


# Peer-led alcohol intervention for college students: A pilot randomized controlled trial

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## Abstract

This study aims to assess the preliminary efficacy and feasibility of a brief, peer-led alcohol intervention to reduce alcohol consumption in binge-drinking Spanish nursing students. A pilot randomized controlled trial was conducted with 50 first-year nursing students who were randomly assigned either a 50-min peer-led motivational intervention with individual feedback or a control condition. Primary outcomes for testing the preliminary efficacy were alcohol use and alcohol-related consequences. Quantitative and content analyses of open-ended survey questions were performed. Participants in the intervention condition significantly reduced binge-drinking episodes, peak blood alcohol content, and consequences compared to the control group. Principal facilitators were completing the questionnaire during the academic schedule and providing tailored feedback through a graphic report. The main barrier was the unreliability of students' initial commitment. The findings suggest that a brief motivational intervention could be effective for reducing alcohol consumption and alcohol-related consequences in Spanish college students. Peer counselors and participants reported high satisfaction, indicating that the intervention is feasible. However, a full trial should be conducted taking into account the identified barriers and facilitators.

## KEYWORDS

alcohol drinking in college; feasibility studies; motivational interviewing; students, nursing; peer group; pilot projects

## Key points

- This study provides the key features of a brief motivational intervention led by trained undergraduate students, its effects on alcohol use and alcohol-related consequences among nursing students, and its feasibility.
- A 50-min peer-led brief motivational intervention with tailored feedback significantly reduced binge-drinking episodes, estimated peak blood alcohol content, and alcohol-related consequences compared with a treatment-as-usual control group.
- The identified barriers included the recruitment process and the shortness of time notice given to the counselors for each intervention session. The main facilitators were completing the measures during the academic schedule, the collaborative attitude of peer counselors, and the provision of tailored feedback and individualized material.

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## 1 | INTRODUCTION

Approximately 65% of college students report having consumed alcohol in the past month, and 44.7% report engaging in heavy drinking (Barry & Merianos, 2018; Busse et al., 2021), which is a major problem on college campuses. Alcohol consumption is associated with engaging in high-risk behaviors, such as driving under the influence of alcohol and unintentional alcohol-related injuries (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2022).

Previous studies have shown that complex interventions focused on motivational enhancement, cognitive-behavioral strategies, expectancy challenges, and skills training (Larimer et al., 2022) might be effective in reducing alcohol use in college students. The Brief Alcohol Screening and Intervention for College Students (BASICS) program incorporates all of these components and thus may be the most suitable intervention (Dimeff et al., 1999). Several reviews and meta-analyses have demonstrated the potential efficacy of this individual-focused intervention (Hennessy et al., 2019; Larimer et al., 2022; Lavilla-Gracia et al., 2022) specifically designed for college students. It considers students' lack of knowledge and skills required to reduce alcohol consumption and their need for motivation to change their intake because of social-contextual factors. Furthermore, BASICS is a brief intervention delivered in the motivational interviewing style (MI; Miller & Rollnick, 2012) characterized by nonconfrontational and nonjudgmental conversation, fostering collaboration, evoking motivation, and supporting students' autonomy in setting goals for alcohol use and harm reduction planning (Lee et al., 2021). The success of this program in college students is also based on the harm reduction principles that it follows, focusing on minimizing the negative effects of alcohol use without mandating reductions in or abstinence from alcohol use (Kimmel et al., 2021).

In addition, peer-led interventions are increasingly employed at universities to reduce harmful behaviors (Eaton et al., 2018). Peer education in young people increases self-awareness, self-confidence, and knowledge of risk factors and is an effective method that promotes changes in risk-taking behaviors at this age (Orsal & Ergun, 2021). Research in the U.S. shows that when BASICS is implemented by peer counselors, it is, in some cases, as effective as by non-peers in reducing/preventing heavy drinking and drinking initiation or escalation (Larimer et al., 2022). Nevertheless, a recent literature review (Lavilla-Gracia et al., 2022) shows that evidence for the efficacy of peer-led BASICS is scarce, and there are no data on this program or other peer-led interventions in the Spanish context.

The aim of this study was to assess the potential efficacy and feasibility of a brief, peer-led alcohol intervention focused on reducing alcohol consumption among heavy drinking, Spanish nursing students.

## 2 | METHODS

### 2.1 | Study design

This study was a single-blinded, two-arm, parallel groups pilot randomized controlled trial conducted between October 2019 and April

2020. It was reported in accordance with the Consolidated Standards of Reporting Trials (CONSORT) guidelines. It was registered at ClinicalTrials.gov (number: NCT05437484). The Medical Research Council (MRC) guidelines and methodological framework for complex interventions were followed (Craig et al., 2008).

### 2.2 | Randomization, allocation concealment, and blinding

Random assignment was performed by using Excel to generate sequential numbers. Each random sequential number was then sealed in thick, opaque, and consecutively numbered envelopes before data collection. Participants were allocated to either an intervention or control group depending on the number in the envelope, which was distributed by one of the investigators. The participants and the treatment providers were aware of the group assignments, which was unavoidable owing to the nature of behavioral interventions. A single-blinded design was adopted; the outcome assessors were blinded to the group allocation.

### 2.3 | Participants and recruitment

This study was conducted at a single private university in northern Spain. The population was undergraduate nursing students in their first year at the university ( $n = 150$ ) in the 2019–2020 academic year.

Nursing students were recruited between January and February 2020. The recruitment strategy consisted of directly providing information about the project by one member of the research team and inviting them to participate. To improve the feasibility of recruitment, the academic calendar, including classes, examinations and holidays, was taken into account.

All students who showed interest after signing the informed consent form and before being allocated to either the intervention or control group completed the baseline data survey (January–February 2020). Respondents were eligible if they were first-year nursing students (aged 18–20 years) who had a binge-drinking episode in the previous month.

### 2.4 | Sample size

Conventional sample size calculation was not applicable at this stage of the MRC framework. Due to the exploratory nature of the study, the main objective was to identify the preliminary efficacy and feasibility of the implementation process (Lancaster et al., 2004). This is in line with similar studies (Ntouva et al., 2019; Ruiz-Zaldibar et al., 2021). Nevertheless, according to Ruiz-Zaldibar et al. (2021), we determined that a minimum of 30 participants were necessary to obtain an estimate of the intervention's effect size.

## 2.5 | Intervention and control protocols

### 2.5.1 | Intervention group

Participants randomly assigned to the intervention group received a peer-led BASICS session (Dimeff et al., 1999) that consisted of a one-off 50-min face-to-face motivational interview (MI). In this session, a peer counselor provided participant orientation with a personalized graphical feedback sheet, with topics including the participant's (i) drinking patterns (e.g., quantity of drinking); (ii) level of intoxication (e.g., highest blood alcohol concentration [BAC] during a typical week and heaviest drinking episode); (iii) perceived/actual drinking norms; (iv) alcohol expectancies; (v) alcohol-related consequences; (vi) individual risk factors; (vii) financial costs; (viii) alcohol caloric consumption, hours of exercise required to burn those calories; and (ix) protective behavioral strategies. Participants received a copy of their personalized feedback, a personalized BAC card, and a tips sheet (a standardized leaflet containing the most relevant alcohol information for that participant, such as supportive skills for reducing drinking-related harm).

### 2.5.2 | Control group

Participants randomly assigned to the control group did not receive any specific intervention.

## 2.6 | Peer facilitator training and support

BASICS facilitators were volunteer third- or fourth-year undergraduate nursing students who attended a pretraining course ( $n = 10$ ). Only those who could competently conduct BASICS-based MIs and were knowledgeable about alcohol use were selected as peer counselors ( $n = 4$ ). The training consisted of a 12 h workshop offered in October and November 2021. This workshop was administered by a clinical mental health nurse and two counselors specializing in coaching and MIs. Training workshops consisted of lecture presentations, written materials, videotapes, and interactive exercises to facilitate learning of alcohol-related content and MI strategies (Miller & Rollnick, 2012) integral to BASICS (Dimeff et al., 1999).

Upon finishing the initial training, peer counselors conducted a minimum of two videotaped role-playing MIs (Mastroleo, Magill et al., 2014). To maintain the fidelity of the intervention, peer facilitators attended two 1 h individual sessions where two members of the research team (SPG and NC) provided assessment of each videotaped intervention after their analysis. These supervision sessions were conducted according to standardized procedures using the same principles to provide peer counselors with individual oral feedback on their implementation of MI and BASICS skills as well as on alcohol-related content. Specific instruction on improvements in MI-consistent behaviors, such as the use of open-ended questions and complex reflections by reducing the use of closed-ended questions,

was provided. To provide this feedback, both supervisors coded the videotaped role-play sessions using an alcohol-related content checklist and the Peer Proficiency Assessment (PEPA; Mastroleo et al., 2009) as a guide for identifying MI-related behaviors and microskill counts.

## 2.7 | Study procedure

Baseline data collection took place in January–February 2020. The baseline participant questionnaire included two sections: sociodemographic variables, such as age, sex, and residence; and 24 questions related to their alcohol consumption and alcohol-related consequences during the previous month. Specifically, the instruments included in the second section were the following.

First, the Daily Drinking Questionnaire-Revised (DDQ-R; Collins et al., 1985) was used to assess the quantity of alcohol consumed on a typical weekend (encompassing Thursday, Friday, Saturday, and Sunday). As this instrument is not available in Spanish, the original version underwent a translation-back-translation procedure according to Isart (2017).

Second, the quantity/frequency/peak index (QFI; Dimeff et al., 1999) was used to estimate participants' peak BAC from their responses about the maximum number of drinks consumed on the occasion of highest consumption and the number of hours they spent drinking on that occasion.

Third, a closed-ended questionnaire was used to evaluate the frequency of binge-drinking episodes (Ferreira et al., 2014); this questionnaire incorporated sex differences in male and female binge drinking according to the following definition: "Reflect upon the past month. In that time, how many days did you consume 5 or more [for males]/4 or more [for females] alcoholic beverages on the same drinking occasion (e.g., on the same night)?"

Finally, the Spanish version of the Young Adult Alcohol Consequences Questionnaire (S-YAACQ; Pilatti et al., 2019) was used to evaluate issues associated with student alcohol consumption. All these alcohol-related instruments were completed at two time points: before (baseline assessment) and 1 month after the program (follow-up assessment).

Additionally, an ad hoc questionnaire was used to evaluate participant satisfaction with the program. Specifically, participants from the intervention group answered several questions, providing their opinion about the necessity, usefulness, and importance of the program, whether they would recommend it to friends, how much they learned, and the appropriateness of the materials used at the end of their intervention session, using a Likert scale ranging from 0 to 10. They also answered open-ended questions about their experience in the session, the facilitator of the intervention, and provided suggestions for improvement or recommendations. Peer counselors completed a similar survey after conducting all participant sessions.

To examine the adherence (fidelity) of peer counselors in implementing the intervention sessions according to their training, as in the

training supervision phase, two members of the research team (SPG and NC) coded each videotaped intervention session using a list of alcohol-related statements (e.g., regarding the participant's alcohol consumption or annual alcohol-related expenditures) and the PEPA instrument for evaluating MI-related microskills (e.g., open-ended and closed questions and simple and complex reflections) (Mastroleo et al., 2009). Open-ended questions are designed to elicit open-ended responses and are used to encourage students to talk without feeling defensive. Closed questions include yes/no questions and answers with a restricted range and are used to gain clarification on a specific area or gain permission for moving forwards in the session. Simple reflections are statements that convey understanding but offer little or no meaning to student statements (e.g., repeat, rephrase). Complex reflections are defined as statements made by the counselor where substantial meaning is inferred or hypothesis testing is explored and are used to assist the student in developing discrepancy and engaging in change talk (e.g., paraphrase, double-sided reflection, reflection of feeling) (Laws et al., 2018; Mastroleo, 2008). The intervention sessions took place in the Faculty of Nursing's simulation center which was equipped with a video recorder.

Finally, field notes were also recorded regarding the identification of barriers and factors that facilitated MI implementation as well as factors that enhanced adherence to the established protocol.

## 2.8 | Outcome measures

The preliminary outcome measures used to determine the potential efficacy of the intervention were the quantity of alcohol use in a typical weekend, estimated peak BAC, frequency of binge-drinking episodes, and number of alcohol-related consequences.

The outcomes used to determine the feasibility were the adherence (fidelity) of peer counselors in implementing the intervention according to their training, including theoretical alcohol-related content and the use of MI microskills; the barriers and factors that facilitated implementation; and the satisfaction (acceptability) of participants and peer counselors with the program.

## 2.9 | Data analysis

Quantitative data analysis was performed using STATA version 15.1 (StataCorp, College Station, TX, USA). In relation to preliminary efficacy analysis, the similarity of treatment groups was assessed using the Mann-Whitney *U* test and Fisher's exact test. The data were assumed to be non-normally distributed, as the sample size was less than 60 participants (Martínez-González et al., 2008). Accordingly, differences between the control and intervention groups were determined by the Mann-Whitney *U* test with a significance threshold of 5%. Differences between the pretest and posttest scores of each group were examined using the Wilcoxon signed-rank test with a significance threshold of 5%. The effect size (Cohen's *d*) was also calculated. Furthermore, to compare the mean difference between groups

over time, repeated-measures analysis of variance (ANOVA) was used, and repeated measures analysis of covariance (ANCOVA) was used to compare groups after controlling for age and sex. To determine the interaction effect of group and time, an ANOVA factorial analysis was carried out. Students who answered the baseline questionnaire incorrectly were excluded from further analysis.

Because this study was partially conducted during the COVID-19 lockdown, some participants from the intervention group completed the follow-up evaluation before isolation (labeled "intervention group 1"), similar to all the participants from the control group, but other participants allocated to the intervention group completed the evaluation after isolation started (labeled "intervention group 2"). Therefore, preliminary efficacy analyses were conducted comparing data from those students who completed the follow-up evaluation in the same time period to be comparable (intervention group 1 vs. control group). Note that no differences at baseline existed between participants from intervention group 1 and intervention group 2. Comparisons between the entire intervention group and control group were also conducted and are presented in the Supplemental Material.

Regarding feasibility analysis, to examine the adherence (fidelity) of peer counselors in implementing the intervention sessions, a count of the number of alcohol-related statements and the number of MI-related microskills covered in each session was carried out. Acquisition of MI-related microskills was achieved if the counselor-participant interaction included a 1:1 ratio of open- and closed-ended questions, a 1:1 ratio of complex and simple reflexes, and a 2:1 ratio of reflexes to questions (Mastroleo et al., 2009).

To assess satisfaction (acceptability) with the program, average calculation of the Likert responses was employed. In addition, a qualitative analysis was conducted through content analysis to interpret participants' answers to the open-ended questions in a systematic manner. Following Burnard (1991), responses were analyzed under an inductive approach to identify codes and categories that most frequently occurred. This type of analysis was also applied to examine the barriers and facilitators of the implementation process (field notes). The qualitative data analysis was performed by one member of the research team and validated independently by two other researchers.

## 2.10 | Ethical considerations

This research was approved by the Research Ethics Committee of the University of Navarra (code: 2019.142). All participants were provided with detailed information about the study procedures, and written consent was obtained. Both the intervention group and peer facilitators were fully aware of and consented to being videotaped throughout the interventions. In cases where the participant was classified as an alcoholic or demonstrated self-destructive behaviors, the senior researcher contacted the participant and referred them to Specialized Health Care with their consent. Confidentiality of participants' personal data was ensured, and all information

was coded. Permission for using the copyrighted instruments was obtained.

### 3 | RESULTS

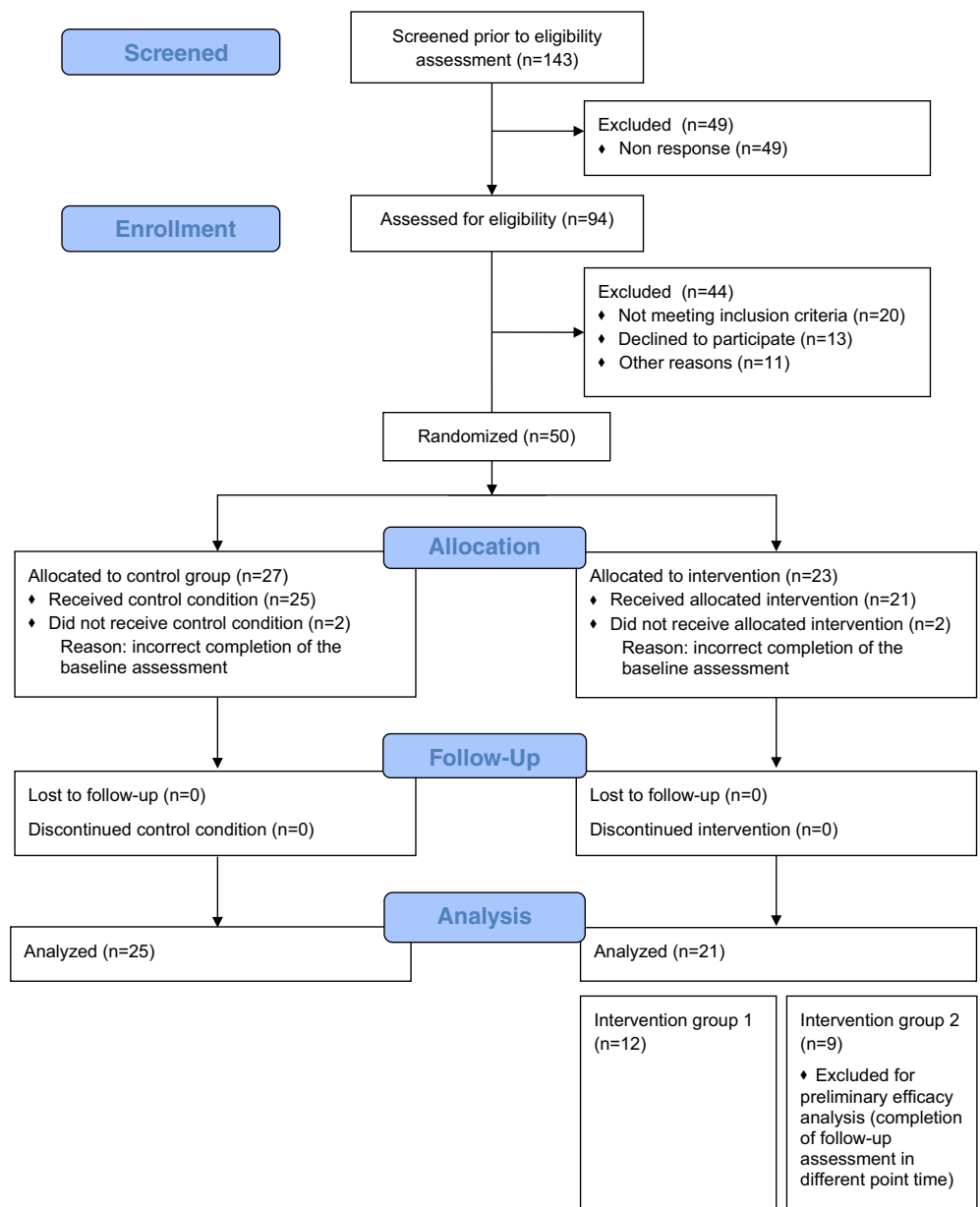
#### 3.1 | Participants

A total of 143 students were invited to participate in the study. Of the 84 students who initially agreed, 20 did not meet the inclusion criteria because they did not have a binge-drinking episode during the previous month or were not in their first year of university, three refused to participate, and attempts to contact 11 of these students were unsuccessful. A total of 50 students (age range = 18–19 years) met the inclusion criteria. They were randomly assigned to the intervention group ( $n = 23$ ) or control group

( $n = 27$ ). Four participants were eliminated from the study because they did not correctly complete the baseline questionnaire. Thus, the intervention group included 21 participants, and the control group included 25 participants. To analyze intervention potential efficacy, data from intervention group 2 ( $n = 9$ ) were excluded from the preliminary analysis to avoid confounds introduced by the COVID-19 lockdown. Therefore, a total of 37 students were included in this analysis: 25 in the control group and 12 in intervention group 1 (Figure 1).

#### 3.2 | Baseline characteristics

Table 1 shows participant characteristics according to group (intervention group 1 and the control group). These groups did not differ in sociodemographic variables. The mean age of the students was 18.1



**FIGURE 1** Consolidated Standards of Reporting Trials (CONSORT) flowchart of participant screening, enrollment, allocation, follow-up, and analysis

Characteristics	Intervention group 1	Control	<i>p</i>
Age <sup>a</sup>			0.973
Mean (SD)	18.1 (0.3)	18.1 (0.3)	
Sex, <i>n</i> (%) <sup>b</sup>			0.470
Male	1 (8.3)	4 (16.0)	
Female	11 (91.7)	21 (84.0)	
Residence, <i>n</i> (%) <sup>b</sup>			0.094
Family home	7 (58.4)	12 (48.0)	
Student residence	4 (33.3)	6 (24.0)	
Residence hall	0 (0.0)	7 (28.0)	
Student flat	1 (8.3)	0 (0)	
Age of onset of alcohol consumption <sup>a</sup>			0.930
Mean (SD)	15.6 (1.0)	15.5 (1.0)	
Alcohol consumption on a typical weekend <sup>a</sup>			0.240
Mean (SD)	7.3 (4.2)	6.2 (5.1)	
Binge drinking episodes <sup>a</sup>			0.084
Mean (SD)	2.2 (1.2)	1.7 (1.3)	
Peak BAC <sup>a</sup>			0.496
Mean (SD)	2.3 (0.8)	2.1 (1.2)	
Alcohol-related consequences <sup>a</sup>			0.385
Mean (SD)	6.8 (7.0)	4.7 (6.2)	
Risk consumption, <i>n</i> (%) <sup>b</sup>			0.079
Low risk	5 (41.7)	18 (72.0)	
Medium risk	7 (58.3)	7 (28.0)	

<sup>a</sup>Mann-Whitney *U* test.

<sup>b</sup>Fisher's test, *p* < 0.05.

Abbreviation: BAC = blood alcohol concentration.

(SD: 0.30) years in the intervention group and 18.1 (SD: 0.30) years in the control group. In both groups, most participants were female (91.7% in the intervention group; 84.0% in the control group). All participants were Spanish. Regarding participant residence, 58.3% of intervention group and 48.0% of control group participants lived in their family home; 33.3% and 52.0%, respectively, lived in a student residence or at a college; and the remaining intervention group subjects (8.3%) lived in a student flat. There were no significant differences at baseline between intervention group 1 and the control group for the alcohol use and alcohol-related consequences variables.

### 3.3 | Preliminary efficacy

The intervention had a significant effect on the two outcome variables of interest: peak BAC (mean: intervention = 0.8 vs. control = 1.7; *p* = 0.015) and binge-drinking episodes (mean: intervention = 0.3 vs. control = 0.8; *p* = 0.023). Means and SDs adjusted for baseline variability are presented in Table 2 (Table S1 shows the median, minimum, and maximum values). Participants randomly assigned to the intervention group reported significantly less binge drinking and lower peak BAC than those in the control group (peak BAC, *d* = 0.98; binge-drinking episodes, *d* = 0.69).

**TABLE 1** Baseline characteristics (sociodemographic and drinking) by groups

Table 3 shows the comparison of the mean differences between the two groups. In addition to the number of binge-drinking episodes and the peak BAC, the intervention effectively reduced the number of alcohol-related consequences (differences: intervention = −5.6 vs. control = 0.2; *p* = 0.020). The same statistical significance was found in the repeated-measures ANOVA and repeated measures ANCOVA (Table 4) analysis adjusted for age and sex (mean difference: −1 [−1.3 to −0.5]; *p* < 0.001).

Analyses of pretest–posttest differences in each group (Table 2) revealed a significant reduction in all outcome variables (alcohol consumption, binge-drinking episodes, peak BAC, and alcohol-related consequences) in the intervention group. In comparison, students in the control group exhibited a significant change only in the number of binge-drinking episodes (means: baseline = 1.7 vs. follow-up = 0.8; *p* = 0.002).

The factorial ANOVA showed no interaction between time and group in all dependent variables.

Preliminary efficacy results of comparisons between the entire intervention group and control group are presented in Table S2.

### 3.4 | Feasibility

Peer counselors achieved proficiency in two out of three MI skills: the ratio of open- to closed-ended questions and the ratio of

**TABLE 2** Means and repeated measures significance tests by group assignment for alcohol use and related consequences

Measures	Baseline mean (SD)	1 month follow up mean (SD)	Significance <sup>a</sup>		Effect size <i>d</i>
			Time	Treatment × Time	
Alcohol use on a typical weekend			0.304		0.46
Control	6.2 (5.1)	5.0 (5.5)		0.220	
Intervention group 1	7.3 (4.2)	3.1 (1.9)		0.015	
Binge drinking episodes			0.023		0.69
Control	1.7 (1.3)	0.8 (0.9)		0.002	
Intervention group 1	2.2 (1.2)	0.3 (0.5)		0.002	
Peak BAC			0.015		0.98
Control	2.1 (1.2)	1.7 (1.1)		0.146	
Intervention group 1	2.3 (0.8)	0.8 (0.7)		0.002	
Alcohol-related consequences			0.067		0.74
Control	4.7 (6.2)	4.5 (5.9)		0.146	
Intervention group 1	6.8 (7.0)	1.3 (1.6)		0.025	

Abbreviation: BAC = blood alcohol concentration.

<sup>a</sup>Mann-Whitney *U* test to compare intervention and control group in the follow up (time). Wilcoxon test to compare intragroup changes (Treatment × Time).

**TABLE 3** Comparison of intragroup mean differences in drinking use and related consequences

Measures	Intervention group 1	Control	<i>p</i> <sup>*</sup>
Alcohol use on a typical weekend			0.114
Mean (SD)	−4.3 (4.2)	−1.2 (7.6)	
Binge drinking episodes			0.005 <sup>*</sup>
Mean (SD)	−1.9 (1.1)	−0.8 (1.4)	
Peak BAC			0.007 <sup>*</sup>
Mean (SD)	−1.5 (0.8)	−0.4 (1.3)	
Alcohol-related consequences			0.020 <sup>*</sup>
Mean (SD)	−5.6 (6.7)	−0.2 (3.2)	

Abbreviation: BAC = blood alcohol concentration.

Mann-Whitney *U* test.

<sup>\*</sup>*p* < 0.05 from ANOVA analysis.

**TABLE 4** Comparison of alcohol use and related consequences at 1 month follow-up

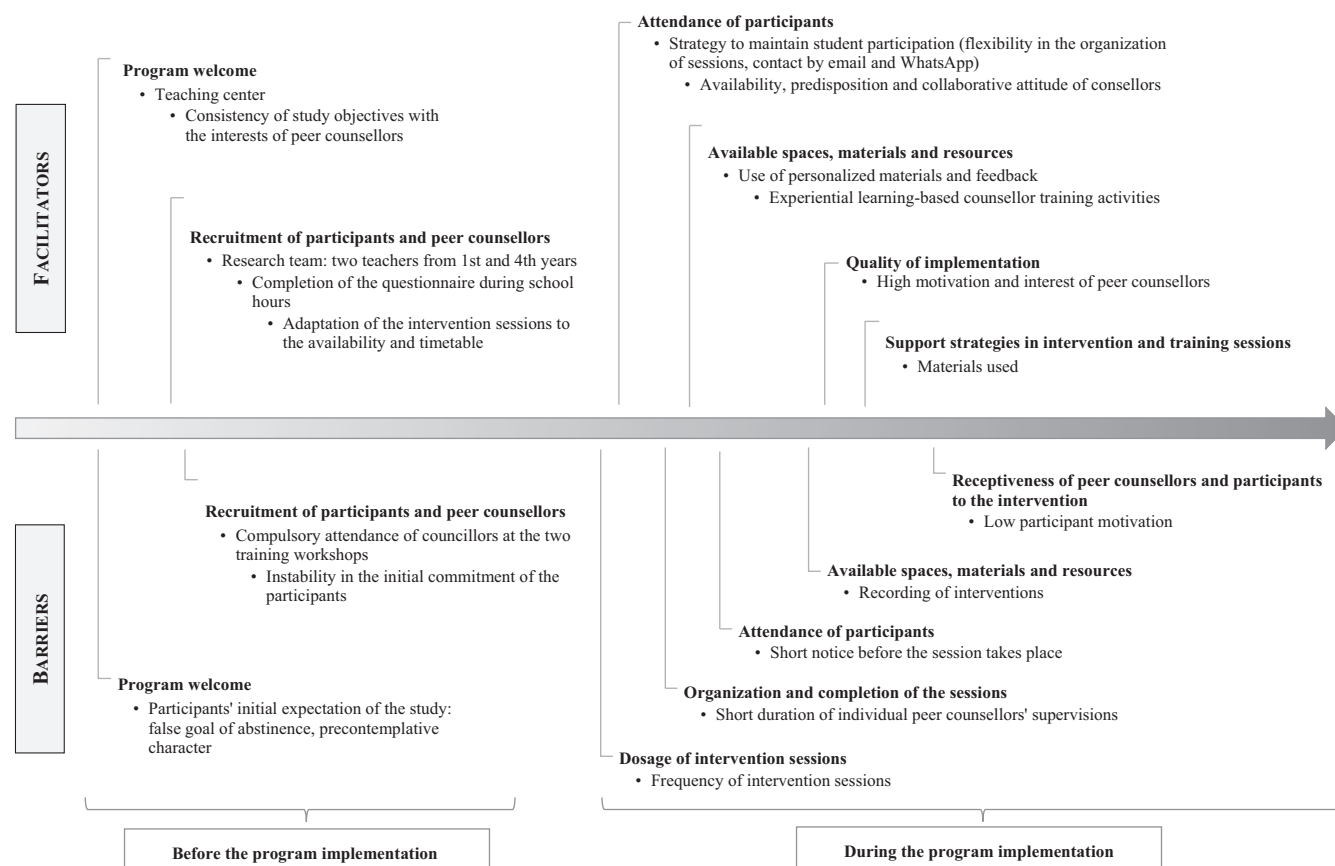
Measures	Unadjusted difference	<i>p</i> value <sup>a</sup>	Adjusted difference	<i>p</i> value <sup>b</sup>
Alcohol use on a typical weekend				
Mean (SD)	−1.9 (−4.2 to 0.4)	0.096	−1.8 (−4.1 to 0.4)	0.113
Binge drinking episodes				
Mean (SD)	−0.6 (−1 to −0.2)	0.002	−0.6 (−1 to −0.2)	0.002
Peak BAC				
Mean (SD)	−0.9 (−1.4 to −0.4)	<0.001	−1 (−1.3 to −0.5)	<0.001
Alcohol-related consequences				
Mean (SD)	−3.3 (−5.7 to −0.9)	0.008	−3.2 (−5.6 to −0.8)	0.011

Note: Estimates and associated statistic refer to differences of mean.

Abbreviation: BAC = blood alcohol concentration.

<sup>a</sup>Repeated measures ANCOVA test.

<sup>b</sup>Repeated measures ANCOVA test adjusted for age and sex. \ BAC = blood alcohol concentration.



**FIGURE 2** Barriers and facilitators during the implementation process

**TABLE 5** The results of content analysis of peer counsellor's and participant's experience during the implementation of the intervention.

Topics	Quotes
Training and education of peer counsellors	<p>"A knowledgeable interviewer who has explained everything to me very well and many interesting facts to take into account ... I have felt very comfortable and it has been enjoyable for me." (PARTICIPANT 17)</p> <p>"He [the peer counsellor] controlled and knew how to handle the interview. He was trained, very professional." (PARTICIPANT 15)</p> <p>"I have acquired the knowledge and skills to conduct interviews." (PEER COUNSELLOR 4)</p> <p>"Both the theoretical part and the practical part are equally adequate and necessary." (PEER COUNSELLOR 2)</p> <p>"The role plays were very important, they allowed me to put into practice the training I received previously." (PEER COUNSELLOR 4)</p> <p>"In group supervision I felt more involved and understood with the other classmates." (PEER COUNSELLOR 3)</p>
Helping role of peer counsellors	<p>"A girl who is easy to deal with and with whom to have an open and sincere conversation." (PARTICIPANT 40)</p> <p>"Respectful, very attentive, and at all times without pressuring me to change my behavior, but to make me see new things and be more aware of my consumption." (PARTICIPANT 1)</p> <p>"I have felt very comfortable and it has been enjoyable for me." (PARTICIPANT 17)</p> <p>"As I have progressed in the interviews I have felt more comfortable, prepared and relaxed." (PEER COUNSELLOR 2)</p>
Strengths	<p>"What I liked the most is that everything has been very personalized, always focusing on my consumption and my risks and consequences." (PARTICIPANT 15)</p> <p>"As a strength of the session, I would highlight its ability to inform and make people think. There were curious facts that have impacted me enormously". (PARTICIPANT 7)</p> <p>"I found it very complete both in terms of knowledge about alcohol and for carrying out the motivational interview." (PEER COUNSELLOR 1)</p>
Implications of the intervention	<p>"It has impacted me quite a bit. I have learned more about my alcohol consumption and it has made me think about my consumption in the future." (PARTICIPANT 15)</p> <p>"It has touched me very deeply. I see that I am harming my health. I'm going to try to drink half." (PARTICIPANT 46)</p> <p>"I have already been able to apply it (the content) even during my clinical practices in Primary Health Care. It will be a great tool which will help me a lot in my professional life." (PEER COUNSELLOR 2)</p>



complex to simple reflexes. However, peer counselors did not achieve proficiency in the ratio of reflexes to questions. The facilitators adhered to the alcohol-related content, as they correctly addressed approximately 25 of the 28 total topics.

Feasibility analysis identified barriers to implementation, mainly related to recruitment, such as unreliability in the initial commitment of students, which delayed achievement of the final sample by 2 weeks as well as the intervention sessions. In addition, peer facilitators noted the short time of notification for each intervention session. Principal facilitators were completion of the questionnaire in light of the academic schedule; the availability, predisposition, and collaborative attitude of peer counselors; and the provision of personalized feedback through the graphical report and individualized material. Figure 2 illustrates the main barriers and factors that facilitated the implementation of the intervention.

Both participants and peer counselors expressed high overall satisfaction with the program (average of 9.3 points out of 10). Specifically, they noted its usefulness, importance, and informative and educational nature and would recommend it to other university students (9.5 points out of 10). They also highlighted the quality of the material provided (9.7 points out of 10). Participants specifically highlighted peer facilitators' role and knowledge of the different topics addressed, their preparation and training, their ability to listen and empathize, and the clarity of the explanations provided. Peer counselors felt that they had achieved the competence needed to adequately administer the intervention and felt that they became more competent as they conducted more sessions. Finally, participants identified several strengths of the program, such as its personalized nature, the role of the peer facilitators, and the informative and reflective nature of the intervention; peer counselors identified other strengths, such as the acquisition of competence to adequately implement the program, their training, and experiential learning based on repeated intervention sessions. Table 5 summarizes the main findings and example quotes.

## 4 | DISCUSSION

This is the first study to evaluate the preliminary efficacy and feasibility of a peer-led BASICS intervention to reduce alcohol consumption among Spanish nursing students. Our results suggest that the program could positively modify alcohol consumption by significantly reducing the number of binge-drinking episodes and the peak BAC compared with those of the control group and adjusting for age and sex. These preliminary findings are consistent with previous reports carried out in the US context (Mastroleo et al., 2009).

There are several explanations for these promising findings. First, the harm reduction philosophy on which the intervention is based (Jenkins et al., 2017) seeks to reduce the potential and real risks derived from alcohol intake, such as the frequency of binge-drinking episodes or high blood alcohol levels. Second, the format (brief MI adapted to the college population) combined cognitive-behavioral techniques and motivational improvement strategies. According to

the NIAAA (2018), this type of program has widely demonstrated efficacy in modifying alcohol consumption in this group. As suggested by Lavilla-Gracia et al. (2022), university students lack the motivation to modify their own alcohol consumption due to their assumptions about its effects, such as the pleasant effects of alcohol consumption and its influence on socializing. Third, peer counselors established a helping relationship with the participants. According to Georgie et al. (2016), these relationships are characterized by a dialogue between equals with similar experiences and cultural background, which results in the subject feeling understood rather than judged. Finally, peer facilitators' training could explain the potential efficacy of the intervention, as it has in other studies in the same field (Mastroleo, Magill et al., 2014; Tollison et al., 2013).

Contrary to our expectations, we found no significant differences between the intervention and control groups in terms of alcohol use, adjusted for age and sex. This lack of effect might be related to the study's small sample size. Importantly, however, our preliminary results showed tendencies towards improvement in all outcome variables in the intervention group. Due to the exploratory nature of this trial, our main objectives were to determine the preliminary effects of the program, explore potential (or to generate) hypotheses for testing underlying mechanisms (Craig et al., 2008), and calculate the required sample size of subsequent large-scale trials (Moore et al., 2015). As such, and according to the MRC framework, future research conducting a full-scale trial is required to confirm the results. Moreover, including longer follow-up time points would be interesting to determine how long the effects of the intervention could be maintained.

While we did not find any statistically significant differences in alcohol use and alcohol-related consequences after the intervention, we found significant differences in the mean number of binge-drinking episodes and the peak BAC as well as the alcohol-related consequences, in contrast to the findings of Mastroleo et al. (2010). This discrepancy may be due to the very different contexts in which the two studies were conducted. Our study took place in a Mediterranean culture where alcohol consumption is more moderate throughout the week, typically consisting of drinks low in alcohol content (Moreta-Herrera et al., 2020), whereas Mastroleo et al. (2010) examined an American population whose consumption is characterized as high-risk, with binge drinking of beverages high in alcohol content (NIAAA, 2018).

Regarding differences between pretest and posttest, students assigned to the intervention group exhibited significant reductions in all outcome variables, with no interaction between group and time, suggesting the potential benefits of this intervention. These findings are consistent with Mastroleo, Magill et al. (2014).

Our results support the feasibility of implementing BASICS in the Spanish context, in line with studies from the US context (King et al., 2020; Mastroleo, Oakley et al., 2014). Peer counselors reliably adhered to the intervention protocol due to their high degree of commitment and motivation, resulting from a rigorous selection process, and to their training, consisting of individualized supervision sessions. Specifically, the peer counselors acquired a sufficient level of theoretical knowledge about alcohol and competence in two of the three MI

components: the 1:1 ratio of open- to closed-ended questions and the 1:1 ratio of complex to simple reflexes. On the other hand, peer counselors did not achieve the desired 2:1 ratio of reflexes to questions. However, learning and mastering MI competence is difficult even for highly trained counselors or therapists and is even more challenging for peer counselors, whose practical experience is scarce (Larimer et al., 2022; Tollison et al., 2013).

Participants and peer counselors reported very high satisfaction with the intervention in terms of general satisfaction and perceptions of its necessity and the likelihood of recommending it to others. These data are in line with Mastroleo, Oakley et al.'s study (2014) which was conducted in a similar context. These positive results could stem from peer counselors due to their close and trusting attitude, ability to listen, empathy, and credibility, as has been reported in other works (Georgie et al., 2016; Hatcher et al., 2014). It could also be explained by the personalized feedback provided to recipients, which is recognized as an effective strategy to promote alterations in the drinking patterns of college students (Rainisch et al., 2022). These key features should be considered when redesigning, adjusting, and implementing large-scale trials.

The study has several limitations. First, the generalizability of the data may be limited by the fact that the participants were students from only one university. In addition, participant self-assessment of alcohol consumption could have resulted in underestimation of the effects of the intervention (Kypri et al., 2007). Second, although participants who completed the follow-up assessment during COVID-19 isolation were excluded from the preliminary efficacy analysis, our results should be interpreted with caution. Third, researchers rated peer counselors' adherence to the intervention. In an attempt to minimize rater bias, the assessments were conducted by two researchers independently. Fourth, the study was conducted with only a first-year nursing class, and contamination of the groups may have been possible. To avoid this, participants consented not to discuss the study until it was completed, although we cannot verify it. In case of contamination, the results of the control group would improve, underestimating the intervention's potential efficacy. Finally, although some of the measurement tools underwent a back-translation process to ensure their content validity (Isart, 2017), full psychometric validation is needed.

In addition, our study has several strengths. First, this study demonstrated the feasibility of implementing an intervention to decrease alcohol use among university students and provided promising outcomes for reducing the number of binge-drinking episodes and the peak BAC. Identifying the potential barriers and factors that facilitate implementation is paramount prior to a full-scale study (Ruiz-Zaldibar et al., 2021). Second, the MRC is a very useful framework for evaluating complex interventions that combine physical, psychological, and environmental aspects and educational activities (Möhler et al., 2012; Ruiz-Zaldibar et al., 2021). It has guided this study in exploring the implementation process and the evaluation of the preliminary efficacy and feasibility of the program, which will allow for the improvement and replication of the intervention in future large-scale trials (Craig et al., 2008). Moreover, this framework has guided the preliminary

theoretical and modeling phases of this study in collecting up-to-date evidence and defining the key components of the intervention. Third, this investigation analyzed satisfaction (acceptability), which is often neglected when evaluating programs in general, especially with peer-led programs (Mastroleo, Oakley et al., 2014). Finally, the program has a strong theoretical foundation based on behavioral and peer education theories, the stages of change model and principles of MIs, cognitive-behavioral therapy, and harm reduction philosophy, all of which are key for developing this kind of program (Dimeff et al., 1999).

## 5 | CONCLUSIONS

Delivering a brief motivational alcohol intervention (BASICS) to college students in the Spanish context was potentially effective for reducing alcohol use and negative alcohol-related consequences.

Participants and peer counselors expressed high fidelity and satisfaction with the program, specifically in regard to the materials, resources, and role of peer counselors as well as their training and supervision. Regarding the feasibility of this intervention, we identified barriers to and factors that facilitated implementation of this intervention in the study, informing the development of a future study.

The findings from this pilot randomized control trial report on what might be the mechanisms that mediate the outcomes of the motivational intervention to reduce alcohol use in college populations. Given the preliminary nature of our investigation and according to the MRC framework for complex interventions, a full-scale final randomized controlled trial with a larger Spanish sample is warranted.

## 6 | RELEVANCE FOR CLINICAL PRACTICE

This work reports the earliest evidence for guiding nurse educators to boost nursing students' effective health education practices regarding alcohol use in the college setting. Given the positive impact of the program in terms of preliminary efficacy and feasibility, we recommend implementing peer-led, student-specific alcohol prevention and consequence prevention interventions on campus. These interventions, together with restrictive drinking policies, may result in fewer students initiating, maintaining, or increasing their drinking. At the same time, they would help young university students who are low- or high-risk drinkers reduce their consumption and thus their negative consequences. Nursing educators are in an ideal position to promote teaching initiatives to develop and expand prevention and health promotion activities for young university students.

For effective prevention of alcohol consumption in universities, we recommend the establishment of a health counseling service or a peer promotion and prevention consultation to facilitate the reduction of alcohol consumption among students. Such a service, which has been successfully developed and is widely integrated in the North

American university context, would be a novel and cost-effective resource to help promote healthy lifestyles in the university population (Gibbs & Larcus, 2015; Sloane & Zimmer, 1993).

Ultimately, due to the appropriateness of the university setting to work with nursing students as peer counselors, their capacitation should focus more on knowledge, skills, and attitudes to fully achieve competence (Pueyo-Garrigues et al., 2021), addressing factors influencing young people's drinking, the Stages of Prochaska Change Model, motivational interviewing, and cognitive behavioral techniques. Furthermore, including training and supervision would increase the effectiveness of interventions aimed at young people.

## AUTHOR CONTRIBUTIONS

**Sara Pueyo-Garrigues:** Conceptualization; data curation; formal analysis; methodology; writing – original draft. **Miren Idoia Idoia Pardavila-Belio:** Conceptualization; formal analysis; methodology; supervision; writing – review and editing. **María Pueyo-Garrigues:** Conceptualization; investigation; writing – review and editing. **Navidad Canga-Armayor:** Conceptualization; funding acquisition; project administration; supervision; writing – review and editing.

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## DATA AVAILABILITY STATEMENT

Data available on request from the authors.

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