sweden over the last 20 years.

During recent years, increased attention has been paid to older people’s alcohol consumption, which many countries report to be increasing among people 65 years and older. The results of some studies have prompted rising concern that alcohol use disorders and harm will increase among old people both in Europe and worldwide (Hallgren, Högborg, & Andréasson, 2009, 2010; O’Connell, Chin, Cunningham, & Lawlor, 2003; Sulander, Helakorpi, Rahkonen, Nissinen, & Uutela, 2004a), although the results of other studies suggest that the increase in alcohol consumption is only moderate and that there is no indication of any alarming trends (Jyrkämä & Haapamäki, 2008).

Little is known, however, about the drinking behaviours of people 80 years and older, in part because they are often excluded from studies of alcohol consumption, but perhaps also because of the notion that older people do not drink alcohol (Hallgren et al., 2010; Jyrkämä & Haapamäki, 2008). Nevertheless, studies from Finland show that alcohol consumption is also prevalent among those over 80 years old (e.g. Immonen, Valvanne, & Pitkala, 2011a).

In Sweden, historical national data about older people’s alcohol consumption is available from the late 1980s but is restricted to individuals aged 50 to 74. In line with the general trend in Sweden, increasing alcohol consumption was reported in this age group between 1990 and 2002 (Ramstedt, 2009). Since 2001, survey data on alcohol consumption have been collected monthly from 16–80-year-olds in the Swedish population (the Monitor project). The results suggest increased alcohol use among those aged 65 to 80 during the first decade of the twenty-first century, a finding that contrasts with the general trend in Sweden (Ramstedt & Raninen, 2012; Ramstedt, 2009). Questions about alcohol consumption are also included every 8 years in the Swedish Living Conditions Surveys (ULF/SILC). Results suggest increased alcohol consumption among 75–84-year-olds in 1996–97 and 2004–05 (Statistics Sweden, 2007). However, the previously used upper age limit of 84 years limits analyses of trends over time among the oldest age groups.

In addition to setting upper age limits that exclude the oldest old, many studies of alcohol consumption combine older adults into one age group, usually 65 years and older. This population has an age span of over 30 years and comprises a heterogeneous group with substantial diversity and inequality. Life after 65 usually contains a number of socially and physically active years free of health problems and disability, but at the end of life there is typically a period of frailty and disability that includes considerable use of medication and living in an institution. Consumption pat-
terns and alcohol-related harm are therefore likely to vary with age even within the 65 plus population, where alcohol consumption has typically been described as decreasing with age (Chan, Neighbors, Gilson, Larimer, & Marlatt, 2007; Hallgren et al., 2010; Jyrkämä & Haapamäki, 2008; Sulander et al., 2004a).

Drinking patterns vary by sex and socio-economic factors. In all age groups, women tend to consume less alcohol than men, and this pattern is stable across different countries (Ahlström, 2008). In several European countries, alcohol consumption, including heavy drinking behaviour, has been associated with higher education, although the strength of the association varies as a function of sex and country (Ahlström, Bloomfield, & Knibbe, 2001; Bloomfield, Grittner, Kramer, & Gmel, 2006). It has also been suggested that the association between alcohol consumption and higher socio-economic position persists even into old age (Immonen, Valvanne, & Pitkälä, 2011a; Sulander et al., 2004a), but to the best of our knowledge, the possibility that such an association may also exist in Sweden is as yet unexplored.

Sex and socio-economic factors are also related to health. Research consistently shows socio-economic inequalities in health among older people; poorer health and function and higher mortality rates are found in individuals with lower socio-economic position (Fors, Lennartsson & Lundberg, 2007; 2011; Fors, Modin, Koupil, & Vågerö, 2012; Huisman, Kunst & Mackenbach, 2003; House, Lantz & Herd, 2005), and older women have poorer health than men but live longer (Austad, 2006; Lennartsson & Lundberg, 2007).

The association between functional capacity (which includes mobility and the ability to manage activities of daily living) and alcohol consumption has typically been described as J- or U-shaped: poor functional capacity is most common among abstainers and/or heavy drinkers (Cawthon et al., 2007; Lee et al., 2009). In old age, poor functional capacity is also associated with living in an institution. The number of old people living in institutions depends on current social politics, which affect the threshold for admission to institutional care. The likelihood that a person living in an institution will consume alcohol may also be affected by the institution’s alcohol policy. Accordingly, alcohol consumption in old age is likely related to the functional capacity of the elderly population and to the number of individuals living in institutions.

The demographic change toward an aging population, in combination with the fact that younger birth cohorts with different alcohol habits are reaching old age, underscores the importance of including the oldest section of the population in alcohol research. However, as people grow older, increasing numbers find it difficult to participate in surveys because of physical or cognitive impairments. To date, there have been few nationally representative studies on alcohol consumption among the oldest old that include people in institutions and those who have poor health.

Using our experience in conducting surveys of old people in the field of social gerontology, we aim to explore alcohol consumption among the oldest old in Sweden. We will use nationally representative data on people 77 years and older to explore 1) whether or not consumption frequency increased among the oldest old from 1992 to 2011; 2) whether the trend over time is
similar regardless of sex, age, education, living situation (living in the community vs. living in an institution), mobility and the ability to carry out Activities of Daily Living; and 3) whether the trend is associated with societal changes such as demographic factors, living situation or functional capacity during the study period.

**Methods**

**Data**

The study used repeated cross-sectional data from the Swedish Panel Study of Living Conditions of the Oldest Old (SWEOLD), a nationally representative survey of individuals 77 years and older that has thus far been conducted in 1992, 2002 and 2011. The survey covers a wide range of topics, such as health, health behaviours and living conditions. SWEOLD is based on probability samples and provides a unique database. Because it includes institutionalised individuals, uses indirect interviews and has achieved high response rates, individuals are represented in SWEOLD regardless of health, possible cognitive impairments and living situation.

Most participants (70%) were interviewed face-to-face. In addition, indirect interviews (proxy interviews) were performed when the older person was too frail or cognitively impaired to participate (19%). Proxies were close relatives or health care personnel who knew the participant well. Telephone interviews were primarily used for the proxy interviews, but were also occasionally used as an alternative when a respondent refused a visit (8%). In the 2011 wave, a shorter version of the questionnaire was sent by post to those who refused an interview (3%). The nonresponse rates in SWEOLD ranged between 4.6% and 15.6% (Table 1). Item nonresponse reduced the total study sample from 2061 to 2007 individuals. A more thorough description of the SWEOLD study, and the level of representativeness, can be found elsewhere (Kelfve, Thorslund & Lennartsson, 2013; Lennartsson et al., 2014).

**Measurements**

Self-reported frequency of alcohol consumption was measured by the question “How often do you drink alcoholic beverages such as wine, beer or spirits?” Because of the small sample size, the original seven categories (never, 1–6 times/year, 1 time/month, 2–3 times/month, 1–2 days/week, 3–4 days/week, 5–7 days/week) were collapsed into “never/seldom”, “monthly” and “weekly” in all subsample analyses.

Sex and age were registered in the sampling process. Because of the small sample size, age was categorized as 77–79, 80–84 and 85+.

Level of education was measured by highest attained level of education. The categories were compulsory, intermediate (e.g., vocational education or upper secondary school) and university.

Living situation refers to whether the older person was living in the community or in an institution. Institutions included any type of nursing home, retirement home or group living arrangement with service around the clock. In Sweden, people move to an institution only after a needs assessment in the municipality where they reside.

We used two measures of functional capacity: mobility and Activities of Daily Living or ADLs, both of which are commonly used indicators of health in surveys of old people.

The term mobility problems is a dichoto-
mous measure of at least one self-reported mobility problem (difficulty walking 100 metres fairly briskly or difficulty walking up and down stairs). In the multivariate analyses the measure was given linear representation (None, 1 or 2 mobility problems).

The term ADL limitations is a measure of self-reported problems with ADLs (eating, using the toilet, dressing, getting up/going to bed and washing one’s hair). ADL limitations are usually a consequence of physical or cognitive health problems (Schön, Parker, Kåreholt, & Thorslund, 2011). We have dichotomised the measure into managing all ADLs independently or having problems with one or more ADLs. In this study, it is more relevant to capture the difference between independence and dependence rather than the number of problems.

Analysis
Initially, we described the structure of the Swedish population aged 77 years and older in each survey year by sex, age, education, living situation, mobility and ADL. To test whether the frequency of alcohol consumption increased over time, we first calculated relative risks for each frequency category between 1992 and 2011. To further analyse whether the trend over time was similar regardless of sex, age, education, living situation and functional capacity, subsample analyses were conducted using collapsed frequency categories because of the small sample size. Changes in weekly consumption from 1992 to 2011 were calculated by determining relative risks.

Using ordered logistic regression, we then investigated whether increased consumption frequency was associated with changes in the distribution of demographic factors, living situation or functional capacity in the Swedish population during the study period. The odds ratios should be interpreted as the ratios of the odds of reporting (one level) more frequent alcohol consumption.

Finally, the predicted probabilities of reporting weekly alcohol consumption, adjusted for age, educational level, living situation and functional capacity, were calculated from a binary logistic regression model. The results are presented separately for men and women in a graph. STATA software was used in all analyses. To correct for varying probability of inclusion, sample weights were used in all analyses.

Results
Table 1 shows the structure of the Swedish population aged 77 years and older in each survey year. Because women live longer than men, the samples included some 60% women and 40% men. Increased survival to older age affected the age structure of the samples, generating a greater percentage of the sample in the older age groups in 2011 than in 1992. The development of the educational system in Sweden during the mid-1900s was reflected in changes in educational level during this 20-year period: the percentage of people with only a compulsory school education decreased significantly from 1992 to 2011, while there was an increase of the percentage with intermediate or university education. There was no clear pattern regarding living situation and functional capacity over the study period. The percentage of people living in an institution or with ADL limitations remained fairly stable over time, and except for some fluctuation, the percentage of people with mobility problems increased over time. That is, more individu-
als reported problems climbing stairs or walking 100 metres in 2011 than in 1992. Because the SWEOLD surveys used probability samples with no exclusion criteria and achieved high response rates, we regard the distribution of sample characteristics as good approximations.

The self-reported frequency of alcohol consumption among those aged 77 and older is shown in Table 2. Over time, more individuals reported weekly consumption, and fewer individuals reported consuming alcohol never or seldom. From 1992 to 2011, abstention rates decreased from 40.9% to 30.4%, a relative decrease of 25%. Simultaneously, the percentage of people who reported weekly consumption doubled in all frequency categories of weekly consumption. In 1992, 3.6% of the oldest old in Sweden reported almost daily alcohol consumption; in 2011, the figure was 7.1%.

Subsample analyses using collapsed frequency categories are shown in Table 3. In general, the percentage of individuals 77 years and older in Sweden who reported weekly consumption doubled during the period, from 15% in 1992 to 29% in 2011. During the same period, those who reported that they never or seldom consumed alcohol decreased by 9 percentage units. Most of the change occurred between 2002 and 2011.

As expected, less frequent alcohol con-

Table 1. Descriptive statistics (%).

| Survey year | 1992 | 2002 | 2011 |
|-------------|------|------|------|
| Response rate % | 95.4 | 84.4 | 86.2 |
| Study sample | 530 | 611 | 866 |
| Sex | |
| Men | 39.2 | 40.4 | 37.5 |
| Women | 60.9 | 59.6 | 62.5 |
| Age | |
| 77–79 | 32.3 | 25.4 | 27.0 |
| 80–84 | 39.2 | 39.0 | 37.3 |
| 85+ | 28.6 | 35.7 | 35.7 |
| Level of education | |
| Compulsory | 76.9 | 68.3 | 57.7 |
| Intermediate | 20.7 | 28.5 | 37.5 |
| University | 2.4 | 3.3 | 4.8 |
| Living situation | |
| Living in community | 88.4 | 85.1 | 88.5 |
| Living in institution | 11.6 | 14.9 | 11.5 |
| Mobility problems | |
| No | 54.0 | 39.9 | 46.1 |
| Yes | 46.0 | 59.4 | 53.7 |
| ADL limitations | |
| No | 72.8 | 68.7 | 75.7 |
| Yes | 27.0 | 30.9 | 23.6 |
| Total % | 100.0 | 100.0 | 100.0 |

* refers to the sample size after excluding individuals with item nonresponse (54 individuals).

Table 2. Self-reported frequency of alcohol consumption among people aged 77 years and older in Sweden in 1992, 2002 and 2011 (%).

| | 1992 | 2002 | 2011 | Δ1992–2011 | P-value |
|---|------|------|------|------------|---------|
| Never | 40.9 | 36.8 | 30.4 | 0.7 | 0.000 |
| 1–6 times/year | 25.1 | 25.0 | 23.0 | 0.9 | 0.458 |
| 1 time/month | 11.8 | 9.8 | 10.1 | 0.9 | 0.352 |
| 2–3 times/month | 7.0 | 10.5 | 7.3 | 1.0 | 0.847 |
| 1–2 days/week | 8.6 | 10.2 | 15.3 | 1.8 | 0.003 |
| 3–4 days/week | 3.1 | 3.0 | 6.8 | 2.2 | 0.004 |
| 5–7 days/week | 3.6 | 4.8 | 7.1 | 2.0 | 0.056 |

* Change between 1992 and 2011, calculated as relative risk.

\[^{b}\] P-values for relative risk.
|                | 1992 |       |       | 2002 |       |       | 2011 |       |       | Δ1992–2011 | P-value  |
|----------------|------|-------|-------|------|-------|-------|------|-------|-------|------------|----------|
|                | Never/Seldom | Monthly | Weekly | Never/Seldom | Monthly | Weekly | Never/Seldom | Monthly | Weekly |            |          |
| **Sex**        |      |       |       |      |       |       |      |       |       |            |          |
| Men            | 52.0 | 24.5  | 23.6  | 49.4 | 21.5  | 29.2  | 38.4 | 20.2  | 41.4  | 1.8        | 0.001    |
| Women          | 75.0 | 15.2  | 9.8   | 70.3 | 19.5  | 10.2  | 62.4 | 15.7  | 21.8  | 2.2        | 0.001    |
| **Age**        |      |       |       |      |       |       |      |       |       |            |          |
| 77–79          | 63.5 | 17.5  | 19.1  | 50.3 | 27.7  | 21.9  | 43.1 | 24.0  | 32.9  | 1.7        | 0.042    |
| 80–84          | 62.5 | 24.0  | 13.5  | 62.2 | 19.3  | 18.5  | 46.8 | 17.8  | 35.5  | 2.6        | 0.000    |
| 85+            | 73.7 | 13.2  | 13.2  | 69.7 | 16.1  | 14.2  | 68.1 | 12.1  | 19.8  | 1.5        | 0.076    |
| **Level of education** |      |       |       |      |       |       |      |       |       |            |          |
| Compulsory     | 71.8 | 16.4  | 11.8  | 70.0 | 18.5  | 11.5  | 65.6 | 16.6  | 17.8  | 1.5        | 0.034    |
| Intermediate   | 50.4 | 28.9  | 20.7  | 47.1 | 25.3  | 27.6  | 39.7 | 18.9  | 41.4  | 2.0        | 0.010    |
| University     | 14.3 | 7.1   | 78.6  | 20.0 | 15.0  | 65.0  | 13.9 | 15.7  | 70.4  | 0.9        | 0.537    |
| **Living situation** |      |       |       |      |       |       |      |       |       |            |          |
| Living in community | 62.9 | 20.1  | 17.0  | 57.7 | 22.9  | 19.4  | 50.3 | 17.8  | 31.9  | 1.9        | 0.000    |
| Living in institution | 89.7 | 8.8   | 1.5   | 85.7 | 5.5   | 8.8   | 77.5 | 14.4  | 8.2   | 5.6        | 0.102    |
| **Mobility problems** |      |       |       |      |       |       |      |       |       |            |          |
| No             | 57.6 | 23.1  | 19.3  | 48.8 | 26.6  | 24.6  | 40.1 | 22.2  | 37.7  | 2.0        | 0.000    |
| Yes            | 75.8 | 13.8  | 10.4  | 70.8 | 15.7  | 13.5  | 64.7 | 13.4  | 22.0  | 2.1        | 0.000    |
| **ADL limitations** |      |       |       |      |       |       |      |       |       |            |          |
| No             | 62.2 | 20.2  | 17.6  | 53.6 | 25.0  | 21.4  | 46.3 | 18.8  | 34.9  | 2.0        | 0.000    |
| Yes            | 76.6 | 14.6  | 8.9   | 79.9 | 10.1  | 10.1  | 75.6 | 13.6  | 10.9  | 1.2        | 0.537    |
| **Total**      | 66.0 | 18.8  | 15.2  | 61.9 | 20.3  | 17.8  | 53.4 | 17.4  | 29.2  | 1.9        | 0.000    |

*a* Change between 1992 and 2011, calculated as relative risk.

*b* P-values for relative risk.
sumption was associated with female sex, higher age, lower education, living in an institution and limited functional capacity. However, all subgroups reported increased consumption frequency over time. The only exception were people with a university education; no pattern of increased consumption was found in this group. The group of people with a university education reported considerably more frequent alcohol consumption than those with lower education in all three survey years, but the proportions remained fairly stable over time. This group included a small number of individuals, which made the estimates more unreliable.

In all subgroups except those with a university education, the percentage of weekly consumers was higher in 2011 than 1992 (see the last column in Table 3). Notably, the increase in weekly consumers was greater among women than men, which reflected the substantial change in weekly consumers among women that occurred between 2002 and 2011. Moreover, although living in an institution was associated with less frequent alcohol consumption in all three survey years, the greatest increase in weekly consumers was found among people living in institutions (1.5% in 1992 to 8.2% in 2011).

The increase in the frequency of alcohol consumption from 1992 to 2011, shown in the first model in Table 4, was not explained by changed distribution in sex and age (Model 2) or level of education (Model 3). Living in an institution and the presence of mobility problems and/or ADL limitations explained some of the association between alcohol consumption and age and between alcohol consumption and sex. However, the period change remained significant: the results of Model 4 indicated that no substantial part of the period change in consumption frequency was related to changes in the distribution of demographic factors, living situation or functional capacity during the study period.

Interaction effects for alcohol consumption were found between period and age (p-value 0.083), and period and ADL (p-value 0.074). They indicated that the increase over time was lower among the oldest age group and that the negative association between ADL-limitation and alcohol consumption was stronger in 2002 and 2011 compared with 1992. When included simultaneously in Model 4 (not shown), only the interaction term between period and ADL-limitation was still present (p-value=0.013). The interaction term was not included in the models because it did not change the interpretation – the increased consumption patterns over the time period remained significant and were not affected – indicating only that having an ADL-limitation was less related with alcohol consumption in 1992 than it was in 2002 and 2011.

As illustrated in Figure 1, the probability of a man reporting weekly alcohol consumption (adjusted for age, educational level, living in an institution and functional capacity) increased from 22% in 1992 to 36% in 2011. The corresponding figures for women were 12% in 1992 and 21% in 2011. Thus, during the study period, the probability of reporting weekly consumption increased by 64% among men and 75% among women.

Discussion

Summary of results and study limitations
Self-reported frequency of alcohol con-
Table 4. Odds ratios (ORs) of higher frequency (never/seldom, monthly, and weekly) of alcohol consumption among people aged 77 years and older in Sweden (from ordered logistic regression).

|                  | Model 1 |          | Model 2 |          | Model 3 |          | Model 4 |          |
|------------------|---------|----------|---------|----------|---------|----------|---------|----------|
|                  | OR      | 95%CI    | OR      | 95%CI    | OR      | 95%CI    | OR      | 95%CI    |
| **Period**       |         |          |         |          |         |          |         |          |
| 1992             | Ref (1) |          | Ref (1) |          | Ref (1) |          | Ref (1) |          |
| 2002             | 1.19    | 0.92;1.54| 1.26    | 0.97;1.64| 1.16    | 0.88;1.52| 1.26    | 0.95;1.66|
| 2011             | 1.85    | 1.43;2.38| 2.05    | 1.58;2.67| 1.70    | 1.29 2.24| 1.79    | 1.35;2.37|
| **Sex**          |         |          |         |          |         |          |         |          |
| Women            | Ref (1) |          | Ref (1) |          | Ref (1) |          |         |          |
| Men              | 2.61    | 2.13;3.2 | 2.28    | 1.84;2.82| 2.15    | 1.74;2.67|         |          |
| **Age**          |         |          |         |          |         |          |         |          |
| 77–79            | Ref (1) |          | Ref (1) |          | Ref (1) |          |         |          |
| 80–84            | 0.90    | 0.70;1.16| 0.92    | 0.71;1.20| 0.99    | 0.76;1.29|         |          |
| 85+              | 0.51    | 0.39;0.67| 0.54    | 0.41;0.71| 0.74    | 0.56;0.98|         |          |
| **Level of education** |       |          |         |          |         |          |         |          |
| Compulsory       | Ref (1) |          | Ref (1) |          |         |          |         |          |
| In between       | 2.46    | 1.96;3.09| 2.29    | 1.82;2.89|         |          |         |          |
| University       | 10.73   | 5.94;19.41| 9.30   |          |         |          |         |          |
| **Living situation** |      |          |         |          |         |          |         |          |
| Community dwelling | Ref (1) |          |         |          |         |          |         |          |
| Institutional living |       | 0.47 | 0.30;0.72 |         |          |         |          |          |
| **Mobility problems** |      |          |         |          |         |          |         |          |
| Linear           |       | 0.74 | 0.65;0.85 |         |          |         |          |          |
| **ADL limitation** |      |          |         |          |         |          |         |          |
| None             | Ref (1) |          |         |          |         |          |         |          |
| Yes              | 0.77    | 0.56;1.04|         |          |         |          |         |          |

consumption increased among the oldest old in Sweden during the period 1992 to 2011; the largest increase occurred between 2002 and 2011. The proportion of people who reported never or seldom consuming alcohol (that is, consuming it less often than monthly) decreased, and weekly consumption increased. The increase was seen both among men and women, in all age groups and in all educational groups except those with a university education, in whom rates of weekly consumption remained high yet stable over time. Men reported more frequent consumption than women, and high education and lower age were associated with more frequent consumption. The lowest level of weekly consumers was found in the group of people living in institutions; however, this group showed the greatest increase in weekly consumers over the study period. The change over time in consumption frequency was not explained by changes in demography, living situation or functional capacity (ADL limitations and mobility problems) during the study period.

To the best of our knowledge, this is the first study to analyse alcohol consump-
tion among the oldest old in Sweden over time on a national level and with no upper age-limit. The results are in line with a recent study, based on a sample from the Swedish city of Gothenburg, where the proportion of abstainers decreased significantly among 75-year-old men and women in 1976–2006 (Waern, Marlow, Morin, Östling & Skoog, 2014). The results are also in line with the results of studies on alcohol consumption in younger adults, which have reported increases in alcohol consumption among people aged 50 years and older, as they show that during the last two decades, alcohol consumption also increased among people 77 years and older.

In this study, we have examined alcohol consumption frequency over time. The alcohol questions included in SWEOLD do not give us the opportunity to measure the exact volume of consumption over time. Surveys of the oldest old are normally characterised by high and nonrandom nonresponse (Kelfve et al., 2013). Thus, the high level of representativeness of this interview group has been a strength of this study.

Because we only had access to data on consumption frequency, we could not capture exact changes in drinking patterns. For instance, it was not possible to ascertain whether the volume of alcohol that participants consume increased during the study period. It could be that it did not; in other words, that the same amount of alcohol consumption that was previously concentrated on weekends is now spread out evenly across the week. However, the hypothesis that binge drinking behaviour
patterns in the general population have been replaced with Mediterranean drinking patterns finds no support in the Swedish literature (Ólafsdóttir, 2013; Tryggvesson, 2013). If this is also true among old people, the increased consumption frequency would reflect an increase in total alcohol consumption in the group, but without additional data we can neither be sure of this nor ascertain the magnitude of the possible increase.

The aim of this paper has been to give a broad overview of the changes in alcohol consumption that have occurred among the oldest old in Sweden. Nevertheless, measuring trends in alcohol consumption always raises the question whether the trend is an effect of age, period or cohort. Because the age structure in the samples is equal, with the exception of a higher proportion of individuals 85 years and older in 2002 and 2011, we conclude that the trend is not likely to be an age effect. The structure of the longitudinal data (with 10 years between the surveys) offers limited possibilities for investigating whether the reason behind the increase in consumption is a period effect or cohort differences. What we do know is that today’s older people report more frequent alcohol consumption than people of the same age 20 years ago, but the reason behind the increase can only be discussed in this paper on the basis of previous research and speculation.

Why has drinking increased among older people?
Older people’s living situation, health status and health-related behaviours can be attributed to the complex accumulation of exposures and behaviours over the life course, which in turn have been influenced by time and context (Ferraro & Shippee, 2009). Older people born during the first decades of the twentieth century have experienced several changes in social policy, social and gender norms, the changes wrought by the women’s rights movement, economic development and globalisation (e.g. Hernes, 1987). Societal changes have different impacts on each birth cohort, which depend on how old the cohort members are when the event occurs. Social and economic policy shape a cohort’s living conditions and, consequently, members’ health, health behaviours and well-being in late life (e.g. Lundberg, et al., 2008). Thus, the pattern of health-related behaviours such as alcohol consumption is unique for each old age cohort and each time period.

The consumption trend among older individuals contrasts with that of the general population in Sweden, where alcohol consumption has been decreasing among people 50 years and under since 2004 (Raninen, Leifman, & Ramstedt, 2013). There is no single explanation for the increased alcohol use among old people, and explanations based on existing data remain limited and speculative.

One hypothesis builds on the idea that recent cohorts of older adults have more liberal attitudes towards alcohol than earlier cohorts. Younger generations developed their alcohol habits during a period of more liberal alcohol policy than older generations and have consumed more alcohol throughout their lives (Norström & Ramstedt, 2006). Previously, researchers have reported that in Sweden, abstention rates among older people decrease when younger cohorts with different alcohol habits reach old age (Ahacic, Kennison, & Kåreholt, 2011).
Younger cohorts are also characterised by higher educational levels (Batljan & Thorslund, 2009). In our results, however, the higher educational levels of later cohorts only marginally explained increased consumption frequency. Moreover, an increase in consumption frequency was also reported in the group with the lowest level of education.

A related explanation is the better health of recent cohorts, which may enable them to continue their earlier drinking habits into very old age (Fors, Lennartsson, Agahi, Parker, & Thorslund, 2013). However, although age differences diminished when health-related variables were added to the analyses, the difference in alcohol consumption between the 1992 and 2011 surveys remained significant even after adjustment for living in an institution, ADL limitations and mobility problems. Hence, it is unlikely that health differences between cohorts are the main explanation of increased alcohol consumption in old age.

Changing alcohol consumption patterns in the older population may also reflect more liberal societal attitudes toward alcohol consumption. Alcohol is generally more accessible today than 20 years ago (Norström & Ramstedt, 2006). It is also more socially acceptable for certain groups, such as women and older persons, to drink alcohol now than it was previously (Ahlström, 2008; Bloomfield et al., 2006), which may in turn affect informants’ readiness to report alcohol consumption. Self-reported alcohol consumption is sensitive to under-reporting (Greenfield & Kerr, 2008). The likelihood that a person will report alcohol consumption may also vary across socio-demographic groups as a function of societal acceptance and attitudes. We cannot rule out the possibility that some of the increase in the frequency of alcohol consumption over time is due to a greater tendency to report alcohol consumption in 2011 than in 1992. However, the crude alcohol question in SWEOLD cannot be considered particularly sensitive or value-laden, and the magnitude of the increase found in this data is unlikely to have occurred only as an effect of increased willingness to report alcohol consumption.

Regardless of the reason behind the changed consumption pattern, period and/or cohort effect, old people in Sweden report substantially more frequent alcohol consumption than previous generations did at the same age.

Old-age drinking and society
Little is known about the overall effects of increasing alcohol consumption among the oldest old on a population level. There are reports on alcohol use for medicinal purposes among old people, such as for cardiovascular diseases, sleep disturbances and indigestion (Immonen, Valvanne, & Pitkälä, 2011b). At the same time, older adults are more sensitive to alcohol than younger individuals. Medications are more common among older persons, and interactions between medications and alcohol may cause problems. In addition, the risk of falls and accidents increases in old age, as does the risk of disease-related complications. Consuming the equivalent amount of alcohol may therefore be more harmful to older than to younger individuals and may affect health in a number of negative ways (Heuberger, 2009; Sorocco & Ferrell, 2006). Further, while poor functional capacity, such as ADL-limitations,
has been reported more frequently among abstainers and/or heavy drinkers (Cawthon et al., 2007; Lee et al., 2009; Sulander, Martelin, Rahkonen, Nissinen, & Uutela, 2004b), the causal pathways between alcohol consumption and functional capacity are still unclear.

According to previous research, an increase in the number of weekly alcohol consumers also suggests an increase in the number of risk consumers (Engdahl & Ramstedt, 2010). In Sweden, there are signs of increasing alcohol-related problems among old people. Among those aged 60 and older, a significant increase has been reported in alcohol-related deaths (Hallgren et al., 2010) as well as in alcohol-related hospitalisations and suspected cases of drunk driving (Ramstedt & Raninen, 2012).

People 80 years and older constitute a significant part (5.2%) of the Swedish population, a total of more than half a million people. Regardless of improvements in the health of older people, the growing number of older people will increase the demand for medical and long-term care. We have limited knowledge about how to cope with an aging population that includes an increasing number of individuals with alcohol-related problems. The public home-help services have reported difficulties in the daily care of older people who have alcohol problems. Municipalities have no guidelines for dealing with older people with such problems, and care workers lack training in this area (Gunnarsson, 2013).

Conclusions

In general, older individuals consume less alcohol than individuals in younger age groups. However, older people today consume alcohol more frequently than they have in previous generations. In addition, they live in a society with more liberal attitudes toward alcohol, where moderate alcohol intake is assumed to be beneficial to health (Heuberger, 2009). Given that we are living longer, alcohol habits are bound to have a greater impact at both the individual and societal level. Individuals will also have a longer period of time in which to develop hazardous alcohol behaviour in old age.

The increase in the numbers of weekly consumers of alcohol among the oldest old in the population suggests an increase in the numbers of older risk consumers. Considering the rapid rise in both the number of older individuals and the proportion of older people in the population, these changes in consumption patterns may have widespread consequences.

Declaration of interest None.

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