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*European Journal of Public Health*, Vol. 24, No. 4, 561–565

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 doi:10.1093/eurpub/cku060 Advance Access published on 21 May 2014  
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## Youth exposure to alcohol advertising on television in the UK, the Netherlands and Germany

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**Background:** Exposure of young people to alcohol advertising is a risk factor for underage drinking. This study assessed youth exposure to television alcohol advertising in the UK, the Netherlands and Germany, from December 2010 to May 2011. **Methods:** A negative binomial regression model predicted number of alcohol advertisements from the proportion of the television viewership in each age group. This allowed comparison of alcohol advertisement incidence for each youth age category relative to an adult reference category. **Results:** In the UK, those aged 10–15 years were significantly more exposed to alcohol advertisements per viewing hour than adults aged  $\geq 25$  years [incidence rate ratio (IRR) = 1.11; 95% confidence interval (95% CI): 1.06, 1.18;  $P < 0.01$ ]; in the Netherlands, those aged 13–19 years were more exposed per viewing hour than adults aged  $\geq 20$  years (IRR = 1.29; 95% CI: 1.19, 1.39;  $P < 0.01$ ). Conversely, in Germany, those aged 10–15 years were less exposed to alcohol advertisements than adults aged  $\geq 25$  years (IRR = 0.79; 95% CI: 0.73, 0.85;  $P < 0.01$ ). In each country, young children (aged 4–9 years in the UK and Germany, 6–12 years in the Netherlands) were less exposed than adults. **Conclusion:** Adolescents in the UK and the Netherlands, but not Germany, had higher exposure to television alcohol advertising relative to adults than would be expected from their television viewing. Further work across a wider range of countries is needed to understand the relationship between national policies and youth exposure to alcohol advertising on television.  
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## Introduction

Exposure of young people to alcohol marketing has been identified as a risk factor for underage drinking. It has been found to increase the likelihood that adolescents will start to drink alcohol,<sup>1,2</sup> and among those who already consume alcohol it is likely to increase alcohol consumption.<sup>1</sup>

Measurement of exposure to alcohol advertising on television has to date been primarily through self-reported exposure, based on surveys. In some cases, this has been combined with per capita expenditure on alcohol advertising,<sup>3</sup> volume of advertising exposure by television program,<sup>4</sup> or an index of watched shows weighted for alcohol advertising frequency.<sup>5</sup> A small number of studies have made more systematic use of audience or viewer data, using (targeted) per-capita advertising exposure<sup>6</sup> or raw data on viewership and advertisement volume to measure exposure.<sup>7</sup>

This study seeks to further advance our understanding of youth exposure to alcohol advertising on television. We built on an analytical approach used by Chung et al. (2010), which examined the association between television advertisement incidence and youth viewership in the USA.<sup>7</sup> Here, we focus on the UK, Germany and the Netherlands. These countries use a range of policies on alcohol advertising. The UK and Germany have implemented some restrictions on the placement of alcohol advertisements.<sup>8–10</sup> In the Netherlands, a voluntary ban on alcohol advertising applies to any media where 25% of the audience is <18 years of age,<sup>11</sup> and a statutory ban is in place on alcohol marketing on television and radio between 6:00 and 21:00 hours.<sup>12</sup>

## Methods

### Data

We used commercially available data, which we obtained from the market research company Ebiquity, on viewership (average advertising spot viewership, by age group) and the number of alcohol advertisements by alcohol brand and product type. We aggregated alcohol products into five product categories: beer and cider, spirits, wine, ready-mixed drinks and 'combination' (advertisements for a particular supermarket, which show several different types of alcohol, used in the UK only).

Data were for 6 months from December 2010 to May 2011. It included the 10 most viewed channels in each country, excluding the BBC public service channels in the UK, which do not broadcast any advertising.<sup>9</sup> All data were disaggregated by channel, month and

daypart (section of the television viewing day)<sup>13</sup>; viewership data were further disaggregated by age of viewer.

The age groups by which viewership data were disaggregated differed across countries. In the UK and Germany, data were disaggregated by age groups 4–9, 10–15, 16–24 and 25+ years. These age groupings were not available for the Netherlands, and the age groups 6–12, 13–19 and 20+ years were used.

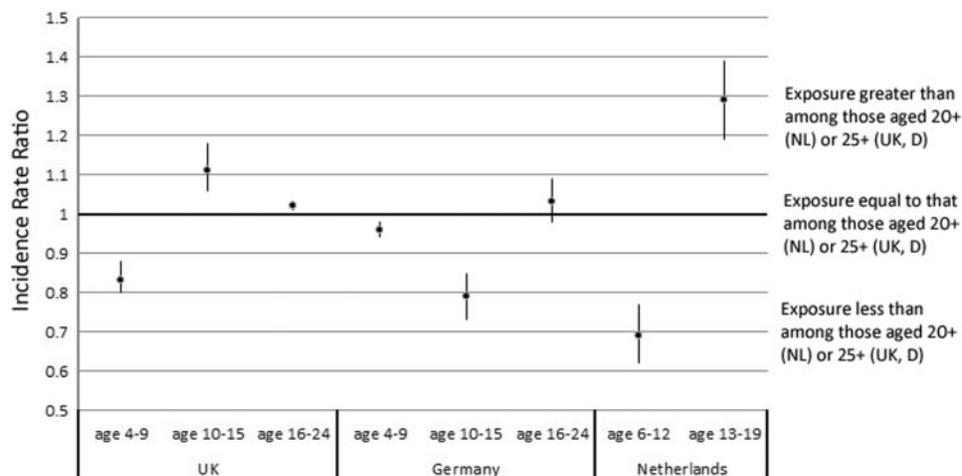
### Analysis

Analyses were conducted separately for each of the three countries. Treating each unique channel, daypart and month combination as a single data point, we conducted a negative binomial regression analysis.<sup>7</sup> The number of alcohol advertisements was the dependent variable, and the proportion of the viewership made up by each age group was the independent variable. Because dayparts differed both in duration (hours) and size of audience (viewership), we created an exposure variable equal to the length of the daypart in hours (total hours in the given month) multiplied by the corresponding average viewership. We thus modelled the association of the age composition of the audience with advertisement incidence per viewer-hour.

Results are presented as incidence rate ratios (IRRs). An IRR >1 indicates that the age group concerned is exposed to more alcohol advertisements per viewer-hour than the reference group; an IRR <1 indicates that an age group is exposed to fewer alcohol advertisements per viewer-hour than the reference group. Specifically, the IRR represents the amount by which alcohol advertisement incidence is multiplied for a given age category, relative to a reference category. We calculated IRRs separately for each alcohol beverage type and for all beverage types combined. We used different reference groups, depending on the age grouping available by country (Germany, UK: ages 16+ or 25+ years; the Netherlands: age 20+ years). For each product category, we conducted a joint test of significance for the estimated parameters. We further conducted sensitivity analyses to test the robustness of our findings.

## Results

Figure 1 presents the IRRs for exposure to alcohol advertisements among young people compared with the adult reference group. We find that during December 2010 to May 2011, in each country, young children aged 4–9 (UK and Germany) or 6–12 years (the Netherlands) were exposed to significantly fewer alcohol advertisements per viewer-hour than adults aged ≥25 years (UK, Germany) or ≥20 years (Netherlands). This association held for all alcoholic



**Figure 1** IRR for exposure per viewer hour of those aged 10–15 (UK; Germany, D) or 13–19 years (Netherlands, NL) to alcohol advertisements compared with the 25+/20+ years age group, December 2010–May 2011.

beverages combined (figure 1) and for the individual beverage categories studied, where the data reached significance ( $P < 0.05$ , data not shown).

In contrast, adolescents in the UK aged 10–15 years were significantly more exposed to alcohol advertising per viewer-hour than adults aged  $\geq 25$  years, with an IRR of 1.11 [95% confidence interval (CI): 1.06, 1.18;  $P < 0.01$ ]. This was not observed for Germany. In the Netherlands, the 13–19 years age group was significantly more exposed to alcohol advertising per viewer-hour than adults aged  $\geq 20$  years (IRR 1.29; 95% CI: 1.19, 1.39;  $P < 0.01$ ).

In the UK, young adults aged 16–24 years were also significantly more exposed to alcohol advertising per viewer-hour than older adults, but by only a small amount (IRR 1.02; 95% CI: 1.01, 1.03;  $P = 0.01$ ). In Germany, there was no significant difference in exposure of the 16–24 years age group compared with adults, except for the ready-mixed category of drinks (IRR 1.39; 95% CI: 1.14, 1.69;  $P < 0.01$ ).

We further examined whether and how the pattern of advertising exposure varied by beverage type (see figure 2). We find that in the UK, young people aged 10–15 years were 51% more exposed to ready-mixed alcohol advertising per viewing hour than adults aged  $\geq 25$  years (IRR 1.51; 95% CI: 1.27, 1.78;  $P < 0.01$ ). Conversely, exposure to wine advertisements among those aged 10–15 years did not differ significantly from that among adults (IRR 1.05; 95% CI: 0.97, 1.14;  $P = 0.24$ ). In Germany, exposure of this age group to beer and spirit advertising remained lower than that among adults, while other beverage categories did not show significant differences in advertisement incidence between those aged 10–15 years and adults. In the Netherlands, exposure of 13–19-year olds to advertising for all alcohol beverage categories was higher than that among adults, but wide confidence intervals make it difficult to draw robust comparisons between beverage categories.

### Sensitivity analyses

We conducted sensitivity analyses for the UK and Germany. We first compared exposure of children and adolescents aged 4–9 and 10–15 years with a reference group aged  $\geq 16$  years. The principal findings were similar to those using the reference group  $\geq 25$  years for both countries.

For the UK, we also examined the extent to which unusual and potentially influential dayparts and channels may have influenced

our results. We firstly excluded three dayparts of the ITV4 channel with high levels of alcohol advertisement intensity in December 2010. Secondly, we excluded channels E4 and Dave, which had particularly high viewership among 10–15-year olds, and Channel5 breakfast dayparts, which had especially high viewership among 4–9-year olds. These additional analyses did not substantially alter our findings. It is worth noting that, in the UK, regional components of some television channels (ITV1, Channel 4 and Channel 5) can broadcast different advertisements at the same time. Because we did not have access to regional data on viewership, we summed the advertisements on regional components to obtain data at the national level for a given channel.

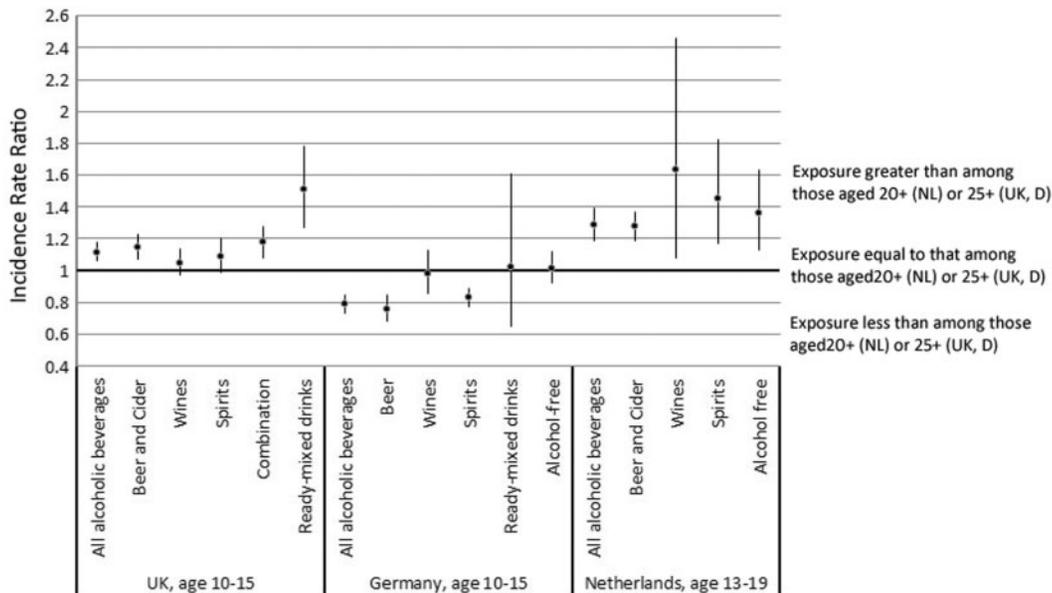
In Germany, advertising on public service channels such as ARD and ZDF, which were included in the present analysis, may not exceed 20 min per day from Monday to Saturday before 20:00 hours, limiting total advertising space.<sup>14</sup> To further explore the consequences of these restrictions we repeated our analysis excluding ARD and ZDF; again, this analysis did not substantially alter our findings. Findings of all sensitivity analyses are presented in Supplementary Table S1.

### Discussion

The analyses presented here provide important new insights into the exposure of young people to alcohol advertising in three European countries. We show that children and adolescents in the UK aged 10–15 years and those in the Netherlands aged 13–19 years were significantly more exposed to alcohol advertising than adults, compared with what would have been expected from their viewing of the 10 most watched channels in each country. This was not the case in Germany. In each country, young children aged 4–9 (UK, Germany) or 6–12 years (Netherlands) were significantly less exposed to alcohol advertising than adults (UK and Germany:  $\geq 25$  years; Netherlands:  $\geq 20$ ).

In the UK, exposure to advertisements for ready-mixed drinks, which include ‘alcopops’, sweetened alcoholic beverages that are particularly popular among younger consumers,<sup>15</sup> was particularly strong for young people aged 10–15 years, with 51% higher exposure per viewing hour than adults aged  $\geq 25$  years.

It is unclear to what extent national differences may reflect differences in drinking preferences in the three countries. In both the



**Figure 2** IRR for exposure per viewer hour of those aged 10–15 (UK; Germany, D) or 13–19 years (Netherlands, NL) to alcohol adverts compared with the 25+/20+ years age group, by alcohol beverage type, December 2010–May 2011

UK and the Netherlands, adolescents showed increased exposure to alcohol advertising per viewer-hour compared with adults. This suggests that the current advertising regulations in these two countries, including the time restriction on placement of alcohol advertising in the Netherlands,<sup>11</sup> do not eliminate disproportionate exposure of young people per viewing hour. However, the differential exposure to advertising, across the three countries and across the different beverage types, suggests that this elevated youth exposure is not unavoidable. Further work is needed that can extend this analysis across a wider range of countries, allowing a broader comparison of such exposure to the policy and cultural factors in different settings.

There has been much focus in recent years on regulations that restrict the content of alcohol advertisements, rather than the level of exposure. All three countries, the UK, the Netherlands and Germany, implement restrictions on alcohol advertisements whose contents are deemed to 'appeal to youth'.<sup>8,11,16</sup> However, content analysis of advertisements from these countries has suggested that despite adherence to marketing codes, most alcohol advertisements contain some features that have been shown to be appealing to young people.<sup>17</sup> Previous studies have also shown that, despite adherence to the literal interpretation of the marketing codes, compliance to these codes may not be effective in terms of reducing the influence of advertising on young people.<sup>18</sup> This may suggest that further monitoring and regulation of levels of exposure to advertising, rather than the content of such advertising, may have a greater effect on public health outcomes.

## Strengths and limitations

The strength of this study derives from the methodology. Our data capture a census of all alcohol advertising and television viewership across the 10 most viewed channels in each of the three countries, over a 6-month period. Because of the costs associated with obtaining the data, we were unable to analyse all television channels in these countries, or cover a longer period. Nonetheless, the 10 channels with the highest viewership are likely to capture a robust picture of alcohol advertising in the three countries. An additional strength is that the raw data used are the same as that available for use by advertisers to inform their own advertising strategies.

A key challenge to our analyses was the difference in age ranges and definitions of dayparts, which limited our ability to directly compare our findings across countries, in particular between the UK or Germany and the Netherlands. What appears to be a stronger effect in terms of IRRs for young people compared with adults in the Netherlands than in the UK may simply be a result of the differences in available age categories or other similar factors.

The nature of the data did not allow us to use age  $\geq 18$  years as the 'adult' reference group in our analyses. This would have been preferable given that this is the legal purchasing or selling age for alcohol in most, although not all, European countries. However, we have been able to approximate this cut-off by using age  $\geq 16$  years in the UK and Germany and age  $\geq 20$  years in the Netherlands. Notably, the age ranges we used are those used by advertisers to inform their advertising strategies.

This method for assessing relative exposure to advertising has not previously been applied to European data. However, our findings can be compared with a recent study from the USA.<sup>7</sup> That study also used commercial data on viewership and alcohol advertising and, similarly to our findings for the UK and the Netherlands, found a significant positive association between alcohol advertising and youth (ages 12–20 years) viewership. In the USA, the strongest effect was seen for youth exposure to alcopops, while for wine the association was negative. Importantly, and in line with our findings, the US study found viewers at ages

2–11 years to be significantly less likely to be exposed to alcohol advertising on US cable television.

Our findings are not directly comparable with other work that has sought to assess youth exposure to alcohol advertising on television that has used gross rating points (GRPs),<sup>19,20</sup> or other measures of per-capita advertising exposure.<sup>21</sup> GRPs measure advertising exposure per member of a given population, and youth exposure to alcohol advertising may be measured relative to adult exposure by comparing GRPs for each group within a given population. Thus, GRPs can provide relative valuations of per capita exposure, although it can be difficult to assess what are the correct populations to use to calculate GRP ratios.<sup>22</sup>

Furthermore, an industry such as alcohol, which often appears to target young adults, is likely to advertise in ways that guarantee high levels of exposure among youth, simply because youth and young adults view many of the same programs. Therefore, from a policy point of view, a key issue may be not only how high per capita youth exposure is compared with adults but to what degree this exposure may be disproportionately high based on youth and young adult viewing patterns. The approach used in the present study therefore examined whether advertisement incidence is associated with youth viewership, even after controlling for young adult viewership and other adult viewer demographics. If advertisement placement had been sensitive only to young adult viewership, for instance, then placement would have appeared random with respect to youth viewership after controlling for young adult viewership.

## Conclusion

In this study, we have examined whether advertisement incidence is associated with youth viewership, after controlling for adult viewership. Differential exposure to advertising by beverage type as shown for all three countries suggests that high exposure to alcohol advertising is not an inevitable consequence of alcohol advertising more generally. Our finding that, in the UK, adolescents aged 10–15 years may be disproportionately exposed to advertising per viewer-hour for specific products, such as ready-mixed drinks including alcopops, that have been found to be most popular among young drinkers<sup>15</sup> is cause for concern. Our findings suggest that current advertising regulations in the UK and the Netherlands may not effectively limit young people's exposure to alcohol advertising on the channels and dayparts where such advertising is allowed. Policymakers may wish to consider further measures to reduce exposure of young people to alcohol advertisements.

## Supplementary data

Supplementary data are available at *EURPUB* online.

## Acknowledgements

This work was based on data derived from a Service Contract with the Executive Agency for Health and Consumers, under the EU Health Programme. The opinions expressed are those of the Contractor only and do not represent the Executive Agency's and the European Commission's official position.

## Funding

This work was supported by the Health Programme (2008–13) in the framework of a contract with the Executive Agency for Health and Consumers acting on behalf of the European Commission, contract number EAH/2011/Health/10.

*Conflicts of interest:* None declared.

## Key points

- In the UK and the Netherlands, children and adolescents were significantly more exposed to alcohol advertising on television than adults, given what would be expected from their patterns of television viewing.
- This increased exposure of children and adolescents to alcohol advertising is not observed in Germany.
- These findings suggest that alcohol advertising restrictions should be further modified to limit exposure of underage viewers.

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