

The cultural aspect: How to measure and interpret epidemiological data on alcohol-use disorders across cultures

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Abstract

Aims: To examine the cultural impact on the diagnosis of alcohol-use disorders using European countries as examples. **Design:** Narrative review. **Results:** There are strong cultural norms guiding heavy drinking occasions and loss of control. These norms not only indicate what drinking behaviour is acceptable, but also whether certain behaviours can be reported or not. As modern diagnostic systems are based on lists of mostly behavioural criteria, where alcohol-use disorders are defined by a positive answer on at least one, two or three of these criteria, culture will inevitably co-determine how many people will get a diagnosis. This explains the multifold differences in incidence and prevalence of alcohol-use disorders, even between countries where the average drinking levels are similar. Thus, the incidence and prevalence of alcohol-use disorders as assessed by surveys or rigorous application of standardised instruments must be judged as measuring social norms as well as the intended mental disorder. **Conclusions:** Current practice to measure alcohol-use disorders based on a list of culture-specific diagnostic criteria results in incomparability in the incidence, prevalence or disease burden between countries. For epidemiological purposes, a more grounded definition of diagnostic criteria seems necessary, which could probably be given by using heavy drinking over time.

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Keywords

alcohol, alcohol-use disorders, culture, measurement, universality

Epidemiology as an international science: Implications for definitions of disease

Epidemiology is an international science, trying to explore the incidence, distribution, determinants and possible control of diseases and other factors relating to health (Last, 2001). One of the most important tools for this exercise is standard definitions of phenomena, most importantly for epidemiology the definition of disease (Susser, 1973). This led to early efforts at standardisation; the first international classification came into effect in 1883. The current 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) was adopted in about 1990 (World Health Organization, 2010). The underlying principles of the ICD-10 or alternative classifications such as the DSM-5 (American Psychiatric Association, 2013) are universality and objectivity. Obviously, cultural interpretations are a threat to universality (Reidpath, 2007; Room, 2006).

Both large diagnostic systems have to deal with the tension between universality and cultural specificity. For instance, a group of cultural psychiatrists was invited to participate in the development of DSM-IV (Mezzich et al., 1999) to minimise the threat of different cultural interpretations of symptoms to universality. This resulted in significant innovations, including an introductory cultural statement, cultural considerations for the use of diagnostic categories and criteria, a glossary of culture-bound syndromes and idioms of distress, and an outline for a cultural formulation. However, suggestions threatening the basic underlying universalistic nosological assumptions of validity of concepts and arguments for a contextualisation of illness, diagnosis, and care were rarely incorporated (Mezzich et al., 1999).

Similarly, there had been studies of cross-cultural applicability and validity of substance-related diagnoses in ICD-10 and DSM-IV, the results of which (Room, Janca, Bennett, Schmidt, & Sartorius, 1996; Schmidt & Room, 1999) have not really been integrated into further developments.

This contribution will try to sketch out the impact of culture on diagnosis and measurement of alcohol-use disorders, and by doing so, will give some examples of cultural definitions and norms regarding heavy drinking and intoxication in different countries, including the social location and integration of drinking. It thus expands and systematises the arguments on cultural specificity made in other papers (Rehm & Room, 2015; Rehm, Room, Van den Brink, & Jacobi, 2005; Room, 2003).

Alcohol-use disorders as they are currently defined and measured

While there are strong recommendations to base psychiatric definitions of mental disorders on biological pathways and closely linked symptoms (National Institute of Mental Health [NIMH], 2017; Sisti, Young, & Caplan, 2013), for the diagnoses referring to alcohol-use disorders, most of the criteria are not based on biological symptoms.

For example, in ICD-10 a diagnosis of alcohol dependence (World Health Organization, 1992) is given when at least three of the following criteria have been present together at some time during the previous year:

- a. a strong desire or sense of compulsion to take the substance;
- b. difficulties in controlling substance-taking behaviour in terms of its onset, termination, or levels of use;

- c. a physiological withdrawal state when substance use has ceased or been reduced, as evidenced by: the characteristic withdrawal syndrome for the substance; or use of the same (or a closely related) substance with the intention of relieving or avoiding withdrawal symptoms;
- d. evidence of tolerance, such that increased doses of the psychoactive substances are required in order to achieve effects originally produced by lower doses (clear examples of this are found in alcohol- and opiate-dependent individuals who may take daily doses sufficient to incapacitate or kill nontolerant users);
- e. progressive neglect of alternative pleasures or interests because of psychoactive substance use, increased amount of time necessary to obtain or take the substance or to recover from its effects;
- f. persisting with substance use despite clear evidence of overtly harmful consequences, such as harm to the liver through excessive drinking, depressive mood states consequent to periods of heavy substance use, or drug-related impairment of cognitive functioning; efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm.

While we will restrict ourselves to ICD-10, all of the considerations also apply to other currently used and discussed diagnostic systems such as DSM-5 (American Psychiatric Association, 2013) or ICD-11 (World Health Organization, 2017: see, e.g., criteria for alcohol dependence in Tyburski, Sokolowski, Samochowiec, & Samochowiec, 2014), as these diagnostic systems have a related history (Room, 1998), are built on lists of criteria as concurrently occurring symptoms, and the symptom central to the discussion below, loss of control, is a key criterion in all of these systems.

Variations in the cultural framing of heavy drinking and control of intake

The above criteria can all be seen (and have been criticised – Martin, Langenbucher, Chung, & Sher, 2014) as a list of consequences – psychological, biological, behavioural and social – of heavy drinking over time (Rehm et al., 2013). However, social norms about what constitutes heavy drinking or loss of control, and what constitutes a violation of the prevailing norm have differed and differ considerably between cultures, between different groups within a culture, and over time (Greenfield & Room, 1997; Room, 1975). Thus we will argue that there are strong cultural norms guiding heavy drinking occasions and loss of control, which will impact on behaviour, as well as on the reporting of behaviour such as drinking and loss of control.

First, we define cultural norms as rules or understandings affecting behaviour, which are to some degree enforced by sanctions, and which are shared by a group of people even if they have never met each other (Room, 1975). Cultural norms may be shared by a whole culture or by subcultures, and in our multicultural societies it becomes rare that one cultural norm affects the whole population of a country (The Social Issues Research Centre, 1998). Regarding alcohol consumption, there tend to be norms particularly on two dimensions: drinking per se and intoxication (Room & Mäkelä, 2000).

Consider “Italian drinking culture”¹ and its norms (see Savic et al., 2016 for a definition of drinking culture). For many Italians, alcohol was traditionally part of daily meals and thus part of food (Lolli, Serianni, Golder, & Luzzatto-Fegiz, 1958; Mäkelä, 1983). This role of alcohol persisted up until recent decades, when the Italian style of drinking alcohol no longer fitted into the globalised work and leisure schedules of a more and more urbanised citizenry (Allamani, Beccaria, & Voller, 2010), and the per capita consumption

and alcohol-attributable health burden fell consistently (Shield, Rylett, & Rehm, 2016; World Health Organization, 2014). Alcohol was no longer part of multiple meals in the day, and the length of meals and time off for meals (e.g., pennichella after lunch) decreased (Allamani et al., 2014). Thus, consumption decreased, but the overall norms and attitudes regarding alcohol prevailed (Allamani et al., 2010, 2014).

What are the implications of Italian drinking norms for heavy drinking and control? Heavy drinking occasions in Italy have been tolerated, as long as they are part of meals and tradition. A festive meal might start with an aperitif, the main courses were accompanied by wine, and at the end there often was a digestive, resulting in a combined number of drinks which would fall above the US threshold of “binge drinking” (Gmel, Rehm, & Kuntsche, 2003). However, alcohol was part of a ritualised food intake, stretched out over hours, less absorbed because of the food (Gentry, 2000), and under social control of the family, with a clear norm of not showing any loss of control and intoxication. Thus, when being asked about loss of control as part of establishing a diagnosis for alcohol dependence, either in a clinical situation or as part of a population survey (Rehm, Anderson et al., 2015), most Italians would indicate no loss of control, even for heavy drinking situations. Avoiding loss of control while drinking alcohol is part of the socialisation process (Beccaria & Guidoni, 2002). Two processes apply here: first, actual behaviour is affected, i.e., the subjective feeling of no drunkenness, in part due to the longer time-spans between drinks, and in part due to the norm of not showing effects. Second, the cultural norm also forms part of the expected and thus socially desirable answer in a survey (Nederhof, 1985). Clearly, social desirability is not mainly about wilfully deceiving others; it is about choosing the most acceptable or applicable answer in case of doubt (Schwarz, 1994), or at times it may involve self-deception (Nederhof, 1985).

Compare the Italian way of drinking to the drinking patterns in a country where different

norms persist and heavy drinking occasions are normatively linked to “letting loose” or intoxication. This has traditionally been the case for some of the countries in the north and east of Europe (Iontchev, 1998; Nemtsov, 2011; Popova, Rehm, Patra, & Zatonski, 2007; Simpura & Karlsson, 2001). If members of a culture or subculture which has norms where intoxication is allowed for certain situations (e.g., to let loose, at weekends, fiestas – Room & Mäkelä, 2000) are asked the same question about losing control, they would agree to having lost control, as this is not a taboo behaviour as in Italian or Mediterranean cultures, but, rather, for them is one of the use values of drinking.

Implications for measurement and interpretation of incidence and prevalence of alcohol-use disorders

Given the above, it is not surprising that population prevalence of alcohol dependence or alcohol-use disorders varies dramatically, to the extent of 20-fold differences, even within groups of countries with relatively similar rates of heavy drinking, such as the countries of European Union (Rehm & Room, 2015; World Health Organization, 2014). To illustrate the problem: in the EU in 2010, there was wide variation in estimates of prevalence of alcohol-use disorders of between less than 1% (Italy, Spain) and more than 12% (Latvia) with an average of 3.4% (Rehm, Anderson et al., 2015). The per capita consumption, or the *per drinker* consumption, on the other hand, only varied by a factor of three (World Health Organization, 2014).

So the incidence and prevalence of alcohol dependence and alcohol-use disorders as assessed by surveys or rigorous application of standardised instruments must be judged as measuring social norms as well as the intended mental disorder (Rehm, Allamani, Elekes, Jakubczyk, Landsmane et al., 2015; Rehm & Room, 2015). In other words, current

international comparisons on alcohol dependence or alcohol-use disorders (GBD 2015 Disease and Injury Incidence and Prevalence Collaborators, 2016; World Health Organization, 2014) are comparing apples with oranges, and not similar health states. Moreover, if we want to estimate rates of alcohol-attributable harm, we should not rely on standardised instruments oriented to ICD-10 and other diagnostic criteria of dependence and other alcohol-use disorders. Rates of such harm are more reliably estimated from indicators such as drinkers' average level of consumption, and rates of chronic and irregular heavy drinking occasions (Rehm, 2016; Rehm et al., 2010; Rehm, Gmel et al., 2017). Comparisons between countries and periods with similar social norms about alcohol, such as a comparison within the same country within a time span of five to ten years, in which there were no major changes in social norms, or comparisons between the Baltic countries at a time point where norms about drinking were similar, are obviously less affected by cultural specificity, compared to comparisons across Europe, or global comparisons (GBD 2015 Disease and Injury Incidence and Prevalence Collaborators, 2016; World Health Organization, 2014).

This does not mean that cultural norms have no impact on reporting heavy drinking. That alcohol is forbidden legally or prohibited by religion in several countries should serve as a strong reminder that any answers to questions about alcohol consumption are potentially impacted by social norms. The high *per drinker* consumption in Muslim countries (World Health Organization, 2014) probably reflects more the norm of abstinence than the actual drinking level of drinkers (i.e., a considerable number of people consuming alcohol are claiming abstinence in these countries, thus artificially lowering the proportion of drinkers, and thus increasing the apparent *per drinker* consumption). However, any connotation of losing control or being alcohol dependent surely evokes more and stronger social norms in most countries than just the level of drinking would.

This can be corroborated by the stigmatisation attached to alcohol dependence (Schomerus et al., 2011), even in the medical system (see examples in Rehm, Hasan, Imtiaz, & Neufeld, in press).

Similar considerations should prevail when we look into the distribution of alcohol-use disorders by age across cultures. For example, the highest rates of alcohol-use disorders in US population surveys are reported in late adolescence and early adulthood (Grant et al., 2015; Rehm, Dawson et al., 2014). There are a lot of reasons for this finding, which differs from the age distribution for survey responses on alcohol-use disorders in several other countries (Rehm et al., 2005) – as well as for those in treatment for alcohol-use disorders in the US – but certainly the norms about drinking for adolescents and college students play a role (Seaman, 2005; see also Caetano & Babor, 2006). Despite some globalisation, such norms about bingeing in adolescence are still different between countries, and would require students and working young adults in much of Europe not to admit to loss of control in most situations, while such an admission is less of a problem for their North-American counterparts (Beccaria & Guidoni, 2002; Room, 2007). This leads to markedly lower reported prevalence of feeling drunk in wine-drinking countries than in northern Europe, though the reported rates of drinking substantial amounts on occasion are similar (Room, 2007).

As for limitations, first it should be noted that there are a number of factors other than cultural ones which impact on studies trying to establish incidence and prevalence of alcohol-use disorders. Most prominent here are differences in instruments: while a lot of these seem to be variations of the Composite International Diagnostic Interview (CIDI), it has been shown that small variations in wording or a different interpretation of DSM/ICD can lead to substantial variations in prevalence (e.g., Grant et al., 2007); or situations such as the Dutch surveys, where slight changes led to a substantial decrease of dependence and

increase in abuse/harmful use (see de Graaf, Ten Have, van Gool, & van Dorsselaer, 2012; Rehm, Anderson et al., 2015). Moreover, the sampling frame for general population surveys can lead to marked differences (Shield & Rehm, 2012; for some empirical estimates on the size of the problem see Rehm, Anderson et al., 2015), as marginalised groups tend to have substantially higher incidence and prevalence, and such groups are differentially included in sampling frames (Groves, 2004). Second, loss of control is only one criterion (though it also impacts indirectly on other criteria); it is not a necessary condition in the current conceptualisation of alcohol-use disorders (American Psychiatric Association, 2013; World Health Organization, 2010). However, empirically this criterion is among the most important, as it is endorsed by a high proportion of people identified as having alcohol-use disorders (Nelson, Rehm, Ustun, Grant, & Chatterji, 1999). Thus, even though analyses on proportion of endorsement by culture are missing (which is in fact an important research gap), it is plausible that the cultural norms were indeed a major factor in the differences between prevalence of dependence in northern versus southern EU countries (Rehm, Anderson et al., 2015, Figures 1 and 2).

Incidence and prevalence of disorders are based on survey measures trying to operationalise the criteria specified in the diagnostic systems (most prominently using a variant of the CIDI; Robins et al., 1988). It may be argued that the above problem is a measurement problem of surveys in the general population only, which disappears in clinical practice. Indeed, there are some indications that other criteria are used in clinical practice, and that the official diagnostic criteria are not really important. Indeed, in a large study of European primary healthcare in six European countries, the overlap between CIDI and judgement of the general practitioners on alcohol dependence was not large (Rehm, Allamani, Elekes, Jakubczyk, Landsmane et al., 2015; for alcohol-use disorders in general see also Manthey et al., 2016):

only 24% of the cases of alcohol dependence as assessed by general practitioners were also picked up by the CIDI (similarly, only 24% of the cases as defined by CIDI were also identified as such by general practitioners). General practitioners seem to have based their judgement more on drinking level, social marginalisation and co-morbidities (liver cirrhosis, hypertension) than on the criteria specified in diagnostic systems; and treatment was initiated based on mental and somatic co-morbidities and level of alcohol-use disorders (Rehm, Allamani, Elekes, Jakubczyk, Manthey et al., 2015).

However, the fact that general practitioners and others are not diagnosing according to the diagnostic schedules or the textbook does not mean they are diagnosing with universal rules not influenced by cultural norms about alcohol and intoxication. To give one example of a cultural discrepancy: when a German group replicated a famous US trial for people with alcohol dependence, the baseline values on severity of dependence in the clinical cases as they were enrolled from the treatment system were markedly higher than those in the US trial (Mann et al., 2013). Other examples can be found in Skog's paper on the collectivity of drinking cultures, where he showed a strong impact of drinking culture on the drinking level of treated people with alcohol-use disorders (Skog, 1985). For comparisons across cultures of the effects of clinical interventions, attention should be paid to baseline values on diverse relevant dimensions, including amount and pattern of drinking, feelings of craving and loss of control, health and social harms from drinking for the drinker and for others, and social responses to drinking, including marginalisation.

Disaggregating alcohol-use disorders in cross-cultural comparisons: Suiting the measure to the purpose

The DSM-5 classification has moved away from differentiation or specification of types

or dimensions of alcohol problems, and adopted a general diagnostic category of “alcohol-use disorder”. This decision by the American Psychiatric Association further concretises a clinical conceptualisation of alcohol problems in terms of a single underlying disorder. In combining measures of dependence and harmful use into a “use disorders” category, epidemiological reports based on ICD-10 have often gone down the same road. As we have argued above, this solution of lumping a diversity of indicators into a single measure is particularly problematic when applied in cross-cultural comparisons.

For such comparisons, a more culturally valid approach is to use separate indicators for different conceptual dimensions of alcohol problems (see also Knupfer, 1967). At a minimum, four such dimensions can be described: amount and pattern of drinking; feelings of craving and impairment of control over drinking; adverse physical and mental effects of drinking, including chronic disease and injury both to the drinker and to others; and alcohol-related social problems, including societal and others’ reactions.

For epidemiological purposes of describing and characterising alcohol-use disorders, and especially when comparing countries on a global level, as in the Global Burden of Disease and Injury studies (Whiteford et al., 2013) or the Global Status Reports of the World Health Organization (World Health Organization, 2014), we would clearly need measures of alcohol-use disorders which are as little as possible affected by cultural definitions and perceptions (Rehm, 2016). Thus it is inappropriate, for instance, to take one very culturally specific example (e.g., NESARC II from the US with a preponderance of late adolescence and early adulthood alcohol-use disorders) as the basis for global modelling of the age distribution of and the disability attached to alcohol-use disorders (e.g., in GBD 2015 DALYs and HALE Collaborators, 2016). The resulting estimates for other countries such as Russia – to give an extreme example – should

not be taken as serious epidemiological estimates; rather, such estimates serve as a prime counter-example of the importance of culturally informed analyses.

For any prediction of health service utilisation, health sequelae or chronic disease mortality – e.g., liver cirrhosis mortality (Zatonski et al., 2010) or cancer (Praud et al., 2016) – the crucial dimension is amount and pattern of drinking, which could be defined by a threshold on the continuum of level of drinking and some characterisation of variability of drinking (so-called pattern; Rehm et al., 1996). This may be measured objectively or via self-report, though with considerable underreporting in population surveys (Gmel & Rehm, 2004; see also Probst, Shuper, & Rehm, 2017, for an extreme example). For clinical cases, there is not necessarily an underreporting of alcohol (Babor, Steinberg, Anton, & Del Boca, 2000; Polich, 1982), or the tendency to deny or minimise problems associated with alcohol (Probst, Manthey, Martinez, & Rehm, 2015). For the prediction of some injury outcomes such as aggression or violence more than the quantity of alcohol on an occasion may be required, as the relationship between alcohol consumption and aggressive behaviour is affected also by norms of behaviour while drinking (“drunken comportment”; Room, 2001); thus the incidence of aggressive behaviour leading to injury and death is lower in countries where intoxication is taboo – (Norström, Hemström, Ramstedt, Rossow, & Skog, 2001).²

Conclusions

We have argued that current definitions of alcohol dependence in particular, and alcohol-use disorders in general, are based on culture-specific criteria, and that use of the diffuse amalgams resulting from defining “caseness” in terms of a positive answer on at least one, two or three from a longer list of criteria results in incomparability in the incidence, prevalence or disease burden between countries. For

epidemiological purposes, a more grounded definition of diagnostic criteria seems necessary.

In our view, the dimensions of condition and experience which have composed “alcohol-use disorders” need to be dealt with separately – not only in terms of measurement, but also in terms of analysis and interpretation. Proceeding down this path holds the potential not only for greater validity and comprehensibility in cross-cultural comparison and analyses, but also for a better understanding of how culture interacts with other factors in the connections between alcohol and harm – physical, mental and social; to the drinker and to others – and of the effectiveness of different avenues of prevention of harm.

Just relying on level and variability of drinking over time may be a practical and easy solution for some of the problems, e.g., for handling alcohol-use disorders in primary care (Rehm et al., 2016), but this should be empirically tested. Alcohol-use disorders could then be established based on these variables, just as hypertension is derived from level of blood pressure (Anderson et al., 2017; Nutt & Rehm, 2014; Rehm, Anderson et al., 2014).

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Notes

1. We will not go into the current discussion of defining drinking cultures, as we are mainly concerned about the normative expectations regarding drinking and drunkenness. As Savic, Room, Mugavin, Pennay, and Livingston (2016) laid out, in past discussions Italian drinking culture has been labelled as prescriptive (Mizruchi & Perucci, 1962), where norms expect drinking but drunkenness is prohibited; as a typical wine

culture where alcohol is integrated into daily life or as a culture stressing the nutritional value of alcohol. As for the norms regulating behaviour, all these classifications agree to a large amount.

2. In the analyses of Norström and colleagues (2001), there is one puzzling finding that the incidence of liver cirrhosis mortality per capita was also culture specific, when we would not have expected such a relationship based on individual-level studies. We have no biological explanation for this finding.

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