Contents lists available at ScienceDirect

Accident Analysis and Prevention

Drinking and driving among Italian adolescents: Trends over seven years (2007–2013)

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A B S T R A C T

In recent years, increasing attention has been paid to the issue of driving under the influence of alcohol (DUI), especially among young people. The aims of the present study were (1) to analyse the trends of DUI, riding with a driver under influence of alcohol (RWDUI) and alcohol-related road crashes (A-rC) in a nationally representative sample of students in the period 2007–2013, (2) to assess how different drinking patterns were associated with DUI and RWDUI, (3) to evaluate other influential factors (such as gender, older siblings' and friends' behaviour with alcohol) on DUI and RWDUI. Data were drawn from the cross-sectional European School Survey Project on Alcohol and Other Drugs (ESPAD) carried out annually in Italy. The sample size ranged from 25,555 to 40,390 students (15–19 years old). Results were stratified for students <18 years and ≥18 years old. Although a significant decreasing trend for alcohol consumption was observed only in the younger group, a significant decrease in DUI [APC (annual percent change) −9.7 in the younger and −6.4 in the older group] and in RWDUI (APC −6.7 in the younger and −4.8 in the older group) was detected. A significant decreasing trend of A-rC was observed only in the older group (APC −3.4). Three specific drinking patterns were identified: "Drinking to Excess" (DE), "Drinking with Intoxication" (DI) and "Drinking but Not to Excess" (DNE). In both age groups, the DE pattern significantly increased the likelihood of DUI, whereas the DI pattern was negatively associated, and the DNE pattern was not associated. Different results were found for RWDUI: the DE and DI patterns where significantly associated with RWDUI, whereas the DNE pattern was negatively associated. Overall, illegal substance use, parental monitoring, peers' and siblings' influence were associated with DUI and RWDUI. The change in behaviour towards DUI and RWDUI suggests a cumulative effectiveness of current alcohol policies, although further actions (greater attention to social context, law enforcement, and promotion of good practice) are needed to substantially reduce alcohol-related crashes.

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1. Introduction

Underage drinking is a significant problem worldwide, since it has a relevant impact on public health, society and economy. Among the broad range of harms associated with alcohol consumption, road crashes and driving under the influence of alcohol (DUI) represent serious health concerns regarding the young population. Every year, in the WHO European Region, road crashes kill as many as 32,000 people younger than 25, injuring or maiming millions more (Sethi et al., 2007). At any blood alcohol concentration, drivers aged 16–20 are three times more likely to crash than drivers older than 30 years (Peden et al., 2004). Irrespective of age, risks increase

exponentially relative to non-alcohol use: in fact, alcohol intake impairs cognitive and behavioural skills that may affect driving. Alcohol not only worsens features critical to safe road use, such as vision and reaction time, but it is also associated with impaired judgement, and therefore often linked to other high-risk road use behaviours such as speeding (Scott-Parker et al., 2014) or not using seat-belts (Everett et al., 1999) or helmets (Rossheim et al., 2014).

A dimension of risky behaviour different from DUI (Leadbeater et al., 2008), which needs to be investigated concurrently, is riding with a driver under the influence of alcohol (RWDUI): indeed, it may be that underage students ride with adults (such as parents, older siblings, friends) who drink and drive or, having more limited access to vehicles, defer to others, typically older friends, by allowing them to drive (Wechler et al., 2003).

The societal costs of youth alcohol consumption and the burden of alcohol use on disease in general have prompted many countries to implement policies restricting alcohol availability in order to reduce consumption and related harm among young people. A wide

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array of measures are employed by European countries, including setting a minimum legal purchase or drinking age, restricting the availability, increasing the price of alcohol, as well as promoting education campaigns and laws on drink-driving. In this framework, the first significant law passed in Italy on alcohol policy dates back to 2001 (Law n. 125/2001). In particular, it lowered legal blood alcohol concentration (BAC) for driving from 0.8 to 0.5 g/l, aligning Italy to the majority of European countries. In addition, the law provided guidelines about alcoholic beverages advertising and promoted the creation of national information campaigns and prevention programmes on alcohol-related problems. After that, in more recent years, other measures have been implemented: (1) in 2008, within the framework of a law concerning public safety measures (Law n. 125/2008), stricter penalties (up to the confiscation of the vehicle and the arrest of the offender) for driving while drunk were introduced; (2) in 2010 a new law, besides other measures, established a Zero Tolerance (ZT) level for both young drivers (18–21 years) and new drivers in the first three years after obtaining a license; (3) finally, the last legislative measure (Law n. 189/2012) set the minimum legal age for alcohol purchasing at 18 years.

Although changes of behaviour, if any, towards DUI and RWDUI cannot be directly ascribed to the laws, some effects related to their cumulative effectiveness should be detectable. Up to date, unfortunately, a comprehensive register with all the information relevant to the issue – including possible substance use by the driver – does not exist in Italy. The only information available at a national level (ACI-ISTAT Report, 2014) is the steady decrease in the number of road crashes with injured (fatally and non-fatally) drivers aged 15–20 (Table 1).

Thus, the first aim of this study was to analyse the trends of DUI, RWDUI and alcohol-related road crashes using data from a nationally representative sample of students aged 15–19 years of the European School Survey Project on Alcohol and other Drugs (ESPAD), a cross-sectional study conducted in Italy every year. The survey period of interest was 2007–2013.

With regard to alcohol consumption, a comprehensive approach allowing the identification of different drinking patterns was chosen, as proposed in a previous work of our research team (Siciliano et al., 2013), which focused on alcohol-related risky behaviours. This composite measure was applied combining three indicators of alcohol use: (a) frequency of alcohol consumption, (b) episodic heavy drinking (EHD), typically referred to as "bingeing" and (c) frequency of perceived intoxication.

Other variables can have an impact on the association between alcohol use and reckless driving. First, as already highlighted in other studies, a different gender-related attitude needs to be taken into account (Steptoe et al., 2004). Another aspect relates to perception of risk: in particular, concerning adolescents' risk perception of alcohol use in relation to road crashes, youth may tend to underestimate harm attributable to alcohol and/or to overestimate their driving skills (González-Iglesias et al., 2015). Furthermore, alcohol consumption is often associated with the use of other psychoactive substances, which can also impact upon driving performance

(Movig et al., 2004; Ramaekers et al., 2004; Penning et al., 2010; Tomas Dols et al., 2010). It is worth mentioning that the target population of high school students represents a critical age range because substance use and driving (e.g. moped or motorcycle) tend to start during this time. Peer influence is central in many theories, which in general posit that youth are more likely to engage in risky behaviours if they have friends who do so. Within the family context, several studies on risk behaviours in adolescence have emphasized the role of parental monitoring (Shope et al., 2001; Marschall-Lévesque et al., 2014), whereas, more recently, older siblings have been proposed as influential models in the social learning process regarding substance use including alcohol and other risk behaviours (Whiteman et al., 2013, 2014).

Hence, the second aim of the present study was to assess how the different drinking patterns observed were associated with DUI and RWDUI and to evaluate other influential factors.

2. Materials and methods

A full description of sampling and data collection procedures has been reported in the European School Survey Project on Alcohol and Drugs (ESPAD) Report (Hibell et al., 2012). Briefly, standardized data collection was performed using an anonymous self-administered questionnaire completed on a voluntary basis in the classroom setting. All analyses in the present study are based on data drawn from the ESPAD®Italia yearly survey in the period 2007–2013, provided by the Institute of Clinical Physiology, National Research Council (IFC-CNR).

2.1. Participants

The target population was comprised of Italian high-school students aged 15–19 years. The sample size ranged over the years from 25,555 to 40,390 students and response rate of the schools ranged from 86% to 92%. On average, 49% were males.

2.2. Measures

Questions from the ESPAD questionnaire were used as screens:

2.2.1. Indicators of driving after drinking
(a) "During the last 12 months, how often have you driven after drinking too much?"
(b) "During the last 12 months, how often have you been in a vehicle whose driver had drunk too much?"
(c) "Because of your own alcohol use, has a crash occurred while driving a moped/car?"

Questions (a) and (b) had 4 response categories: "never, 1–2, 3–9, 10+ times" and were dichotomized as at least once vs never. Question (c) had response categories: yes vs no.

DUI, RWDUI and alcohol-related crashes were assessed for the year prior to the survey.

Table 1
Number of road crashes with injured (fatally and non-fatally) drivers in Italy, years 2007–2013.

Year	General population	15–17 years old		18–20 years old	
	No. of crashes	No. of crashes	No. of population	No. of crashes	No. of population
2007	230,871	7767	1,782,784	16,360	1,791,425
2008	218,963	7017	1,770,247	16,373	1,825,812
2009	215,405	6683	1,749,688	15,878	1,829,999
2010	212,997	6088	1,716,592	15,332	1,839,153
2011	205,638	5551	1,672,555	13,711	1,779,264
2012	188,228	4310	1,674,590	11,118	1,756,516
2013	181,227	3499	1,709,872	9832	1,749,430

Source: ISTAT (http://demo.istat.it/) for demographic data, 2014 ACI-ISTAT Report for road crashes.