DRINKING PATTERNS AND DSM-IV ALCOHOL USE DISORDERS' CRITERIA IN ARGENTINEAN EMERGENCY DEPARTMENT PATIENTS

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Abstract

Background—Previous studies have shown cultural variations in normative drinking and furthermore, in the quantity and frequency of drinking related to alcohol use disorders.

Aim—The main goal of this study is to characterize alcohol drinking patterns in Argentinean Emergency Department patients, and secondly, to explore the association between those drinking patterns and DSM-IV alcohol use disorders.

Method—Data were collected from a probability sample of patients admitted to the Emergency Department of a large public hospital in Mar del Plata, Argentina. Data analyzed here pertain to those who reported consuming at least one drink during the last twelve months (n=529). A factor analysis of multiple correspondences and a hierarchic classification were performed. For the factor analysis, usual quantity and frequency of drinking (for the last 12 months) were considered active variables; number of DSM-IV dependence criteria met, positive or negative diagnostic status for abuse, positive or negative diagnostic status for dependence (both for the last 12 months), and socio-demographic characteristics (age, gender and economic level) were considered illustrative variables.

Results—The first five factorial axes were retained, accounting for 88% of the total variance. Hierarchic classification resulted in six distinctive classes of drinking patterns. Two patterns were associated with a positive diagnosis of abuse and dependence, respectively. One, drinking between 4 and 6 drinks per occasion mostly on a weekly basis, was associated with a diagnosis of abuse; this pattern was also associated with meeting one or two dependence criteria (*dependence orphans*). The other, drinking 7 or more drinks per occasion, was associated with a diagnosis of dependence, and also with a diagnostic orphan condition. This class, composed primarily of males, was not characterized by any particular frequency of drinking. The other four drinking patterns were not associated with a positive diagnosis of an alcohol use disorder. Two of them were characterized by drinking low quantities with a low frequency (either monthly or yearly).

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Participants in both of these classes tended to be female. The other two patterns were characterized by drinking less than 3 drinks per occasion, either daily or weekly: the former associated with being older than 35 years, and the later with no distinctive socio-demographic characteristics.

Conclusions—Results demonstrated six distinct drinking patterns, two of them related to a positive diagnosis of an alcohol use disorder. Our findings support previous research indicating that dependence orphans share some characteristics with abuse and dependence cases. Given the lack of similar studies in the region, these findings, although descriptive, enrich the knowledge of alcohol use disorders in the regional context. Furthermore, they may contribute to the development of local drinking guidelines and prevention strategies.

Keywords

alcohol; drinking patterns; use disorders; DSM; Argentina

INTRODUCTION

Argentina is, at the international level, one of the main producers of wine, despite which nearly 80% of what is produced is destined towards the domestic market (Dirección de Industria Alimentaria, 2007). In Argentina not only is alcohol consumption widespread (Míguez, 2004; Munné, 2005), but as well as in other countries of the region, it constitutes the first risk factor for the burden of disease (Monteiro, 2007). This situation at the public health level has not been mirrored by research endeavors. With some exceptions, (like the studies by Míguez, 1999, 2004) little is known about Argentinean drinking practices and related problems, alcohol use disorders among them. The Diagnostic and Statistical Manual of Mental disorders, Fourth Edition (DSM-IV) (American Psychiatric Association, 1994) diagnostic scheme includes as alcohol use disorders the categories of abuse and dependence. The DSM scheme contains seven possible domains for the diagnosis of dependence. A positive diagnosis is reached by meeting criteria in at least three of those. There are four criteria for the diagnosis of alcohol abuse, from which at least one has to be fulfilled. Alcohol abuse is considered a residual category, and a diagnosis cannot be made if the patient has ever met criteria for dependence. However, both diagnostic entities, but mostly abuse, have been questioned as to their construct, predictive, and concurrent validity (Babor and Caetano, 2006; Harford and Muthen, 2001; Kahler and Strong, 2006), and furthermore, as to their dimensionality as two separate traits (Borges, Ye, Bond, Cherpitel, Cremonte, Moskalewicz, et al., 2010; Saha, Stinson, and Grant, 2007). Recently there has been also a debate as to whether a consumption measure should be included as a new criterion for alcohol use disorders in the next DSM revision (Keyes, Geier, Grant, and Hasin, 2009). Nevertheless, the association between quantity and frequency of drinking and negative consequences, including those listed as DSM-IV criteria, appears to be complex (Holly, and Wittchen, 1998) and culturally dependent (Borges et al., 2010). Furthermore, most of the literature about alcohol consumption in general, and specifically about alcohol use disorders and how they might relate to different drinking patterns, comes from high-income countries exhibiting very different drinking cultures.

The main goal of this study is to characterize alcohol drinking patterns in Argentinean emergency department (ED) patients, and secondly, to explore the association between those drinking patterns and DSM-IV alcohol use disorders.

METHODS

Instruments

Data were collected through a structured questionnaire developed by Cherpitel (1989) whose locally adapted version has been used in previous studies (Cremonte, Ledesma, Cherpitel, and Borges, 2010). The questionnaire evaluated quantity and frequency of drinking through the quantity-frequency method (Dawson, 2003; Greenfield and Kerr, 2008). In this approach, alcohol consumption is measured with questions that inquire about (a) the overall frequency of alcohol consumption within the reference period -12 months-, and (b) the usual quantity per drinking occasion in number of standard drinks. The average ethanol content for a standard drink was estimated to 12 g. The questionnaire also contained the Alcohol Section of the Composite International Diagnostic Interview (CIDI) (Robins, Wing, Wittchen, Helzer, Babor, Burke, et al., 1988), which identifies a diagnosis of alcohol use disorders compatible with the DSM-IV (American Psychiatric Association, 1994). Validity and reliability of the CIDI has been established in international samples (Tacchini, Coppola, Musazzi, Altamura, and Invernizzi, 1994). Internal consistency in this study was .93 (estimated through the Kuder Richardson-20 formula).

Participants

A probability sample of patients admitted to the ED was recruited from a large public hospital located in Mar del Plata, a coastal city in Buenos Aires state, Argentina and that serves a majority of the adult population in that area. Eligible patients were those 18 years or older. Patients were told data would be collected anonymously and treated confidentially, and inquired about their informed consent to participate in the study. Participants who presented indicators of pathological drinking were referred to self-help groups and to the hospital's Alcohol and Liver Unit.

Completion rate was 92% of those eligible (n=743). The data analyzed here pertain only to current drinkers: those who reported consuming at least one drink in the last twelve months (n=625). Missing data was deleted list-wise, leaving 529 patients for analyses reported here. Most participants were male, young (under 35 years) and with a low income. Participants' characteristics are presented in Table 1.

Procedure

Eligible patients were approached by interviewers as soon as they were admitted to the ED. Interviewers identified themselves as being from the local university to avoid being mistaken as ED staff. Interviewers were male (3) and female (4) psychology or social work students. All interviewers were trained in the use of the questionnaire and were knowledgeable of the ED functioning.

Patients were asked if they were willing to participate in a study having to do with the reason for their visit to the ED and their alcohol use. Those who consented were administered the questionnaire through a personal interview that lasted approximately 25 minutes. Patients who could not be interviewed upon arrival were followed and interviewed later once their condition was stabilized. To ensure that all days and hours were equally represented, data was collected from all patients admitted every other day during the sampling period.

Data Analysis

Two multivariate data reduction techniques were sequentially used: a factor analysis of multiple correspondences and a hierarchic classification. For factor analysis some variables were considered active, while others were taken as illustrative. While active variables

contribute to the variance (inertia) in the data set, and to the formation of factorial axes, illustrative variables are projected after the axes have been established. Active variables were usual quantity and frequency of drinking (for the last 12 months). Quantity of drinking was categorized as the usual number of drinks per occasion, as follows: one drink, two or three drinks, four to six drinks, and seven or more drinks. Frequency of drinking was categorized as follows: between four and seven days a week (daily or almost daily), one or two times a week to two or three times a month (weekly), nearly once a month to six to 11 times a year (monthly), and one to five times a year (yearly). Illustrative variables were: diagnostic status for DSM-IV alcohol abuse (last 12 months) (positive/negative), diagnostic status for DSM-IV alcohol dependence (last 12 months) (positive/negative), number of DSM-IV alcohol dependence criteria met, and socio-demographic characteristics (age, gender and economic level). Economic level was estimated through the monthly family income and categorized as low, middle or high following the income distribution for the country during the period of data collection (Instituto Nacional de Estadística y Censos).

For data management and analyses the Système Portable pour l´Analyse de Données Numériques (SPAD-N) version 4.1 for Windows (Lebart, Morineau, Pleuvret, Brian, Aluja, 1983), and the Statistical Package for the Social Sciences (SPSS) version 8 for Windows (SPSS Inc., 1998), were used.

RESULTS

Drinking Patterns

Drinking patterns were determined by clustering actual drinkers according to their usual quantity and frequency of drinking through factor analysis. The first five factorial axes were retained, accounting for 88% of the total variance. Hierarchic classification resulted in six distinctive drinking patterns. Figure 1 shows the projection of subjects and active variables in the main factorial plane.

The first class (1/6) (n=65, 12%) clustered those who drink on an annual basis, most (62%) reported one drink per occasion. These drinkers could be considered *quasi-abstainers*. The second class (2/6) (n=68, 13%), included those who drink monthly, most (69%) reported one drink per occasion and are considered *light drinkers*. The third class (3/6) (n=108, 20%) included those that drink either one (51%) or two or three (49%) drinks per occasion, all of whom drink daily or almost daily. These frequent and fairly light drinkers could be regarded as *Mediterranean drinkers*.

The fourth class (4/6) (n=140, 27%) included those who drink two or three drinks per occasion (56%), and all of whom drink weekly, and are considered *moderate drinkers*. The fifth class (5/6) (n=76, 14%) is comprised of those individuals who drink between four and six drinks per occasion, most of whom (57%) drink on a weekly basis, and are considered *binge drinkers*.

The sixth class (6/6) (n=72, 14%) is comprised of those who drink seven or more drinks per occasion. All subjects drinking this quantity were clustered here, and are considered *Heavy drinkers*. No specific frequency of drinking characterized this class.

Drinking Patterns Associated with DSM-IV Diagnostic Criteria and Socio-Demographic Characteristics

The association between drinking patterns resulting from the classification, number of dependence criteria met, diagnostic status for alcohol abuse and dependence, and socio-demographic characteristics is shown in Figure 2.

Class 1/6 was associated with being female (71%), not meeting any dependence criteria (92%), and being negative for dependence (100%).

Similarly, class 2/6 was associated with being female (62 %), not meeting any dependence criteria (99%), and being negative for dependence (100%).

Class 3/6 was associated with being older than 35 years (65%). No other socio-demographic characteristic (gender and economic level) nor dependence criteria or diagnostic status were associated with this class.

Class 4/6 was not associated with any socio-demographic characteristic; it was associated with a negative status on dependence (98%), and not meeting any dependence criteria (88%).

Class 5/6 was associated with being male (83%), and young (18 to 24 years) (47%), meeting one or two dependence criteria (diagnostic orphans) (42%), and having a diagnosis of abuse (21%).

Lastly, class 6/6 was associated with being male (88%), having a diagnosis of dependence (37%), and meeting one or two dependence criteria (diagnostic orphans) (29%).

These findings are summarized in Table 2

DISCUSSION

Drinking habits in Argentinean ED patients were described by empirically classifying drinkers as to the quantity and frequency of their drinking. Six distinctive classes (drinking patterns) were obtained. The association between those classes and DSM-IV alcohol use disorders and socio-demographic characteristics was explored.

Of the resulting drinking patterns, only one was characterized by quantity alone (not frequency). This group was differentiated by the consumption of high quantities (seven or more drinks per occasion) and was associated with more serious consequences: i.e. higher prevalence of dependence and more severe cases of dependence by the number of criteria fulfilled –not shown-. Interestingly, this result indicates that quantity could be more relevant to dependence than frequency of drinking. Although there is evidence that those with dependence increase their frequency of drinking along with quantity (Russell, Light, and Gruenewald, 2004), results of studies exploring these two dimensions indicated that the effect of quantity on related problems is modified by the frequency of intoxications (achieved by drinking high quantities in a short period) (Kraus, Baumeister, Pabst, and Orth, 2009). Thus, it could be argued that frequency alone stands as a relatively less important factor than quantity, especially in countries were frequent drinking is common.

The remaining five classes were all characterized by both frequency and quantity of drinking. The two classes which included the lighter drinkers (*quasi-abstainers and light drinkers)* were associated with being female, while the two classes including the heavier drinkers (*binge drinkers* and *heavy drinkers*) were associated with being male. National and international studies have shown that, traditionally, women tend to abstain more than men and to drink less when they do drink (Mäkelä, Gmel, Grittner, Kuendig, Kuntsche, Bloomfield, et al., 2006; Munné, 2005). However, recent studies have shown a leveling off between men's and women's drinking (Keyes, Grant, and Hasin, 2008; McPherson, Casswell, and Pledger, 2004). Our results, indicating that the two lighter patterns were associated with women and with a negative status on alcohol use disorders, and the opposite

for the two heavier patterns (associated with men and with alcohol use disorders) seem to suggest that traditional drinking gender differences still remain.

Two classes were associated with particular age groups. Those whose drinking resembled the Mediterranean pattern (*Mediterranean drinkers*) were 35 years or older, while those consuming between four and six drinks on a weekly basis (*Binge drinkers*) were younger. This finding might be explained by changes in drinking observed in the general population. Argentina traditionally has demonstrated a Mediterranean type of drinking, derived from the large Italian and Spanish immigration wave around 1900. However, more recent generations are switching from wine to beer drinking, and from drinking low quantities on a daily basis (with meals) to drinking larger quantities during weekends (Míguez, 2007), a tendency also described in other countries around the globe (Room, Jernigan, Carlini-Marlatt, Gureje, Mäkelä, Marshall, et al., 2002). Our finding of light daily drinking associated with older ages and a binge type pattern with those younger likely reflects this generational change.

Economic level, on the other hand, was not associated with any drinking pattern. The literature has reported mixed findings on this association, which is likely affected by other cultural factors (Bloomfield, Grittner, Kramer, and Gmel, 2006; Mäkelä, et al., 2006).

Not surprisingly, the two lighter drinking patterns (*Quasi-abstaining* and *Light drinking)* were negatively associated with a dependence diagnosis, as was the *Moderate* pattern. On the other hand, two other drinking patterns were associated with positive diagnoses: the *Binge drinking* pattern was positively associated with an abuse diagnosis, and the *Heavy drinking* pattern with dependence. These outcomes are remarkably similar to those reported by Holly and Wittchen (1998) in a community sample of young Germans: a median of five drinks per occasion among those with abuse and a median of eight among those with dependence. Although without using a formal scheme for diagnosis, results from a retrospective study in a Canadian clinical sample shielded somewhat similar results (Sánchez-Craig and Israel, 1985).

Interestingly, the pattern characterized by daily drinking (*Mediterranean)* was not associated with alcohol use disorders. This outcome indicates that a high frequency of drinking is not necessarily indicative of negative consequences in this context; a conclusion also demonstrated in other countries exhibiting wet drinking (Gmel, Heeb, and Rehm, 2001).

Exploring the association between drinking patterns and number of dependence criteria fulfilled revealed that some drinking patterns were characterized by the presence of diagnostic orphans. Diagnostic orphans were described (Hasin and Paykin, 1998) as individuals who meet one or two dependence criteria but do not reach the minimum necessary to be diagnosed. The *Binge and Heavy* patterns were associated with dependence orphan status; the largest number of them were clustered in the *Binge* pattern along with abuse cases, and secondly in the *Heavy drinking* group, along with dependence cases. Our findings support previous research indicating that diagnostic orphans share some characteristics with abuse and dependence cases (McBride, Adamson, Bunting, and McCann, 2009). Remarkably, some diagnostic orphans were clustered in the *Moderate drinking* group, and even a few (not shown) in the *Light drinking* group. Because patients were clustered by their common drinking characteristics (namely, quantity and frequency of usual drinking), results point to the heterogeneous relationship between drinking patterns and negative consequences, including DSM-IV abuse and dependence.

The literature is rich in descriptions of subtypes of drinking patterns obtained with different clustering techniques (e.g., see Dawson, 1996; Epstein, Labouvie, McCrady, Swingle, and Wern, 2004; Moss, Chen, and Yi Hy, 2007; Pilatti, Castillo, Martínez, Acuña, Godoy and Brussino, 2010). Nevertheless, differences in design and measurements turn results'

comparison across studies problematic. On one hand diverse populations are selected (i.e. current drinkers, heavy drinkers, alcohol dependents); on the other, different dimensions are used to form the clusters (for instance: frequency of binge drinking, intention to drink, age at onset of drinking, or other social or psychological variables). Furthermore, even when the same dimensions are considered, they might be operationalized differently, thus quantity could be, alternatively, regarded as volume per day or as volume per occasion. Despite this difficulty, research on drinking subtypes has probed valuable to identify drinking practices and levels of alcohol involvement and their correlates.

Finally, two limitations should be noted. On one hand, cases analyzed here, although presumed representative of this ED, might not be representative of others, thus, findings should not be generalized beyond this particular site. Secondly, given the exploratory nature of the analytical methods used findings should be taken with caution and corroborated by other means.

Results, although descriptive, enrich our knowledge about drinking patterns and alcohol use disorders in the regional context. Furthermore, they may contribute to the development of local drinking guidelines and to target tailored prevention strategies.

Acknowledgments

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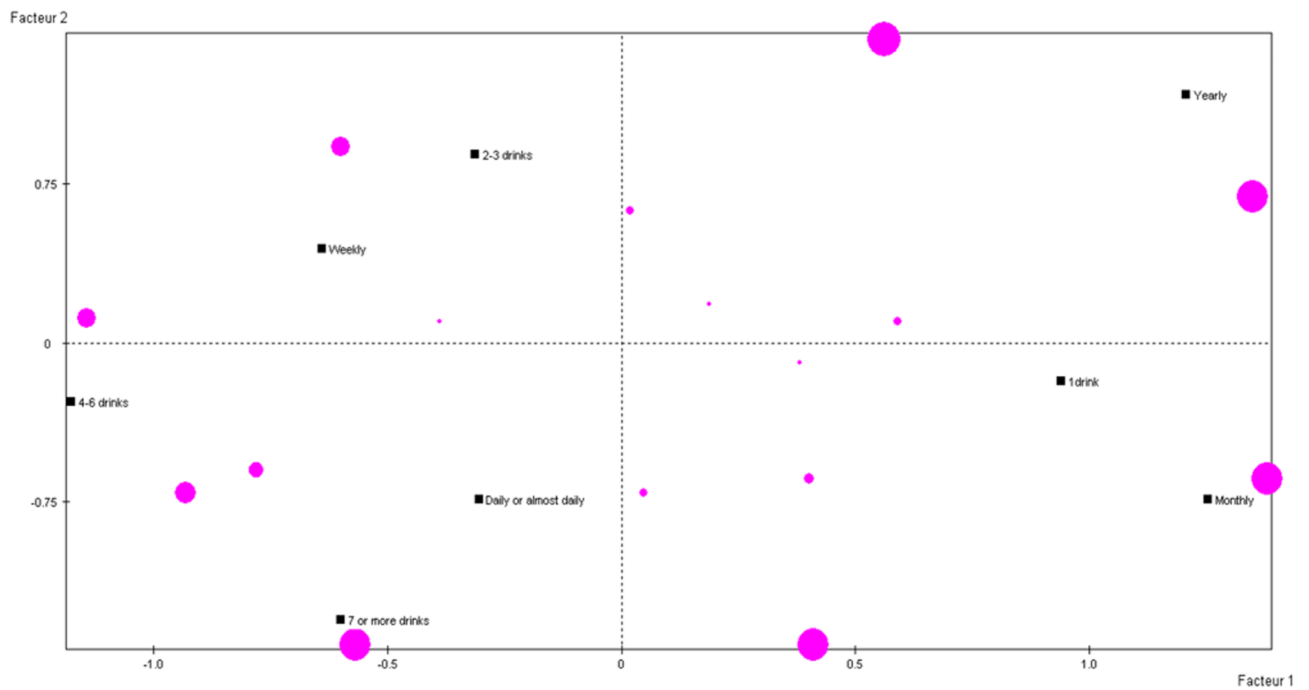
Subjects (symbol size proportional to the number of subjects).

Active variables: habitual quantity of drinking (number of standard drinks per occasion) and

habitual frequency of drinking.

Figure 1.
Factor analysis of multiple correspondences. Projection of the active variables and subjects
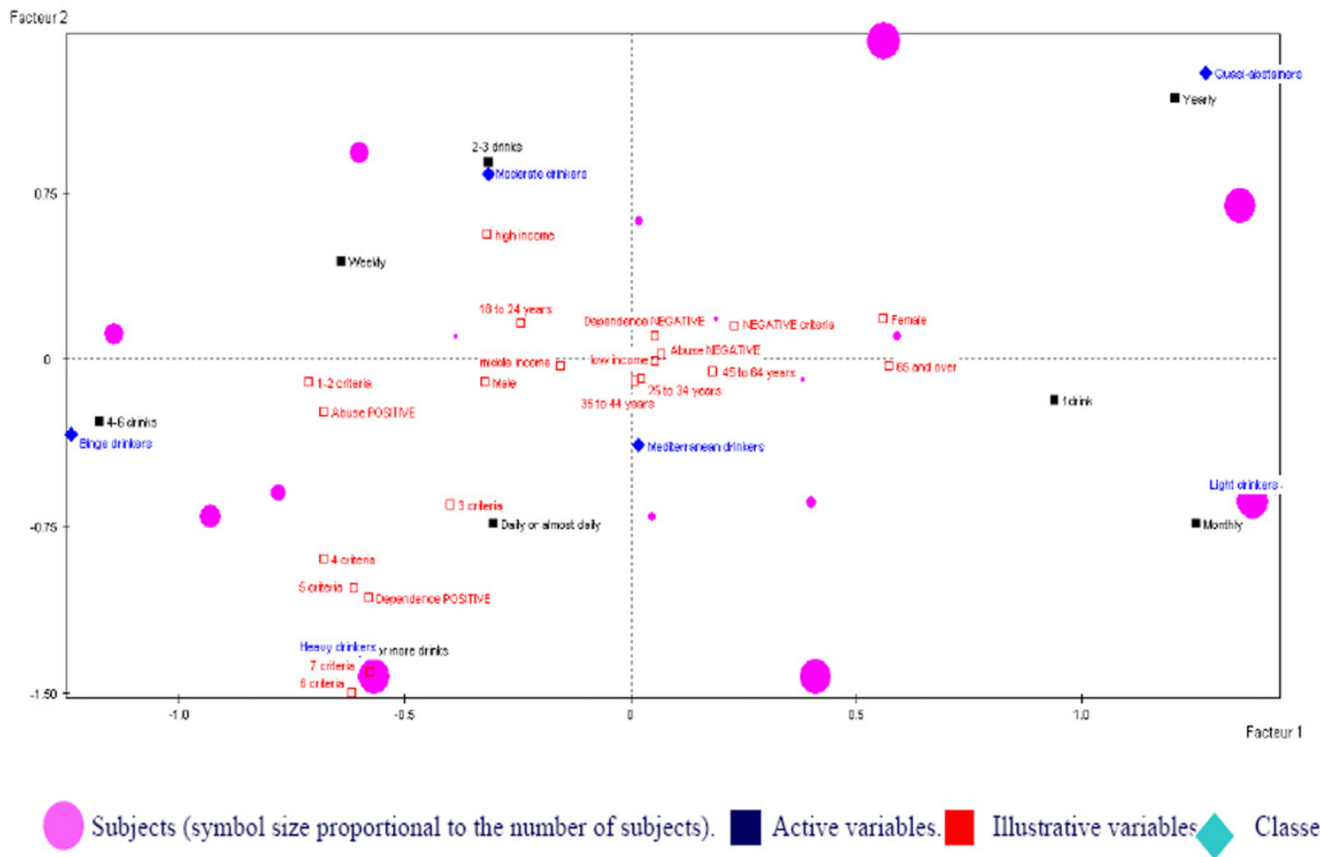on the main factorial plane.

Figure 2.
Factor analysis of multiple correspondences and hierarchic classification. Projection of subjects, active variables, illustrative variables, and classes on the main factorial plane.

Table 1

Participants` sociodemographic and drinking characteristics (n=529)

Variable	Categories	Frecuency (%)
Gender	Male	336 (64)
	18 to 24 years	169 (32)
	25 to 34 years	118 (24)
Age goup		
	35 to 44 years	80 (15)
	45 to 64 years	128 (24)
	65 and over	24 (5)
	Low	404 (76)
Economic Level	Middle	111 (21)
	High	14 (3)
	Daily or almost daily	161 (30)
	Weekly	216 (41)
Habitual frequency of drinking		
	Monthly	81 (15)
	Yearly	71 (13)
	1 drink	204 (39)
	2–3 drinks	173 (33)
Habitual quantity of drinking		
	4–6 drinks	80 (15)
	7 or more drinks	72 (14)
DSM-IV		
	Positive 48 (9)	
Alcohol Abuse		
DSM-IV		
	Positive 46 (9)	
Alcohol Dependence		

Table 2

Drinking patterns obtained through factor analysis of multiple correspondences and hierarchical classification, and characteristics associated with the resulting classes

Classes				Characteristics that contributed to the formation of the class											Characteristics associated[1] with each class.								
Class	Denomination	N	%	Usual[2] quantity	n	%	Usual frequency	n	%	Age group (%)	n	%	Gender (%)	n	%	DSM-IV Abuse Status (%)	n	%	DSM-IV Dependence Status (%)	n	%	Diagnostic Orphan[3](%)	n	%
1/6	Quasi-abstainers	65	12,3	1	40	62	Yearly	65	100	-----			Female	46	71	-----			Negative	65	100	Negative	60	92
2/6	Light drinkers	68	12,8	1	47	69	Monthly	68	100	-----			Female	42	62	-----			Negative	68	100	Negative	67	99
3/6	Mediterranean drinkers	108	20,4	1	55	51	Daily	108	100	35–44	26	24	-----			-----			-----			-----		
				2–3	53	49				45–64	44	41												
4/6	Moderate drinkers	140	26,5	2–3	78	56	Weekly	140	100	-----			-----			-----			Negative	137	98	Negative	123	88
5/6	Binge drinkers	76	14,4	4–6	76	100	Weekly	43	57	18–24	36	47	Male	62	83	Positive	15	21	-----			Positive	32	42
6/6	Heavy drinkers	72	13,6	7	72	100	-----			-----			Male	63	88	-----			Positive	27	37	Positive	21	29

n= number those presenting the characteristic within the class.

% n= % of those presenting the characteristic within the class.

[1] $P < 0.005$ and V-Test > 2.65, otherwise indicated "—".

[2] Number of drinks per occasion.

[3] Meeting one or two DSM-IV dependence criteria without reaching the minimum required for a diagnosis, and not having a diagnosis of abuse.