

Effectiveness of a Program for the Prevention of Psychoactive Substance Consumption in University Students

Efectividad de un programa para la prevención de consumo de sustancias psicoactivas en estudiantes universitarios

Efetividade de um programa para a prevenção do consumo de substâncias psicoativas em estudantes universitários

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Resumen

Objetivo: Evaluar la efectividad de un programa para prevención de consumo de sustancias en estudiantes de una universidad pública en Cartagena, Colombia. **Métodos:** Diseño cuasiexperimental, sin grupo control. La muestra fue de 1098 estudiantes de primer semestre de los programas académicos la Universidad de Cartagena. Las edades variaron entre 16 y 27 años (la media es de 7,0; y la desviación estándar, 1,8), con un registro de 472 mujeres (56,9 %) y 358 hombres (43,1 %). El grupo, en su totalidad, recibió el programa psicoeducativo Construyendo Salud, que consta de diez sesiones, de dos horas semanales, que refuerza habilidades sociales, personales y afronta los efectos negativos de las diferentes sustancias, mitos y realidades. Las escalas mostraron adecuada consistencia interna: escala de actitud hacia el consumo, intención hacia el consumo, autoeficacia general, asertividad, enfado, funcionamiento familiar, ansiedad y autoestima. Se compararon puntuaciones antes y después de la intervención, se

aplicó t de Student y se aceptaron valores de $p < 0,05$. **Resultados:** Participaron 830 estudiantes. Se observó reducción en el consumo de alcohol (77,2 vs. 0,72,7 %; $p < 0,05$) y se aumentó el consumo de inhalantes (pegante Bóxer[®]) (5,1 vs. 5,7 %; $p < 0,05$). La frecuencia se mantuvo similar en el consumo de cannabis (8,4 vs. 11,1 %; $p > 0,05$), cocaína (5,1 vs. 7,1 %; $p > 0,05$) e inyectables (4,3 vs. 5,7 %; $p > 0,05$). Se mejoraron la autoestima ($t = 2,29$; $gl = 824$; $p < 0,02$), el control de emociones ($t = 2,13$; $gl = 813$; $p < 0,03$) y el manejo de ansiedad ($t = 3,06$; $gl = 805$; $p < 0,01$). **Conclusión:** El programa mostró efectividad en reducir el consumo de alcohol, contuvo el consumo de marihuana y cocaína, fortaleció la autoestima, el control emocional y la ansiedad. No presentó efectividad para prevenir el inicio o la intención del consumo de sustancias.

Palabras clave: consumidores de drogas, drogas ilícitas, estudiantes universitarios, evaluación de programas, promoción de la salud.

Resumo

Objetivo: Avaliar a efetividade de um programa de prevenção do consumo de substâncias em estudantes de uma universidade pública em Cartagena, Colômbia. **Metodologia:** Design quase-experimental, sem grupo de controle. A amostra foi de 1098 estudantes de primeiro semestre dos programas acadêmicos da Universidade de Cartagena. As idades variaram entre 16 e 27 anos (a média é de 7,0 e o desvio-padrão de 1,8), com um registro de 472 mulheres (56,9%) e 358 homens (43,1%). O grupo em sua totalidade participou do programa psico-educativo *Construyendo Salud*, composto por dez sessões de duas horas semanais, que reforça habilidades sociais, pessoais e encara os efeitos negativos das diferentes substâncias, seus mitos e realidades. As escalas mostraram adequada consistência interna: escala de atitude perante o consumo, intenção perante o consumo, autoeficácia geral, assertividade, enfado, funcionamento familiar, ansiedade e autoestima. Foram comparadas as medições antes e depois da intervenção, aplicou-se *t* de

Student e foram aceitos valores de $p < 0,05$. Resultados: Participaram 830 estudantes. Observouse redução no consumo de álcool (77,2 vs. 0,72,7%; $p < 0,05$) e aumentou o consumo de substâncias inaladas (cola de sapateiro Bóxer®) (5,1 vs. 5,7%; $p < 0,05$). A frequência manteve-se semelhante no consumo de cannabis (8,4 vs. 11,1%; $p > 0,05$), cocaína (5,1 vs. 7,1%; $p > 0,05$) e injetáveis (4,3 vs. 5,7%; $p > 0,05$). Houve melhora na autoestima ($t = 2,29$; $gl = 824$; $p < 0,02$), o controle de emoções ($t = 2,13$; $gl = 813$; $p < 0,03$) e o manejo da ansiedade ($t = 3,06$; $gl = 805$; $p < 0,01$). **Conclusão:** O programa mostrou efetividade na redução do consumo de álcool, conteve o consumo de maconha e cocaína, fortaleceu a autoestima, o controle emocional e a ansiedade. Não apresentou efetividade na prevenção do início ou da intenção do consumo de substâncias.

Palavras-chave: consumidores de drogas, drogas ilícitas, estudantes universitários, avaliação dos programas, promoção da saúde.

Introduction

Substance consumption is a public health problem associated directly and indirectly with an important number of morbidities, disability, and premature deaths [1]. In adolescents and young adults, the prevalence of consumption of legal and illegal substances is growing; frequently starting during adolescence, with legal substances, and escalating to illegal substances [2].

The university population is highly vulnerable [3]. A study conducted in Bangladesh in 436 university students found that 54.59% ($n = 238$) was addicted to drugs and 68.43% of them were male with greater consumption ($p < 0.01$) [4]. Blows and Isaacs [5], in South Africa, reported that the prevalence of substance use of 2,915 university students was at 62.7%; those of higher consumption were: alcohol (80.6%), cannabis (46%), and ecstasy (5.3%). These researchers reported that in this group of students, substance consumption was associated significantly to mental-health problems, specially anxiety, with negative repercussions on academic performance [4,5].

In Latin America, a study in 2016 about the prevalence of psychoactive substance consumption in university students from Bolivia, Colombia, Ecuador, and Peru noted that in the last decade, 6.2%, 22.7%, 12.4%, and 6.4%, respectively, of university students have consumed some illegal substance [6]. Prevalence of alcohol

consumption was at 70% during the last year; recent cannabis consumption of 21.1% in Colombia, 11.7% in Ecuador, 5.2% in Peru, and 5% in Bolivia. Prevalence of cigarette smoking was at 20.7% in Ecuador, 17.2% in Colombia, and 15.5% in Bolivia and Peru [6]. Substance consumption is a complex phenomenon, given that it is due to the interaction of biological, psychological, social, cultural, and political factors that interrelate syndemically [7].

Due to the large number of youth who, according with different studies, experiment with diverse substances or start regular or abusive consumption, it is imperative, from educational institutions, to implement duly planned and systematic good practices to prevent substance consumption, with the possibility of evaluating their effectiveness and continuity over time, that may influence the phenomenon, favor student retention and achievement of goals proposed by those entering university life [8,9].

Effectiveness evaluation is understood as the degree to which an intervention produces a beneficial result in the program's participants, *i.e.*, how much it contributes to improving health conditions in the short and medium term [10,11]. Some interventions have shown positive results in preventing substance consumption in university students. For example, in the United Kingdom, Norman

et al., [12] implemented a program based on the Theory of Planned Behavior to reduce excessive alcohol consumption; upon completing the program, the intervention group had a less favorable attitude toward excessive alcohol consumption, drank less units, and had less harmful consumption patterns in the first six months of university. Muñoz [13] observed that a preventive program for alcohol consumption increased the scores for the question about how to control consumption and an increase in harmful alcohol consumption; in other words, the program showed no effectiveness.

This research implemented the program Constructing Health in Universidad de Cartagena, a public university in Colombia, adapted for university students. It is a universal prevention program, with psychosocial approach, theoretically based on the program Life Skills, by Gilbert Botvin, one of the preventive approaches best valued by the evidence, which aims to promote self-esteem, self-control, favorable attitudes toward health and different personal and social abilities in students [14].

The program Constructing Health has proven effective in preventing and reducing substance consumption in multiple applications in different Spanish regions, at three months of follow up [15-18]. It has also evidenced reduction in weekly cigarette consumption in those who were already smokers in the intervention group and a reduction in the intention to consume other substances [16,18]. In Colombia, the program has been adapted linguistically to the context of the city of Cartagena and applied in high school students, where it proved effective to prevent intention of cigarette consumption; finding relative risk (RR) of 0.51 and 95% confidence interval (CI) between 0.37-0.72 [14].

The program Constructing Health is articulated within an institutional strategy denominated “UdeC Healthy Environment” by the Vice-rectory of University Welfare at Universidad de Cartagena, seeking to promote healthy habits and lifestyles in the university community, among which is the prevention of substance consumption. Therein the importance of evaluating an intervention for universal prevention of psychoactive substance consumption in university students.

Hence, the aim of this research was to evaluate the effectiveness of the program Constructing Health to prevent substance consumption in students from Universidad de Cartagena.

Materials and Methods

A pre- and post-test quasi-experimental study was designed, without control group. The work kept in mind the recommendations by the TREND Guide for this type of study [19]. The population was comprised by 1,098 students, registered in the first semester of the 26 daytime

academic programs of a university in the city of Cartagena, in 2019, that is, 26 groups, who in all comprised the sample.

The sample selection was based on convenience. All the students who entered and matriculated in the institution were included in the program Constructing Health by the Vice-rectory of University Welfare, in articulation with the directors of the academic units, in an intervention to prevent psychoactive substance consumption, with which it is pursued that upon admission to the university life, academic commitments, peer pressure, reduced monitoring by the parents, and other factors that can be conjugated (family, economic, micro-trafficking problems, among others) do not constitute favoring factors of the beginning or increase of substance consumption, which – in turn – lead to desertion from the educational system and with it failure with the life project.

As inclusion criterion, the participants had to be students registered in the first academic semester of each of the university’s in-person day programs. Students who did not wish to participate were excluded, hence, 830 students managed to complete the program.

Description of the intervention

The intervention is designed to be carried out in-person in the classroom. It has 10 sessions, each lasting 2 h weekly, in interactive workshop modality, during two and a half months.

The interactive modality has to do with the pedagogic strategies used to facilitate and improve comprehension of themes in the classroom and includes: role playing and team-work techniques: (brainstorm, debate, Phillips 6.6, general acting rules, feedback, reinforcements) and individual-work techniques (homework).

Field team

This was integrated by the researchers, who managed, coordinated, and conducted the training and provided the material used for the intervention.

Facilitators

This group was made up by students from more advanced semesters, peer trainers, who due to the closeness in age can generate cohesion and modeling possibility.

Workshop contents

Through six components, the contents of the workshops were structured: informative component, decision making component, component centered on emotional control, social skills component, component of tolerance and cooperation, and component focused on leisure activities. Each was worked with a specific purpose, so that all activities and programming to be carried out during the session contribute to achieving its purpose.

- *Informative component*: dissertation and dialogue about legal and illegal substances (alcohol, cigarettes, marihuana, others), presentation forms, myths versus realities, action mechanisms, effects, consequences, epidemiological data, impact on the psychological, physical, and social spheres [14].
- *Decision making component*: constituted by two sessions that favor critical thought and responsible decision-making skills. A decision-making procedure is taught and practiced; work is conducted on the influence of second or third parties in their own decisions and, finally, different examples are used to indicate tactics used by the media and publicity to interfere in the consumer's conduct [14].
- *Component centered on emotional control*: through two sessions, students are taught to identify and manage anger and anxiety, the situations or events that motivate these emotions, as well as the coping techniques (mental rehearsal, relaxation, breathing) [14].
- *Social skills component*: addressed in five sessions, where students are trained in aspects, like self-esteem, self-improvement, and self-efficacy, in communication skills, and skills focused on resisting peer pressure to consume.
- *Tolerance and cooperation component*: this highlight the importance of respecting differences, collaboration, and cooperation.
- *Component focused on leisure activities*: discussion of leisure alternatives to satisfy the need youth have to search for new and varied sensations, and the importance of responsibly deciding on how to invest this time stands out.
- During an extra session, the program closes with the students signing a public commitment for no substance consumption.

Variables and measurement instruments

Sociodemographic variables (age, sex, socioeconomic level) were quantified, along with outcome variables (attitude toward consumption of substances, like alcohol, cigarettes and marihuana, future intention of substance consumption) and cognitive, behavioral, and family variables. The cognitive variables quantified were: self-efficacy, assertiveness, and self-esteem. With respect to behavioral variables, anger and anxiety were considered (which fulfills both criteria), and the family variable corresponded to family functionality:

- *Attitude toward substance consumption*. The scale of attitude toward overall substance consumption consists of 23 questions, with response options “agree”, “disagree” and “indifferent”, used to evaluate the attitudes of university students regarding the consumption of alcohol, cigarettes, and marihuana [14]. This study obtained a Cronbach's alpha of 0.63.
- *Consumption intention*. Evaluated through the questionnaire adapted by Gómez-Frágüela *et al.*, [15]. The objective of this instrument is to know the near-future consumption intention of adolescents for legal substances, like alcohol and cigarettes, and for illegal substances, like marihuana. It consists of three reactions; one for each substance. It has four response options: “yes, sure”, “probably yes”, “probably not” and “surely not”; scored from 3 to 0; a higher score, meant greater global substance consumption intention [17-18]. This instrument has shown adequate internal consistency; Cronbach's alpha of 0.72 [20,21] and 0.75 in the present study.
- *Overall self-efficacy*. Consists of 10 items, with four Likert-type response options. It evaluates the feeling of confidence in one's abilities to manage stressors. The maximum score is 40 points, and the minimum is 10 points; the higher the score means a higher level of self-efficacy. This instrument showed Cronbach's alpha of 0.72 in the original version [21,22] and of 0.72 in the present study.
- *Assertiveness*. The instrument has three response options: good, average, and bad. It was proposed by Gambrill and Richey (Cronbach's alpha of 0.64) [cited in 23, p. 21], and in adapted version of 15 items by Gómez-Frágüela *et al.*, [15] and Gómez-Frágüela and Villar [16], with better psychometric properties than the original version, with Cronbach's alpha of 0.72 [24]; the present sample had a Cronbach's alpha of 0.64.
- *Anger*. Used by students to evaluate their capacity to control anger. It consists of 10 questions with response options “a lot”, “little” and “nothing”, proposed by Gómez-Frágüela *et al.*, [15] and Gómez-Frágüela and Villar [16]. In this study, it had a Cronbach's alpha of 0.71.
- *Family functioning*. The family APGAR questionnaire is an instrument that permits evaluating how family members perceive their level of functioning and global unity. It consists of five items, with Likert-type response options, thus: 1, almost never; 2, sometimes; 3, almost always, and 4, always. Each question has a possible score from 0 to 4 points. Scores < 16 were categorized as family disfunction [25]. Forero *et al.*, [26] reported high internal consistency in Colombian high school students, with Cronbach's alpha of 0.79; the current study had a Cronbach's alpha value of 0.89.
- *Anxiety*. This instrument seeks to determine anxiety levels according with what the individual has felt in the last 30 days [27]. It has 10 items, and was used in this study due to showing higher internal consistency in the Cronbach's alpha, with 0.83, and a bidimensional structure of 54% of variance, compared with the scale of 20 items for students [28]. The scale's res-

ponse options are Likert type; the minimum score obtained is 10 and the maximum is 40. The Cronbach's alpha value in the present research was 0.87.

- *Self-esteem*. The Rosenberg scale for self-esteem consists of 10 items, five written positively and five written negatively. It has four Likert-type response options; with a minimum score of 10 points and maximum score of 40 points [29]. The internal consistency is Cronbach's alpha of 0.78 [30]. Cogollo-Milanés *et al.*, [31] reported, in students from Cartagena, Colombia, a modest internal consistency, a Kuder-Richardson coefficient of 0.63. The Cronbach's alpha value in this study was 0.78.

Evaluation

A pre- and post-intervention evaluation was performed. Students' satisfaction with the course was evaluated and the program's execution was monitored, to make pertinent adjustments and seek fidelity in the application.

To evaluate participant adherence to the program, percentage of attendance, delivery of tasks (homework), and active participation were considered.

Procedure

During the program's initial phase, spaces were requested in the University's daytime and in-person academic programs for the assignment of schedules; a single day per week was assigned, at a specific hour, which could be in the morning or in the afternoon. The possibility was left open to expand in later application phases to evening programs.

A workshop chronogram was designed per academic unit. Each academic program was assigned a facilitator, who was responsible for teaching the workshops; the facilitator had been previously trained by the researchers, although they were supervised and supported by the program coordinator.

The 10 workshops were conducted in the classroom, with a two-hour weekly frequency, without the professors being present. Some academic units gave up the space of a subject, which in almost all academic programs corresponded to the subject of University Life, while other academic units assigned a special schedule to carry out the workshops of Constructing Health.

In the first session, the students were explained the objectives of the program and of the research, program methodology, and were asked to sign the informed consent. The pre-test was applied to know the students' state with respect to substance consumption and skills for life before the program. A post-test was applied at the end of the program during the last session. Completion of the

instrument was supervised by a group of coordinators from the program. The students were asked to be honest in their answers, guaranteeing the anonymity of the questionnaire and confidentiality.

Data analysis

Consumption frequencies before and after the intervention were compared with the Z test; this, through the approximation to the normal distribution, calculated the statistical contrast for the frequency difference [32].

Likewise, the scores in the measurement scales, mean (M) and standard deviation (SD) were contrasted with Student's t test [33]. Previously, the normal distribution of the scores was verified through the Shapiro-Francia test [34]. Differences showing probability value $< 5\%$ ($p < 0.05$) were accepted as significant.

Ethical considerations

The project was evaluated and approved by the Institutional Research Ethics Committee, minutes 105 by the Research Ethics Committee, dated 12 February 2018, at Universidad de Cartagena.

This type of study is classified as risk higher than the minimum, according to Resolution 8430 of 1993 by the Colombian Ministry of Health [35]. Consequently, adult participants signed their informed consent.

Because they are first-semester students, it is possible to find underage students; the informed consent was sent to their parents to be signed, and the students in question signed the consent, according with Article 25 of the same resolution.

The ethical principles contained in the Declaration of Helsinki by the World Medical Association were also taken into account for health research with people [36].

Results

The baseline had participation by 830 students from all the University's programs (Table 1); 196 students belonging to four academic units refused to participate and 72 abandoned the preventive program. The loss of students, when comparing the pre-test and the post-test, was 24.5%. Considering that the acceptable loss should not be $> 20\%$, this loss percentage is high and corresponds to those who refused to participate and those who withdrew from the program due to other obligations or absenteeism by students on the day of the evaluation (post-test). This can be considered a follow-up bias, when subjects from one of the study cohorts are totally or partially lost ($\geq 20\%$). [37].

Table 1. Number of students trained per academic unit in the program Constructing Health

Academic program	Recruitment	Exposure and permanence in the intervention
Business Administration	46	0
Industrial Administration	59	59
Biology	47	47
Social Communication	38	0
Public Accounting	47	47
Law (daytime)	39	40
Law (evening)	37	22
Economics	50	50
Nursing	70	50
Philosophy	37	22
History	24	14
Food Engineering	47	47
Civil Engineering	31	31
Chemical Engineering	59	59
Computer Engineering	46	47
Foreign Languages	48	15
Degree in Education	48	0
Linguistics and Literature	32	20
Mathematics	47	70
Medicine	50	31
Metrology	23	47
Odontology	26	0
Chemistry	47	47
Pharmaceutical Chemistry	50	38
Social Work	50	27
Total	1,098	830
Retention percentage (%)		75.5

Ages ranged between 16 and 27 years (M = 17.0; SD = 1.8). Distribution by sex was: 472 women (56.9%) and 358 men (43.1%). Distribution by socioeconomic level was: level 1 had 287 students (34.5%); in level 2, 263(31.7%); in level 3, 157(18.9%); in level 4, 27(3.3%), in level 5, 5(0.6%), and in level 6, 3(0.4%). No response was given by 88 students (10.6%).

Inhalant consumption increased (Boxer® glue) (5.1% vs. 5.7%; $p < 0.05$). The frequency remained similar in consumption of cannabis (8.4% vs. 11.1%; $p > 0.05$), cocaine (5.1% vs. 7.1%; $p > 0.05$) and injectable drugs (4.3% vs. 5.7%; $p > 0.05$) (Table 2).

Table 2. Substance consumption sometime in life in university students before and after applying the program Constructing Health

Type of psychoactive substance	Consumption before, n (%)	Consumption after, n (%)	Z (p)
Cigarettes	186 (22.4)	183 (22.0)	0.20 (> 0.05)
Alcohol	641 (77.2)	603 (72.7)	2.12 (< 0.05)
Cannabis	70 (8.4)	92 (11.1)	1.86 (> 0.05)
Boxer® glue	42 (5.1)	64 (7.7)	2.17 (< 0.05)
Cocaine	42 (5.1)	59 (7.1)	1.70 (> 0.05)
Injectable drugs	36 (4.3)	47 (5.7)	1.41 (> 0.05)

Consumption prevalence showed that the most-consumed substance is alcohol. Before the program, 641 students (77.2%) reported alcohol use, and after the participation, 603 students (72.7%) reported, evidencing a consumption reduction (77.2% vs. 72.7%; $p < 0.05$). Consumption of inhalants showed a statistically significant increase, going from 42 to 64 students (5.1% vs. 5.7%; $p < 0.05$). There was no consumption reduction after the program in the use of cigarettes, cocaine, and injectable drugs.

Regarding the overall consumption intention, no significant reduction was noted after the program; nor in the consumption intention specifically for cannabis. The results are shown in Table 3.

Table 3. Intention of substance consumption in university students

Measurement	Before, M (de)	After, M (de)	Student's t gl (degrees of freedom)	p-value
Overall consumption intention	14.02 (1.66)	14.13 (1.87)	1.32 (807)	0.186
Intention of cannabis consumption	10.12 (1.24)	10.14 (1.16)	0.23 (817)	0.814

Results of social and personal skills, like self-efficacy, assertiveness, anger management, anxiety and self-esteem are shown in Table 4. The mean scores for self-efficacy and assertiveness diminished after the preventive program and the association was statistically significant, although not relevant for the practice. Mean scores for anger management, anxiety, and self-esteem

increased after the preventive program, with statistically significant association. Regarding family dysfunction, a decrease was found after applying the program in university students.

With respect to students' satisfaction with program, it was found high, as shown in Figure 1.

Table 4. Mean scores of university students' social and personal skills before and after applying the program Constructing Health

Social and personal skills	Mean score (SD) Before	Mean score (SD) After	Student's t (gl)	p-value
Self-efficacy	26.42 (2.88)	26.10 (3.58)	2.28 (819)	0.023
Assertiveness	15.30 (3.21)	14.78 (3.04)	3.81 (752)	0.001
Anger	10.40 (2.77)	10.67 (3.05)	2.13 (813)	0.034
Anxiety	17.14 (5.28)	18.04 (5.94)	3.06 (805)	0.001
Self-esteem	5.59 (1.17)	5.73 (1.41)	2.29 (824)	0.023
Family dysfunction	20.1 (4.52)	19.4 (4.59)	3.12 (825)	0.002

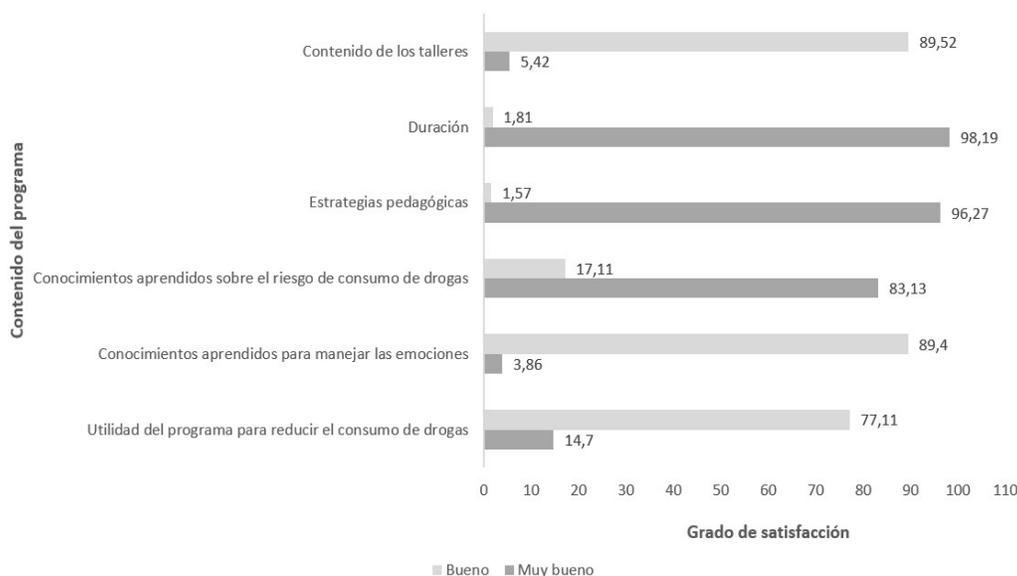


Figure 1. Students' satisfaction with the program Constructing Health (MAKE THIS IN ENGLISH)

Discussion

In this study, the preventive program Constructing Health was effective in reducing alcohol consumption and maintained unincreased the consumption of marijuana, cocaine and injectable drugs. However, it was not effective in preventing general intention or the start of psychoactive substance consumption in university students. These results are similar to those by Muñoz [13], who implemented a program to prevent alcohol consumption in university students and achieved 3.03% decrease of the students' risky consumption in the final

evaluation, although harmful consumption increased from 1.81% in the initial phase to 2.51% in the final phase, according to Audit's test. Salazar *et al.*, [38] in turn, observed that brief counselling, a selective preventive intervention for alcohol consumption in university students, diminished the consumption rate in the baseline and during follow up, with $t = 4.90$, $p < 0.001$.

Contrary data were reported by Pulido *et al.*, [39] when evaluating the effectiveness of a program for the reduction of drug use in university students. Therein,

it reported that substance consumption increased post-intervention, with an important increase for cannabis. The authors attribute this to the design's lack of power (quasi-experimental), difficulties in implementing the program or its incapacity to prevent increased consumption, for which they suggest caution with applying such in similar populations or testing other programs.

The observations presented here from the different interventions tested show divergent results and suggest the consumption prevention in the university context is a highly complex situation, as well as not carried out much, given the scarce evidence collected [38,39].

In addition, the fact that the program has not shown effectiveness in keeping students from initiating substance consumption after entering the University, may be related with those who have prior intentions of consumption and exposure factors, like stress due to academic demands, economic difficulties, and new interpersonal relations, which can precipitate consumption. If students are involved with peers who consume, they have greater probability to consume, influenced in turn by the ease of obtaining the substance [40]. Intentions to consume any psychoactive substance have to do with favorable attitudes toward consumption and the undervaluation of the little damage that substances can cause. Those with intention to consume are more likely to do so [41].

In this sense, it is necessary to warn that universal psychoeducational preventive programs for consumption prevention should be applied during early ages between 10 and 14 years, when the risk conduct has still not appeared, that is, at the end of primary education or at the beginning of high school, during stages prior to the adolescents' experimentation (with age range between 10 and 18 years), before entering university studies, to enhance protective factors that will avoid later consumption [42,43].

In spite of the aforementioned, consumption prevention in this context constitutes a relevant aspect, bearing in mind that university students incur, for example, in greater consumption of alcohol than their peers in the general population; likewise, they have high consumption of cannabis.

Psychoactive substance consumption during university life involves health risk behaviors (unwanted pregnancy, sexually transmitted diseases, accidents due to driving under the effects of alcohol, and violence, among others), as well as having repercussions and consequences during adult life, which can even leave the youth out of the university life [44].

This study also found that the program Constructing Health strengthened social skills, like anger and anxiety management, and self-esteem. This observation is similar to the findings by Pulido *et al.*, [39] who evidenced that their program was effective to increase scores in abilities, like empathy, stress management, and social

skills ($p < 0.001$). Fabelo *et al.*, [45] implemented a psychoeducational program for the prevention of addictions and obtained significant reductions in mean scores of vulnerability to stress and enhancement of coping resources and self-esteem [$M = 4.30$ ($SD = 3.68$) vs. $M = 8.76$ ($SD = 4.20$)].

Social skills are fundamental for human performance. Enhancing them in the university environment is an important achievement, given that such will allow students to insert themselves and adapt more easily in the educational institution, relate better, decide on their preferences with few possibilities of being persuaded, feel good about themselves, be assertive, facilitate achieving goals and improving academic performance [46].

More so, when the bulk of students from this institution where the intervention was conducted and who participated in this study belong to socioeconomic strata 1 to 3. Low income, the fact that parents have low educational levels, and students having other responsibilities, influence on young people having limited management and control of feelings and emotions. The emotional abilities of young people are favored by the types of previous relationships and the teaching about their recognition from home, which facilitates their regulation in an adaptive manner [47]. This reinforces the need to strengthen personal, social, and cognitive abilities because this not only contributes to preventing substance consumption, but also to caring for mental health. [48].

Regarding the process evaluation, students showed high satisfaction with the program, obtained optimal scores in the delivery of tasks (homework) and in participation in the strategies developed during the program's sessions, which accounts for the adherence to it.

Although it is true that psychoactive substance consumption starts before entering the university and that many youth have already tried at least alcohol, the university intervention is important to create healthy environments, bearing in mind that it can become a context of social reinforcement, which promotes behaviors that incite students and the educational community to consumption, given the social conditions that permeate the university environment, like group and peer pressure; the association of consumption with power, freedom and autonomy, publicity, or as a means to reduce stress produced by academic demands or responding to such [49].

Prior experience in applying educational interventions for the prevention of psychoactive substance consumption has demonstrated that it is not sufficient to make adolescents and young people aware of the dangers of consumption, but that these should be combined with the development of personal and social skill to strengthen the capacity to resist negative pressure from peers and the offer of substances, as well as the control of emotions, self-esteem, self-efficacy and decision making, as conducted in the present study [50].

Although these abilities should be strengthened in school, it is necessary to reinforce them in the university; hence, performing these interventions permits containing consumption in higher education institutions, as evidenced in this study, which gains much relevance in the sense that it establishes control to avoid the increase, above all, if reinforcement actions are continued regarding life project and healthy lifestyles from university welfare [49].

The positive results reported encourage insisting on prevention from the educational institution, as measure to ensure that youth can advance in their studies and achieve their life project.

In that sense, this study becomes an important input for current knowledge about prevention based on scientific evidence and the usefulness of preventive interventions, upon studying the program's effectiveness in preventing psychoactive substance consumption in university students. Its usefulness in reinforcing skills for life and in reducing alcohol consumption, aspects that contribute to creating healthy university environments and to reducing risk behaviors, reveals interest by the University in its students developing within a healthy environment that contributes to well-being [48].

Evaluation studies of preventive programs facilitate decision making regarding the availability of resources to use duly proven preventive actions, which show effectiveness and guarantee the quality of the intervention. Besides, these permit identifying errors in the execution and improvement of actions to achieve desired objective more efficiently [43,49].

The study's strengths lie in that it is one of the first preventive interventions with university students conducted in Colombia, which creates a space to continue testing interventions and constructing evidence in that regard. Moreover, the intervention is carried out with first-semester students, that is, those just entering, trying to strengthen self-care, so they identify the risks to which they are exposed and manage to contain consumption before the 'new' students are persuaded by their peers or by those selling the substances within or outside the institutions.

However, the study has limitations: the lack of a control group to compare the results, thereby, it is not possible to accurately establish if the intervention evaluated is truly effective, given that without a comparison group, it is likely that the changes observed after executing the program are due to other factors in the setting where the intervention took place or specific of the population participating in the study [21,43]. Like the 24% loss percentage, because it constitutes a follow-up bias.

It is concluded that the program Constructing Health reduced alcohol consumption and contained the consumption of illegal substances, like marijuana, cocaine, and use of injectable drugs. It improved social

skills, like anger management, anxiety and self-esteem; and, however, did not show effectiveness in university students to prevent the start or future intention of consuming legal or illegal substances.

It is recommended for future interventions to involve the parents; work on measures about the context, not only the external, but also the internal context, to reduce drug micro-trafficking and consumption within higher education institutions. Likewise, work in integrated manner between prevention and mitigation, to reduce or mitigate harm to those who are consumers, so that problematic consumption can be avoided and these young individuals can complete their study plan.

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Declaration of conflicts of interests

The researchers declare having no conflicts of interests.

Declaration of responsibility

The authors declare their responsibility in all the results and manuscript.

Declaration of authors' contributions

Zuleima Cogollo-Milanés: her contributions to the research have to do with generating the research idea, the study design and implementation of the program in each of the academic units; data collection, and together with all the authors worked on writing the article draft and the critical revision of its content.

Edna Gómez Bustamante: supported and accompanied the study design, implementation of the program in each of the academic units, data collection, and together with all the authors worked on writing the article draft and on the critical revision of its content.

Adalberto Campo Arias: supported the study design, contributed with the organization to collect data, conducted the statistical analysis, interpreted the statistical information, and discriminated important results. Carried out the final presentation of the results in text, tables or figures, and together with all the authors worked on writing the article draft and the critical revision of its content.

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