EPIDEMIOLOGY AND PREVENTION

Prevention of "Risky" Drinking among Students at a Brazilian University

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Abstract — Aim: The aim of this paper was to compare the quantity and frequency of alcohol use and its associated negative consequences between two groups of college students who were identified as being "risky drinkers." Subjects were randomly allocated in a clinical trial to intervention or control groups. **Methods:** Risky drinking use was defined as Alcohol Use Disorders Identification Test (AUDIT) ≥ 8 and/or Rutgers Alcohol Problem Index (RAPI) ≥ 5 problems in the previous year. Students who had undergone the Brief Alcohol Screening and Intervention for College Students (BASICS) ($N = 145$ at baseline; 142 at 12 months, and 103 at 24 months, loss of 29.7%) were compared with a control group ($N = 121$ at baseline; 121 at 12 months and 113 at 24 months, loss of 9.3%), the nonintervention group. Variables included drinking frequency, quantity and peak consumption, dependence assessment, and family and friends' abuse assessment. **Results:** Treated students at a 24-month follow-up decreased quantity of alcohol use per occasion and lowered AUDIT and RAPI scores. **Conclusions:** This is the first brief intervention work on risky drinking with college students in Brazil and the results are encouraging. However, it is difficult to conduct individual prevention strategies in a country where culture fosters heavy drinking through poor public policy on alcohol and lack of law enforcement.

INTRODUCTION

Episodic heavy drinking, heavy drinking, drinking to intoxication, occasional heavy intake, and binge drinking are terms that are found in the literature used interchangeably (Yang *et al*., 2007). "Binge" drinking has been defined as a consumption of five or US standard drinks (12 g of alcohol in each drink) in just one episode, with the frequent variation of four or more standard US drinks in a episode of about 2 h for women and five or more drinks for men (NIAAA, 2004; Naimi *et al*., 2003; Kuntsche *et al*., 2004; Plant and Plant, 2006). This quantity of alcohol is enough to make many people intoxicated although other factors play an important role on the speed and degree of intoxication, such as gender, drinking on an empty stomach, or drinking too fast (Wechsler *et al*., 1994; Dimeff *et al*., 2002). Such drinking is commonplace among young people who are beginning to use alcohol. There are two recent studies held in Brazil in binge drinking: Laranjeira *et al*. (2007) in a national survey found that 28% of the Brazilians, 40% males and 18% females, mainly young (18–24 years old), reported binge drinking in the last year and 50% reported it at least once over a 12-month period; Silveira *et al*. (2007) reported in São Paulo city, the same region of the present study, the prevalence of 10.7% and 7.2% of heavy drinking by adult men and women respectively in the last year. Higher percentages of binge drinkers among single women aged 18–44 years and men aged 18–24 years were reported when compared to other age groups. It should be said that this public health problem has been recognized as the main burden of disease in Brazil (Taylor *et al*., 2007).

This pattern of consumption by college students is usual and a cause of concern, once these youths are starting a new period of life, often leaving home for the first time, and experiencing freedom along with the use of alcohol and other drugs (Alexandre and Bowen, 2004). During college, the pattern of use of alcohol is variable and it is related to parties, celebrations, graduation parties, and holidays (Almeida *et al*., 2004). The increase in consumption of drinks by students during college years is often influenced by their peers (Perkins and Berkowitz, 1986). Wechsler *et al*. (1994, 1995) have looked at the repercussions and harmful consequences of episodic heavy drinking among college students since the 1990s, driving attention to this civil public health problem. In Brazil the awareness of this phenomenon is more recent, this being the first study aimed at prevention of this pattern of alcohol use.

Larimer and Cronce (2002) and Larimer *et al*. (2005) reviewed the effects of brief individual interventions from 1984 to 1999 and later they updated this review up to 2005. Their conclusions, as also supported by Foxcroft *et al*. (1997, 2003), pointed out to the fact that just education or awareness of problems related to the use of alcohol would not be prevention effective. However, even brief interventions (BIs) would be very effective for students who were at-risk drinkers, particularly interventions which provided individualized feedback to the students on rules, expectancies and risks related to alcohol consumption.

Although regulation is easy to establish by law and can be supervised at low cost, the taxes and price of alcohol in Brazil are very low. The very low price of alcohol products in Brazil has contributed to the increase in alcohol consumption, primarily among young people (Carlini *et al*., 1990a, 1990b, 2002; Galduróz *et al*., 1997, 2003; Kerr-Corrêa *et al*., 2006; Taylor *et al*., 2007). The most popular alcoholic beverage in Brazil is

"cachaça" or "pinga," a 40% GL distilled beverage made from sugarcane, which costs less than one dollar per liter and almost the same price of a liter of milk or national bottled water and less than a liter of soda.

There were significant diminishing of quantity and frequency of drinking, a positive outcome (Marlatt *et al.*, 1998; Larimer *et al.*, 2001; Dimeff *et al.*, 1999, 2002) obtained through the BASICS (Brief Alcohol Screening and Intervention for College Students) model. Clinical experience in alcohol and drugs abuse and knowledge of the culture led us to expect that Brazilian students would be more likely to accept the harm reduction approach rather than any other approaches aiming at alcohol abstinence. The main objective of this study was to compare the patterns of alcohol use among freshman students who were at-risk drinkers and received the BI with those of a control group in a randomized clinical study.

Students considered at-risk drinkers were randomly assigned to the BI, using the BASICS model (Marlatt *et al.*, 1998; Dimeff *et al.*, 2002), or to the control group. The hypothesis was that the group which received the intervention would show a change in the alcohol use pattern and a reduction in the amount and frequency of alcohol consumption as well as in harm consequences resulting from drinking. The intervention group was compared to the at-risk control group without intervention in a 2-year follow-up.

SUBJECTS AND METHODS

Participants

In 2000 to 2004 all 5052 matriculated freshman students from seven campuses of São Paulo State University (UNESP) were invited to participate of a screening for alcohol consumption. From 4100 responders, 1057 were identified as at-risk drinkers. The students from the areas of Humanities and Exact Sciences were excluded since the campuses located near the region of this study had many more students from the Biological Sciences. Besides students from Biological Sciences consumed more alcohol than those from other areas as observed in previous surveys in the same population (Kerr-Corrêa *et al.*, 2001). All 334 freshman students of the areas of Biology were invited to take part in this project, and after obtaining their written informed consent, they were randomly assigned to the intervention (I) or control (C) groups and a 2-year follow-up. Randomization was performed each year after screening. They were all 18 years or older (mean = 19.6; SD = 1.8) of both genders (56% male and 44% female), all single. The students were considered at-risk drinkers if in the past 12 months they have had: (a) AUDIT (Alcohol Use Disorders Identification Test) scores ≥ 8; (b) five or more harmful consequences related to alcohol use according to RAPI (Rutgers Alcohol Problem Index). The initial sample was reduced due to the following events: college dropouts (10.0%), students' refusal to participate (5.6%), students who were not found after three attempts, students who reported alcohol dependence (2.1%), or abstinence (2.7%). The remaining 266 students were recruited and evaluated as it follows: (a) intervention group (N = 145 at baseline; 142 at 12 months, and 103 at 24 months, loss of 29.7%) and (b) control group which was not assigned to intervention (N = 121 at baseline; 121 at 12 months, and 113 at 24 months, loss of 9.3%). Follow-ups

were performed at 12 and 24 months and the study was finished in the first semester of 2006.

Procedures

The students identified as at-risk drinkers were recruited and invited to participate in a 2-year longitudinal study on alcohol use and life style. They were asked if they would take part in an interview which would last for about 45 to 60 min, and if they would fill out a questionnaire. No payment has been offered which was the approach agreed with the local ethics committee. All students consented to participate and they were informed that they could either receive or not get a BI. The anonymity and confidentiality of study data were guaranteed. Collateral sources have not been used as the majority of students would not agree with this procedure. The participants were included in the study and randomly assigned to the treatment just after obtaining their written informed consent.

Location

The study was carried out in seven university units belonging to São Paulo State University (UNESP), which is one of the four public universities in São Paulo state and offers free education. Its campuses are located upstate and in the capital of São Paulo state.

Therefore, the majority of students attended good high schools, belonged to upper social class, and their parents had higher education levels compared to the average population in São Paulo (Kerr-Corrêa *et al.*, 2001). Most students were aged between 18 and 24 (97.8%), they were all single, lived with roommates (67.3%), and they did not need to work because their parents supported them financially (90%). They were living far from their parents and away from home for the first time (83%). Data were collected in the campuses, during the school year. Special attention was given to preserve students' anonymity.

Tools

Screening. The study employed the AUDIT (Babor *et al.*, 1992). This is a questionnaire with ten questions, adapted and translated by Figlie *et al.* (1997), and validated by Lima *et al.* (2005) to fit Brazilian conditions. A score ≥8 in the AUDIT was one of the criteria used to consider the student as an "at-risk drinker."

The study also used the RAPI (White and Lahouvie, 1989): this is a tool containing 22 questions about harmful consequences or alcohol-related problems as a result of alcohol abuse during the past 12 months or in earlier months. A RAPI score of >5 in the last 12 months was adopted to consider the student as an at-risk drinker.

Both instruments were applied again in the follow-up interviews carried out at 12 and 24 months after the baseline.

Baseline and follow-ups. Another instrument that was used was the evaluation of the Brief Drinker Profile (BDP) (Miller and Marlatt, 1984), adapted by Dimeff *et al.* (1999): this is a tool which evaluates typical and episodic drinking. The students graded, in a six-point rating scale, their typical amount of drinking, frequency of drinking, and the occasion when they drank to excess (peak of consumption or binge drinking) during the past month. One drink was considered as 12 g of ethanol,

the amount present in 40 ml liquor 40%, 350 ml beer 4–5%, 140 ml wine 12%, or 75 ml fortified wine.

The frequency of drinking was evaluated on a five-point rating scale where 0—less than once a month, 1—once a month, 2—twice or three times a month, 3—five or six times a month, 4—seven or eight times a month, and 5—more than eight times a month. A five-point rating scale was used to evaluate typical drinking and peak of recent consumption, where 0—no consumption, 1—one or two doses, 2—three or four doses, 3—five or six doses, 4—seven or eight doses, and 5—more than eight doses.

The Alcohol Dependence Scale (ADS) (Skinner and Horn, 1984; Ross *et al.*, 1990) was also administered. This is an instrument which can be used in many situations and provides a quantitative measure of the severity of alcohol dependence. Several studies have reported the use of ADS in adolescents, and a score higher than 9 is highly associated with alcohol dependence. During the interview at baseline, and at 12- and 24-month follow-ups, the respondents also filled out the ADS questionnaire.

Evaluation of family history of alcohol and other substances. As part of the structured interview at baseline, the family history of alcohol use was evaluated. Students were identified as positive for a family history of alcohol if they reported having father, mother, or siblings with alcohol-related problems or alcohol dependence. Any treatments for daily use of alcohol, either with dependence or not, as well as related clinical/behavioral problems regarding family, law, or works, were explored.

Evaluation of drug use, attitudes, mental health, and risk behavior. A questionnaire was used (available upon request) in order to collect sociodemographic data and the following parameters: (a) risk behavior, including sexual behavior; (b) drug use (Smart *et al.*, 1982); (c) drinking and drunk driving; (d) disapproval of friends concerning alcohol and drug use; (e) alcohol and drug use by friends. Drug dependence was one of the exclusion criteria, although tobacco dependence and occasional use of marijuana or solvent were not considered for exclusion.

Intervention

The BASICS was implemented in the second semester for freshman students and at the beginning of the year for sophomores. There were follow-ups 12 and 24 months after the first intervention. This intervention was based on principles of motivational interviewing (Miller and Rollnick, 1991) as well as on the harm reduction approach. The complete description is available in other researches (Marlatt *et al.*, 1998; Dimeff *et al.*, 2002). The patterns of alcohol consumption reported by students were compared to those of other students from UNESP (Kerr-Corrêa *et al.*, 2001) to show them that they consumed more alcohol than what is considered normal, because, in general, students who are heavy drinkers believe that they drink just as "everyone else." Alcohol-related problems were also identified, such as risk of accidents, unprotected sex, blackouts, decreased academic performance, risk of fights, violence, and others. Beliefs about alcohol's effects were addressed and the students were encouraged to discuss the assumption that "the more alcohol you drink, the better." Suggestions to reduce the quantity of alcohol consumption were discussed, and each student received a fact sheet with information about how much

alcohol they could drink according to their gender and weight so that they would not surpass a blood alcohol level of 0.05% (or 0.5 g of ethanol for each 1000 ml of blood). In Brazil, the legal alcoholemia limit for driving is 0.06% (0.6 g of ethanol for each 1000 ml of blood).

Training

The interviewing team consisted of five social assistants specialized in Mental Health, three clinical psychologists, and a psychiatrist. Of the interviewers eight were women. The team was trained by the second author (F. Kerr-Corrêa) using a handbook and role-playing techniques. This was based on a specific protocol (Dimeff *et al.*, 2002) which was translated into Portuguese. It is important to note that Professor G. Alan Marlatt had previously been a visiting professor in Brazil and given a 1-week course of BASICS at the Medical School of Botucatu-UNESP. He also supervised the program when needed.

Statistical analysis

Multivariate analyses of variance for six variables at baseline showed a significant difference between the treatment group and the control group ($p = 0.0014$). Therefore, the model of repeated analyses to investigate the follow-up for each variable included measures at baseline as a covariate in order to adjust the results for possible differences between groups at baseline. This model included the effect of treatment and time, and the effect of the interaction between treatment and time, all controlled for differences in gender and covariates and interactions between gender and treatment and gender and time. The analyses were performed using SAS statistical software (SAS, 1996).

Ethical procedures

This study was approved by the ethics committee of the Medical School of Botucatu-São Paulo State University (UNESP) on February 7, 2000.

RESULTS

Table 1 shows some of the demographic details of the respondents and some answers of BDP, AUDIT, and RAPI for respondents of at-risk group (not only the intervention students but a larger group) and non-at-risk group. At baseline, before randomization, the sample of the at-risk group (43.6% female students and 56.4% male students) reported drinking approximately two to three times a week, having three to four drinks each occasion. The sample of the at-risk group had an ADS average score of 5.7. The non-at-risk group reported drinking less than once a week and less than two drinks each occasion. The ADS average score was 1.1. There was a similar history of alcohol abuse in both groups. However, a student who lived with roommates was twice as likely to being an at-risk drinker as a student who lived with parents or alone. At-risk students had been involved in twice as many car accidents and five times as many car accidents after drinking alcohol as had the other students.

The comparison between both groups (Table 2) showed that there was no evidence of the interaction between treatment and time of follow-up for the peak variable (number of drinks in the

Table 1. Sociodemographic data of students who are at-risk drinkers compared to those who are non-at-risk drinkers

	At-risk drinkers (N = 266)		Non-at-risk drinkers (N = 3043)	
	Mean	SD	Mean	SD
% Women	43.6		62.0	
% Students who live with roommates or in dorms	67.3		44.2	
Age	19.6	1.8	19.8	2.9
% Single	100		97.4	
Drinks[a] on an occasion	3.4	1.3	1.3	1.5
Frequency (times per week)	2.6	1.0	1.0	0.9
Drinks[a] per weekend	4.2	2.2	1.4	1.6
RAPI (problems)	7.3	5.9	0.7	1.3
AUDIT	9.7	3.6	2.5	2.3
ADS (score)	5.7	3.9	1.1[b]	1.8[b]
% Positive family history of alcohol abuse	25.9		24.6[b]	
Accidents (all)	15.8		8.7[b]	
Accidents after alcohol use	8.5		1.5[b]	

[a]One drink = 40 ml liquor 40%; 350 ml beer 4–5%; 140 ml wine 12%; 75 ml fortified wine (12 g of ethanol).
[b]data from 138 students only.

Table 2. Means and standard deviations at baseline, adjusted means, standard error, and significant probabilities of analyses of repeated measures

	Baseline	Adjusted means[a] for time in each group				
		Baseline	12 months	24 months	p-value	
Variable	Mean (SD)	Mean (SE)	Mean (SE)	Mean (SE)	Time	Treatment × Time
Number of drinks per occasion						
Control group	5.5(2.5)	5.1(0.20)	4.9(0.20)	5.0(0.21)	0.8868	0.0424
Treatment group	4.2(2.7)	4.5(0.18)	4.6(0.18)	3.7(0.22)	0.0017	
Frequency						
Control group	2.7(0.9)	2.6(0.08)	1.8(0.08)	2.5(0.08)	<.0001	<.0001
Treatment group	2.4(0.9)	2.5(0.07)	2.6(0.07)	2.3(0.09)	0.0323	
Number of drinks in the past 30 days						
Control group	3.6(1.6)	3.5(0.11)	3.1(0.11)	3.2(0.12)	0.0231	0.2775
Treatment group	3.1(1.3)	3.2(0.10)	3.1(0,10)	2.9(0.12)		
Number of drinks per weekend						
Control group	4.3(2.1)	4.1(0.14)	4.1(0.14)	3.9(0.14)	0.5416	0.0474
Treatment group	4.0(2.2)	4.0(0.12)	3.8(0.12)	4.3(0.15)	0.0380	
AUDIT						
Control group	10.1(3.8)	9.6(0.24)	–	8.6(0.25)	0.0044	0.0091
Treatment group	9.3(3.3)	9.6(0.22)	–	7.3(0.26)	<0.0001	
RAPI						
Control group	8.1(6.2)	7.6(0.43)	4.9(0.43)	3.9(0.45)	<0.0001	0.0163
Treatment group	6.6(5.8)	7.0(0.39)	3.0(0.39)	4.3(0.46)	<0.0001	

[a]Adjusted means (analysis of covariance) at baseline.
Missing values: AUDIT was not collected at 12 months.

last 30 days) ($p = 0.2775$). The effect of time was statistically significant ($p = 0.0231$) which showed a tendency of decline during the follow-up period for both groups.

There was interaction between time and treatment ($p < 0.05$) for the following variables: number of drinks on an occasion, frequency and number of drinks per weekend, AUDIT, and RAPI. Regarding the number of drinks on an occasion and number of drinks per weekend, investigation of effects of time within each group showed statistically significant effects only for the treatment group, in which the number of drinks on an occasion showed a clear decline. The number of drinks per weekend also declined at 12 months but increased at 24 months. Regarding RAPI and AUDIT variables there was a decline in both groups in relation to time variable. The frequency variable showed a decline at 24 months for the treatment group, but also an unexpected decline for the control group at 12 months.

For the variables number of drinks in the past 30 days ($p = 0.0223$) and number of drinks per weekend ($p = 0.0123$) there were significant interactions between gender and group showing that the differences between male and female are larger for the nonintervention group, but there were no interactions involving gender and time. For AUDIT there was a significant interaction between gender and time ($P = 0.0457$) indicating that women had better improvement than man.

DISCUSSION

Overall, it is possible to conclude that the study findings support the hypothesis that freshman students who were "at-risk" drinkers who received the BI showed a significant improvement. This is related to reduction both in amount and frequency of alcohol use as well as harmful consequences of

alcohol use compared to those who did not receive the intervention. Although, in general, all students who were at-risk drinkers drank less and had fewer alcohol-related problems throughout the 2-year follow-up, the respondents who received the BI showed a higher decline of alcohol consumption and alcohol-related problems during the follow-up compared to the control group. There were significant reductions in both harmful consequences assessed by RAPI and AUDIT scores for at-risk students who received the intervention compared to at-risk students of the control group. These results are consistent with the previous evidence showing that BIs are effective to reduce amount and frequency of alcohol use as well as alcohol-related problems among college students (Kivlahan *et al*., 1990; Baer *et al*., 1992, 2001; Marlatt *et al*., 1998; O'Leary *et al*., 2002; Tevyaw and Monti, 2004). In Brazil there is no evidence related to the use of BASICS in relation to college students who are at-risk drinkers. Even so, there have been some local studies on adults (Sanchez-Craig *et al*., 1991; Formigoni *et al*., 1992) and adolescent populations (De Micheli *et al*., 2004) that were hazardous drinkers and received BI. These investigations show, in a consistent fashion, a reduction of alcohol consumption and fewer alcohol-related problems among at-risk students. Although statistically significant, the effects of the treatment were modest and the students continued drinking more alcohol than those who were non-at-risk drinkers, as shown in Table 1.

There were significant reductions both in amount of alcohol consumption on each occasion and in alcohol-related problems. In particular, the result was more significant concerning the reduction of alcohol-related problems (shown by RAPI) and AUDIT score (which can even indicate alcohol dependence) may suggest that it is likely that students in this group have learned to avoid heavy drinking in potentially dangerous situations (situational reduction of risk) instead of drinking less in every single situation. Marlatt *et al*. (1998) have drawn attention to the importance of making a distinction between alcohol use rates and consequences of drinking when dealing with youths in educational or preventive programs. Programs aiming at reducing problems by promoting the reduction or total abstinence of alcohol did not reach their objective. On the other hand, preventive programs which address the immediate harmful consequences of drinking rather than amount of alcohol consumption may be more appealing to youths, which is why drinking situations were contextualized in this study. Aiming at changes of drinking behavior, risk situations that lead to harmful consequences were identified in both BI interviewing and customized fact sheet provided. This change in the approach of overall alcohol use reduction for that of alcohol reduction in risky situations focusing on harmful consequences is consistent with the approach of harm reduction (Marlatt, 1996; Dimeff *et al*., 2002).

In this study, there was a prevalence of at-risk drinkers living with roommates or in dormitories, compared to students who were non-at-risk drinkers, who usually lived with their family or alone. This fact was also relevant in other studies as a feature which increases the risk of excessive alcohol drinking. Assessing the social network of students, we could note that 63.2% to 77.4% of both groups' respondents (I and C) reported they had friends with alcohol-related problems. Studies in the literature have shown the effectiveness of interventions with students who live abroad in dorms or with roommates (Larimer *et al*., 2001).

Although a positive family history of alcohol problems was common among those who abused of alcohol, students who were non-at-risk drinkers had also a similar family history of alcohol, mainly a father who abused of alcohol. Although having an immediate relative who abused of alcohol was not a predictor of becoming an at-risk drinker, the literature shows that students who drink to excess have many friends with similar behavior. They also have a higher incidence of relatives who abuse of alcohol or drugs (Marlatt *et al*., 1998; Dimeff *et al*., 2002). Similar data of other studies carried out in some Brazilian universities were found (Kerr-Corrêa *et al*., 2001).

It is important to point out that both the treatment group and the control group reduced their alcohol consumption and presented fewer alcohol-related problems during follow-up. This finding is consistent with some other works in the literature which show that students tend to reduce their alcohol consumption as they grow older and come closer to college graduation. This occurs due to academic and professional involvement or to personal commitment such as marriage or religious beliefs (Zucker, 1994; Gotham *et al*., 1997; Vik *et al*., 2003). It is likely that the BI has helped the participants of the treatment group in the process of becoming mature compared to those of the control group. However, it is unclear if such a process would be helped by greater motivation, more awareness of possible risks, better behavior concerning alcohol use, and better adaptive skills to deal with risk situations or still all of these variables together. More research is needed to investigate how binge drinking at universities develops into more serious, problematic, or chronic alcohol dependence, or into reduced alcohol consumption with fewer problems (Schulenberg *et al*., 1996; Marlatt *et al*., 1998).

In conclusion, overall consumption of alcohol in this country is high compared to global averages and the prevalence of heavy episodic drinking is especially elevated among young men and women. Consequently, the alcohol-attributable burden of disease of young adults is particularly excessive (Taylor *et al*., 2007), including findings that young people were more often suffering two alcohol-related acute outcomes (injury and fighting) than older age cohorts. The importance of this work is that this was the first use of BI for alcohol-related problems, especially heavy drinking and binge drinking, with college students in Brazil.

Study limitations

The main limitation of this study was the BASICS adjustments to Brazilian college students. In general, Brazilian students are not used to write diaries recording their amount and frequency of alcohol consumption. Some did not fill out the study forms correctly, and their monitoring cards were discarded. They also rejected the idea of having a collateral source, so this tool was also discarded. Some thought that the interviews were too long and a significant loss of data on follow-ups was due to the number of students who did not attend or postponed the meetings on three or more occasions. The tools, on the other hand, which were back-translated (RAPI, ADS, and scales of amount and frequency) were easy to be filled out and understood. The contexts where alcohol was consumed were very similar to those described in the USA (Larimer *et al*., 2001, 2005; Marlatt *et al*., 1998; Wechsler *et al*., 1994, 1995). The AUDIT has been validated in Brazil.

The prevention program greatly depended on institutional support and, over time, there were different levels of involvement of administration staff. Considering the difficulties that were experienced, the following topics stand out: (a) the students reported feeling embarrassed when they were identified as heavy drinkers; (b) it was not possible to offer students any kind of payment for their time and attention due to Brazilian ethical restrictions; (c) lack of a mandatory treatment for students who had alcohol-related problems; (d) the university authorities do not consider alcohol as a high priority. It is possible that other relevant risk factors have not been assessed. On the other hand, the sample was large and there were similar numbers of male and female students. Furthermore, the sample was also compared to a non-at-risk group in order to determine a pattern of alcohol use. It is possible that these findings could be applied to students of other public universities.

The use of motivational interviewing and the harmful reduction approach was well accepted by most students. Other approaches could have been used such as those designed to students who live with roommates or in dorms which are known as places of high alcohol consumption. Educational programs designed for all campuses have been carried out at all UNESP campuses under the title of "Awareness day about excessive use of alcohol." On this day AUDIT questionnaires are handed out and fact sheets with information and guidance are available for the students. Students with more serious alcohol-related problems were referred to specialized care. However, it must be pointed out that the intervention was purely the first step in the treatment process. Students were only referred to other care if they did not respond to this first BI as it is recommended by other authors studying the same problem in the United States (Marlatt *et al.*, 1998).

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