

**Title of the article:**

Alcohol use disorders in Argentinian girls and women 12 months before delivery: Comparison of DSM-IV, DSM-5 and ICD-10 diagnostic criteria.

**Short title:**

*Alcohol Use Disorders in Pregnant Women*

**Author's names, academic degrees and affiliations**

Mariana Beatriz López (PhD.)<sup>1</sup>; Karina Conde (M.D.)<sup>2</sup>; Mariana Cremonte (PhD.)<sup>3</sup>

<sup>1</sup> Interdisciplinary Centre of Mathematical and Experimental Psychology Research “Dr. Horacio J. A. Rimoldi” (CIIPME). National Scientific and Technical Research Council (CONICET), Argentina. Address: Tte. Gral. Juan D. Perón 2158, Capital Federal (CABA), Argentina.

<sup>2</sup> National University at Mar del Plata, Psychoactive Substance and External Cause Injuries Group. Address: Funes 3250 - Cuerpo V - Nivel III, Mar del Plata, Argentina.

<sup>3</sup> National University at Mar del Plata, Psychoactive Substance and External Cause Injuries Group - National Scientific and Technical Research Council (CONICET), Argentina. Address: Funes 3250 - Cuerpo V - Nivel III, Mar del Plata, Argentina.

**Corresponding address:**

Mariana B. López

Tte. Gral. Juan D. Perón 2158

Capital Federal (CABA)

CP: C1040AAH

Buenos Aires - Argentina

**Email address:**

[nanablopez@gmail.com](mailto:nanablopez@gmail.com)

**Telephone numbers:**

Tel. 54(11) 4953-1477/3541

Cel. 54(342)6309538

## Abstract

**Background:** The evidence of important problems related to prenatal alcohol exposure have faced researchers with the problem of understanding and screening alcohol use in this population. Although any alcohol use should be considered risky during pregnancy, identifying alcohol drinking problems (ADPs) could be especially important because women with ADPs could not benefit from a simple advice of abstinence and because their offsprings are in a higher risk of problems related with prenatal alcohol exposure. In this context we aim to study the prevalence and characteristics of ADPs in pregnant women, evaluating the performance of different diagnostic systems in this population. **Objectives:** Describe the prevalence of ADPs obtained with the criteria of the Diagnostic and Statistical Manual of Mental Disorders in its fourth (DSM-IV) and fifth edition (DSM-5), and the International Classification of Diseases ICD-10, in Argentinean females aged 13-44 years, 12 months before delivery; evaluate the level of agreement between these classification systems, and; analyze the performance of each diagnosis criterion in this population. **Methods:** Data were collected through personal interviews to a probability sample of puerperal women ( $n = 641$ ) in the city of Santa Fe (Argentina), between October 2010 and February 2011. Diagnoses compatible with DSM-IV, DSM-5 and ICD-10 were obtained through the Composite International Diagnostic Interview. Agreement among diagnostic systems was measured through Cohen's *Kappa*. Diagnosis criteria performance was analyzed considering their prevalence and discriminating ability (*D* value). **Results:** Total ADP prevalence was 6.4% for DSM-IV (4.2% abuse and 2.2% dependence), 8.1% for DSM-5 (6.4% mild, 0.8% moderate and 0.9% severe alcohol use disorder – AUD), and 14.1% for the ICD-10 (11.9% harmful use and 2.2% dependence). DSM-5 modifications improved agreement between DSM and ICD. The least prevalent and worst discriminating ability diagnostic criterion was 'legal problems'. The most prevalent and one of the best discriminating ability diagnostic criterion was 'health issues'. **Conclusion:** DSM-IV and ICD-10 dependence prevalence was similar to that of previous studies in pregnant women while abuse prevalence was surprisingly higher. Ours results indicate a better performance of the DSM-5 AUD

category relative to the DSM-IV dual categorization. Nevertheless, the poor diagnostic performance of some DSM-5 criteria in this population could evidence their intercultural variability.

*Key words:* alcohol use disorders; pregnant women; DSM-IV; DSM-5; ICD-10.

## 1. Introduction

Over the last 50 years, research has shown that prenatal alcohol exposure can lead to a wide spectrum of physical, mental, and behavioral problems, encompassed in the term Fetal Alcohol Spectrum Disorders (FASD). In this context, official recommendations about drinking during pregnancy have been changing progressively around the world from moderate consumption to abstinence (ICAP, 2009).

Nevertheless, and despite public efforts to reduce prevalence of alcohol consumption in women of childbearing age and during pregnancy, many women continue drinking during pregnancy. Alcohol consumption during pregnancy in United States of America ranges from 10 to 12% (Krulwich, 2005). In some Latin-American countries like Uruguay and Argentina the prevalence is much higher, ranging from 40% (Magri et al., 2007) to 75% (López et al., 2015), and a significant number of women report heavy alcohol use during this period (López et al., 2015).

Although any level of alcohol consumption in pregnant women should be considered risky (Feldman et al., 2012), heavy alcohol use and related alcohol drinking problems (ADP) are especially important since they imply a higher risk for the mother and the child. On one hand, the consequences of fetal alcohol exposure are related to alcohol dose (Feldman et al., 2012). On the other hand, pregnant women with any ADP most likely will not respond to a simple advice to quit drinking, and would probably need a more specific intervention or referral to specialized treatment (Lichtenberger et al., 2015). Despite this, ADP in women have been historically unattended. Studies regarding the characteristic of ADP and the development of classification systems have been carried out mostly with male population and, to date, epidemiological studies on women in childbearing age and pregnant women are scarce.

Nowadays there are two international diagnostic systems that include ADP: the Diagnostic and Statistical Manual of Mental Disorders (DSM), by the American Psychiatric Association, and the International Classification of Diseases (ICD), by the World Health Organization. Both DSM Fourth Edition (DSM-IV) and ICD Tenth Edition (ICD-10) discriminate between two forms of

alcohol consumption: abuse and dependence (APA, 1994), and harmful use and dependence (WHO, 1992), respectively. Unlike DSM-IV, ICD-10 includes ‘craving’ (i.e., a strong desire or urge to consume alcohol) among its dependence criteria (WHO, 1992). Though equivalent in intent to DSM-IV abuse, ICD-10 harmful use is based on different diagnosis criteria. Abuse focuses on socio-legal consequences of use, while harmful use is determined by pathological intoxication, including physical or mental illness arising from alcohol consumption (WHO, 1992; APA, 1994).

Abuse and dependence categories in DSM-IV have been questioned in terms of their predictive, concurrent, and construct validity (Harford and Muthen, 2001; Babor and Caetano, 2006; Kahler and Strong, 2006). Furthermore, the very pertinence of their distinction has been challenged, as recent studies (Saha et al., 2007; Borges et al., 2010) indicate that both belong to a single latent continuum. According to DSM-IV, abuse entails less severe consequences than dependence. Nevertheless, evidence locates abuse symptoms within the moderate part of the continuum (Harford and Muthen, 2001; Saha et al., 2007; Bond et al., 2011). Notably, both categories may entail similar ranges of severity, as shown by “diagnostic orphans” or unspecified alcohol-related disorders, subjects who meet one or two criteria of dependence but none of abuse and obtain negative diagnoses in both (Hasin and Paykin, 1998).

These considerations, among others, resulted in modifications (APA, 2010) to the DSM-IV, embodied in its fifth edition (APA, 2013). First, legal problems as a consequence of alcohol abuse were eliminated as a diagnostic criterion because of their cultural variation. Second, “craving” was entered as a diagnostic criterion, following ICD-10 (WHO, 1992). Finally, abuse and dependence were unified into alcohol use disorder (AUD), as a single category. Cutoff points to discriminate between levels of severity are determined by the number of criteria a person meets: 0-1 (negative), 2-3 (positive, mild), 4-5 (positive, moderate), and 6+ (positive, severe) (APA, 2013).

Few studies (Agrawal et al., 2011; Dawson et al., 2012; Peer et al., 2012; Compton et al., 2013; Kelly et al., 2014) have examined the prevalence changes arising from evaluations conducted with DSM-5 and the ensuing modifications in the agreement level between DSM and ICD.

Incidentally, such studies were carried out mainly on Anglo-Saxon populations, as far as we know, none focused on women.

The relationship between alcohol use and its negative consequences is complex (Holly and Wittchen, 1998; Cremona et al., 2010) and subject to cultural differences (Borges et al., 2010). In particular, gender plays a key role in discriminating alcohol use profiles (Del Boca and Hesselbrock, 1996). Physiological differences between genders make women more vulnerable to the intoxicating effects of alcohol (Thomasson, 1995; Kovacs and Messingham, 2002; Nolen-Hoeksema, 2004; Baraona et al., 2006). Culturally, gender stereotypes seem to differentially influence consumption patterns and consequences in men and women (Boomfield et al., 2001; Nolen-Hoeksema, 2004; Roberts, 2004; López, 2011). Additionally, Argentina has been characterized as a “wet society”, due to a high level of alcohol consumption acceptance, even among risk groups, like pregnant women (López, 2013).

Knowing the prevalence of ADP in pregnant women is important to make decisions regarding preventive public health actions. Additionally, analyzing alcohol drinking disorders in women may shed light on these problems and contribute to future revisions of extant categories in international diagnostic systems. In this vein, the present study aims to characterize alcohol-related disorders in Argentinean childbearing age women. Specifically, we seek to (i) describe ADP prevalence obtained with the criteria of DSM-IV (APA, 1994), DSM-5 (APA, 2013), and ICD-10 (WHO, 1992) in Argentinean females aged 13-44 years, in the 12 months before delivery, analyzing the impact of DSM-5 changes in diagnosis prevalence (ii) evaluate the level of agreement between DSM-IV, DSM-5, and ICD-10 classification systems, and; (iii) analyze the performance of each diagnosis criterion in this population.

## 2. Methods

This study was approved by the Ethics Committee of the Mathematical and Experimental Psychological Interdisciplinary Investigation Center (CIIPME), unit of the National Scientific and

Technical Research Council (CONICET), Argentina.

### *2.1. Participants and procedure*

Data were obtained through a two-stage sampling design. In the first stage, two perinatal centers in the city of Santa Fe, Argentina, were purposively selected. In order to reach a large number of women in a limited lapse of time, including different sociodemographic strata, we decided to work at the biggest state-owned perinatal center –one of the two state-owned perinatal centers of the city– and the biggest private-owned perinatal center of the city. In the second sampling stage, a probabilistic sample of puerperal women was selected from each perinatal center. The sample size ( $n = 641$ ) was equivalent to about 10% of the births that took place in this city during the year previous to this study (Department of Health of the province of Santa Fe, Provincial Planning and Management Control, 2013).

Women were personally interviewed during the 48 hours after labor. Interviews took place every day, from October 2010 to February 2011, and were conducted by two trained psychologists that worked at both centers. Every woman who had given birth at least one live baby during the evaluation period in each center was invited to participate. Exclusion criteria were: 1. Not being able to understand the questions; 2. Being underage –being under eighteen years old and not married– (Law 23.849, UNICEF, 1898), and not being accompanied with parents or legal guardians that could give consent to participate. Only one woman refused to participate and three were excluded in accordance with previously mentioned criteria.

Informed consent was obtained from all participants and from the parents/legal guardians of girls below the age of eighteen years. Prospective participants were informed that participation was optional, and that data would be collected and treated anonymously and confidentially. After the interview, women were given a brochure on “breastfeeding and alcohol,” containing relevant information and a list of institutions offering further information and assistance in their city.

### *2.2. Instruments*

Diagnoses of abuse, harmful use, dependence (DSM and ICD), and AUD were obtained through the ADP section of the Composite International Diagnostic Interview (CIDI) (WHO, 1990). The CIDI is a fully structured diagnostic interview, with a modular organization, that gives diagnoses simultaneously according to ICD and DSM (Tacchini et al., 1994). It was developed by the *Joint Project of World Health Organization and Alcohol, Drug Abuse, and Mental Health Administration on Diagnosis and Classification of Mental Disorders and Alcohol and Drug Related Problems* and became the most widely administered diagnostic interview in the world (Kessler and Ustun, 2003). This instrument has shown high reliability indexes –among the highest reported for similar instruments–, and good levels of trans-cultural applicability (Tacchini et al., 1994).

### 2.3. Data analysis

1) To calculate the prevalence of ADP, we considered the mean and 95% confidence intervals among participants who meet the criteria of DSM-IV, DSM-5, and ICD-10. Participants were divided into sets of groups: negative vs. positive for abuse/ positive for dependence (DSM-IV); negative vs. positive for harmful use/ positive for dependence (ICD-10); and negative vs. positive for AUD –mild, moderate and severe (DSM-5). All prevalences were estimated for the last 12 months. Furthermore, diagnostic differences between DSM-5 and DSM-IV were described comparing prevalences for diagnostic categories and subcategories from both manuals. To analyze the effects of changes in DSM criteria on the “diagnostic orphans” problem, we also describe DSM-IV prevalences distinguishing between *negatives* and *negatives but with an unspecified alcohol-related disorder*.

2) Agreement among diagnostic systems (and their 95% confidence intervals) was measured through Cohen’s Kappa (Sim and Wright, 2005) for dual comparisons between diagnostic categories within each diagnostic system. Moderate and severe levels of AUD were combined to allow for dual comparison. This was achieved by considering the cutoffs for AUD subcategories related to DSM-IV diagnostic criteria, as well as the prevalence of diagnostic categories of both manuals over the target population. Comparisons were made between: (a) DMS- IV negative,

abuse, and dependence vs. ICD-10 negative, harmful use, and dependence; (b) DSM-5 negative, mild disorder, and moderate/severe disorder vs. ICD-10 negative, harmful use, and dependence; and (c) DSM-IV negative, abuse, and dependence vs. DSM-5 negative, mild disorder, and moderate/severe disorder. To evaluate the effect of bias and prevalence on the Kappa coefficient, we also estimated Kappa maximum (KM) and the proportion of KM (PKM) (Umesh et al., 1989; Sim and Wright, 2005).

3) To analyze the reported criteria, we described the prevalence (percentage of positive responses) of each criterion of each diagnostic system among current drinkers, namely those who had drunk at least one standard unit of alcohol (10-12 gm) over the last 12 months, and estimated their respective discriminating ability through the item discrimination value ( $D$ ). The Discriminating index or  $D$  value is a commonly used measure in psychometric research and indicates item quality by assessing the degree to which an item discriminates between those scoring high and low on an instrument (Nunnally, 1972).  $D$  values were obtained by subtracting the proportion of positive responses in negative AUD participants (DSM-5) from that of participants diagnosed as positive in the most severe extreme of the disorder.

The Statistical Package for Social Sciences (SPSS), version 20.0 for Windows was used for management and data processing.

### 3. Results

#### 3.1. Participant characteristics

The mean age of the women was 25.6 ( $SD = 6.6$ ), ranging from 13 to 44 years old. At the time of the interview, most participants were either cohabiting (59%) or married (24.6%). Roughly one third of the women (35.7%) were first-time mothers, and among those who had given birth previously the mean of children was 2.4 ( $SD = 1.5$ ), with a maximum of 12.

The formal educational level of the sample was low: 62% had fewer than 12 years of formal education and only 10% had completed undergraduate or graduate programs. Over half of the

interviewees (53.7%) were housewives. Out of all employed participants (33.6%), most had a part-time job (19.3%).

With regard to alcohol consumption, 83% of women were current drinkers, and 75% had drunk at least one standard unit during pregnancy. Only 6% was lifelong abstainer.

Socio-demographic characteristics by perinatal center are shown in Table 1.

[Table 1 about here]

### 3.2. Prevalence of ADP

DSM-IV yielded a 6.4% prevalence of ADP, mainly in the abuse category (4.2%). ICD-10 resulted in greater ADP prevalence (14.1%) because of high prevalence of harmful use diagnoses (11.9%). DSM-5 led to a somewhat higher prevalence of ADP (8.1%) than DSM-IV. These results are shown in Table 2.

[Table 2 about here]

### 3.3. Discrepancies in ADP prevalence between DMS-IV and DMS-5

Most DSM-IV negatives (93.6%) remained negative in DSM-5, while 3% obtained a mild AUD diagnosis. This 3% corresponded to 36% of participants presenting an unspecified alcohol-related disorder (i.e. diagnostic orphans) in DSM-IV –those who meet one or two criteria of dependence but none of abuse. Most participants with a DMS-IV abuse diagnosis (66.7%) obtained a mild AUD diagnosis, and the rest became negative in DSM-5. Out of those who met DSM-IV dependence criteria, 77.3% obtained a moderate or severe AUD diagnosis in DSM-5, the remainder being diagnosed with a mild AUD (see Table 3).

[Table 3 about here]

### 3.4. Agreement between diagnostic categories

Table 4 shows the agreement measures, for dual comparisons, between ternary diagnostic categories obtained with each diagnostic system. Agreement (Maximum Kappa proportion) was higher between DSM-5 and ICD-10, and between DSM-IV and DSM-5, than between DSM-IV and ICD-10.

[Table 4 about here]

### 3.5. *DMS-IV, DSM-5, and ICD-10 criteria performance*

As shown in Table 5, there is great prevalence variability of positive answers to the different diagnostic criteria, ranging from 0.4% for ‘legal problems’ to 15.9% for ‘health issues’. ICD-10 ‘craving’, added into DSM-5, had a low percentage of positive answers. Criteria with the least discriminating ability were ‘legal problems’, ‘hazardous use’, and ‘activities given up’; while ‘withdrawal’, ‘inability to control drinking’, and ‘health related issues’ had greater discriminating ability.

[Table 5 about here]

## 4. Discussion

### 4.1. *DSM-IV and ICD-10 ADP prevalences.*

DSM-IV and ICD-10 alcohol dependence prevalence (2.2%) found in our study was similar to that previously reported in pregnant women and lower than that reported in women in childbearing age. In the United States, Caetano et al. (2006) reported 2.3% alcohol dependence prevalence for the last 12 month in women that had been pregnant during that period, and 4.1% alcohol dependence prevalence for the last 12 month in not pregnant women in childbearing age. Abuse prevalence (4.2%) was surprisingly high in the target population. Caetano et al. (2006) reported the same prevalence of abuse in women in childbearing age, but a much lower one in women that had been pregnant during the last 12 month (1.3%). We found neither previous studies reporting ICD dependence and harmful use prevalence in pregnant women, nor other studies reporting DSM dependence and abuse prevalence in pregnant women or in women in childbearing age in Argentina or in other countries of the region.

Harmful use (ICD-10) prevalence (11.9%) was more than two and a half times higher than that of abuse. Even if we have no previous studies to compare this prevalence, this is very relevant information considering that abuse prevalence was found as high when compared to other studies

(Caetano et al., 2006) and that pregnant women are a high-risk population due to the consequences of prenatal alcohol exposure.

Regarding the analysis of the performance of the ADP categories in this population, as previously mentioned, despite being equivalent in intent DSM-IV abuse and ICD-10 harmful use categories are based on different diagnosis criteria. The main difference in prevalence between these categories may be due to the interactions of the differences in diagnostic criteria and the distinctive characteristics of our target population. Abuse diagnosis rests on the socio-legal consequences of consumption (problems with law enforcement, family, school or work), which vary across countries and cultures –e.g., the level of accepted consumption in a specific culture (Rounsaville, 2002) or daily activities of a given population. Most of the interviewed women did not study or work outside the household, and about 20% had informal part-time jobs. Conversely, harmful use diagnosis is based on the concept of pathological intoxication (physical or psychological problems due to consumption), which proves less culture-bound.

#### *4.2. Changes in ADP prevalence between DMS-IV and DMS-5*

Out of all participants obtaining an unspecified alcohol-related disorder diagnosis in DSM-IV, roughly one fourth obtained a mild severity AUD in DSM-5. Besides, all participants with a dependence diagnosis in DSM-IV obtained an AUD diagnosis (most moderate or severe, 76.9%) in DSM-5. Moreover, a third of those with a previous abuse diagnosis changed to negative. Considering that the abuse category has been questioned due to its poor predictive, concurrent, and construct validity (Babor and Caetano, 2006; Khaler and Stong, 2006; Saha et al., 2007), its low agreement level with the equivalent ICD-10 category (Rounsaville et al., 1993; Grant, 1996; Andrews and Slade, 1998), and the intercultural variability of its constituting criteria (APA, 2010), these results might indicate that the DSM-5 AUD category is more valid than the dual DSM-IV categorization.

#### *4.3. Agreement among categories of all diagnostic systems*

Agreement level was good between DMS-IV and DSM-5 and between ICD-10 and DSM-5,

but poor between DSM-IV and ICD-10. The low level of agreement between the latter is explained by the significantly poor agreement between abuse and harmful use categories (Cohen's Kappa = 0.13;  $p < .001$ , not showed in results). Previous studies have also reported low agreement levels between these categories, as well as a high level of agreement between dependence categories in both manuals (Rounsaville et al., 1993; Grant, 1996; Andrews and Slade, 1998; Cremonte et al., 2013).

According to our results, DSM-5 modifications have improved agreement between DSM and ICD, achieving one of their objectives (APA, 2010).

#### *4.4. DMS-IV, DSM-5, and ICD-10 criteria performance*

The criterion of 'legal problems', absent in DSM-5 due to its intercultural variability, showed low prevalence and poor discriminatory value. The same holds for the 'hazardous use' and 'activities given up' criteria. The questions used to evaluate both criteria are related to the subjects' obligations and daily activities, which vary widely among socio-cultural groups. DSM-IV exemplifies 'hazardous use' of alcohol (a criterion of abuse and AUD in DSM-5) as driving a car or operating a machine under the influence of alcohol. In this vein, the characteristics of our sample suggest that most women interviewed were non-drivers. The discrepancy between these results and those of previous reports on other populations might reflect their intercultural variability.

Reduction of social, work-related or leisure activities due to substance use constitutes a criterion of dependence in DSM-IV and AUD in DSM-5. A considerable proportion of our sample was unemployed or had informal part-time jobs. Even in heavy-drinking women, the questions related to giving up or reducing activities (e.g. "Did you ever give up or greatly reduced important activities because of your drinking?") were answered: "No, because I sleep the day after, I have nothing to do" or "No, because I have nothing to do". Most affirmative answers in the CIDI questionnaire were related to dropping out of school.

Although the reducing activities criterion showed a higher prevalence and better performance than the giving up activities criterion, because answers were focused on reducing domestic chores,

in most vulnerable contexts (especially among younger women), unemployment does not necessarily mean responsibility over house chores. Many participants lived with their mothers, who took care of those tasks. Furthermore, over a third was first-time mothers, so they were not responsible for raising previous children.

The most prevalent criterion was ‘health issues’, signaling dependence in DSM-IV, AUD in DSM-5, and harmful use and dependence in ICD-10. This criterion showed a high rate of discrimination. Its high prevalence might be due to the fact that our sample was composed of women. Research has demonstrated that women are more vulnerable than men to the toxic effects of alcohol (Thomasson, 1995). Due to metabolic differences between sexes, women are more prone to develop alcohol-related health issues, such as hepatic, cardiac, or cerebral disease (Nolen-Hoeksema, 2004; Baraona et al., 2006). Withdrawal, also linked to physical consequences of intoxication, showed a good performance in this population. However, its relatively high prevalence might indicate that women were interpreting it as related to the consequences of acute intoxication after an episode of heavy drinking, rather than as related to symptoms of cessation after prolonged drinking. Among the health issues most frequently mentioned by our participants were those affecting the digestive system: stomach and liver issues. In addition, since response tendencies to standardized instruments vary greatly across cultures (Carle, 2009), the largest prevalences of positive answers to these criteria could suggest that women are more likely to inform these problems than males.

‘Craving’, the ICD-10 dependence criterion incorporated into DSM-5, showed a good performance in terms of discrimination power ( $D = 36$ ), but was less discriminatory than other dependence criteria from both manuals –except for giving up activities, as previously discussed. This finding is in agreement with others in the literature (Cherpitel et al., 2010).

### *Limitations*

Finally, the results discussed could have some limitations that must be considered. First, the sample was from only one city, and although it is an important city and the sample was probably

representative of the city, conclusions should not be extended without caution to other populations from Argentina. Second, in another cultural context pregnant women have shown to underreport their alcohol intake (Wurst et al., 2008), undermining the measurement reliability. However, since Argentinean population is characterized by a wide acceptance of drinking, even among pregnant women (López, 2013), it is unlikely that this results in a major bias. Finally, to allow the comparison with other epidemiological studies, we analyzed prevalences of ADP during the 12 month period previous to giving birth. Considering that women had been pregnant during 9 of these 12 month, changes on consumption due to pregnancy could be unseen in ours results. Nevertheless, pre-pregnancy alcohol consumption is one of the most consistently identified predictor of prenatal alcohol use (Skagerström et al., 2011) and, in our cultural context, most women do not change their alcohol consumption during pregnancy (López et al., 2015). A previous study showed that less than 1 out of 3 pregnant women change their pattern of alcohol consumption during pregnancy, and among the ones who change, most reduce their consumption, but do not cease it (López et al., 2015).

## 5. Conclusion

Although DSM-IV and ICD-10 alcohol dependence prevalence was similar to that reported previously in pregnant women, abuse and harmful use prevalences were surprisingly high considering the more salient characteristic of the target population in regards with drinking problems: all women had been pregnant and trying to conceive during the analyzed period. Even if any level of alcohol consumption during pregnancy should be considered risky, ADP are especially important since they imply higher risk for the mother and the child and require specialized treatment. Considering this, our results put into evidence the urgent need for a prevention strategy in the local context.

In respect of ADP categories analysis, differences between the prevalences of abuse and harmful use and the low agreement level between these categories offer local support for worldwide

evidence on the lack of validity of the dual categorization of ADP (Babor and Caetano, 2006; Kahler and Stong, 2006; Saha et al., 2007).

Concerning the abuse category, the poor diagnostic performance of alcohol-related ‘legal problems’ criterion supports its removal from DSM-5 (APA, 2010). However, our research suggested the diagnostic limitations for women of other abuse criteria preserved in DSM-5 AUD, namely: ‘giving up activities’ and ‘hazardous use’. The usefulness of these criteria may depend on socio-cultural factors, as they relate to the subjects’ activities and responsibilities.

The high prevalence of harmful use, a category based on pathological intoxication, may be explained by the use of an all-female sample. As mentioned before, physiological differences between sexes make women more vulnerable to the intoxicating effects of alcohol (Thomasson, 1995; Kovacs and Messingham, 2002; Nolen-Hoeksema, 2004; Baraona et al., 2006). In fact, ‘health issues’ was the criterion with the largest prevalence among all diagnostic systems. However, the high prevalence of positive responses to this criterion may indicate that men and women differ in their conception of health issues and/or likelihood to report them.

Finally, we found that (i) one fourth of all participants with an unspecified alcohol-related disorder using DSM-IV criteria obtained a low AUD diagnosis in DSM-5; (ii) all subjects with a dependence diagnosis in DSM-IV obtained a mild or severe AUD diagnosis in DSM-5 (76.9%); and (iii) a third went from abuse (poorly valid category) to negative in DSM-5. Moreover, the AUD category showed a better level of agreement with ICD-10 than with DSM-IV. Taken together, these results indicate a better performance of the DSM-5 AUD category relative to the DSM-IV dual categorization.

### **Glossary:**

Alcohol drinking problems (ADP): We use this term to refer to all diagnostic categories for alcohol use problems included in the international diagnostic systems DSM and ICD (i.e. Dependence, Abuse, Harmful Use and Alcohol Use Disorder –DSM-5).



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