

PRELIMINARY RESULTS REGARDING THE EFFECTIVENESS OF A GROUP INTERVENTION FOR SUBSTANCE-USING ADOLESCENTS IN MEXICO

RESULTADOS PRELIMINARES DE LA EFICACIA DE UNA INTERVENCIÓN GRUPAL PARA ADOLESCENTES QUE USAN SUSTANCIAS EN MÉXICO

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ABSTRACT

Introduction. The brief intervention program for adolescents with substance use [PIBA] was designed to decrease substance use problems among Mexican adolescents. While studies have supported the efficacy of PIBA when implemented one-on-one, the feasibility and efficacy of PIBA when implemented in groups have not been examined. Group implementation holds potential for increasing the reach and cost effectiveness of PIBA. **Objective.** To provide a preliminary evaluation of group format PIBA. **Method.** Two groups of adolescents received the intervention. Preliminary effectiveness was evaluated across outcomes including substance use patterns, self-efficacy for controlling substance use, and consequences associated with substance use. **Results.** PIBA implemented in a group modality significantly decreased the substance use levels in the adolescents and was effective in increasing self-efficacy for controlling substance use and decreasing the number of consequences associated. **Discussion and conclusion.** Strengths and limitations of group format PIBA are discussed, including the analysis of the results of two adolescents that differed from the rest of the sample. The results of this study are the first step to generate an evidence-based program.

Keywords:

Group intervention, Adolescents, Substance Use.

RESUMEN

Introducción. El Programa de Intervención Breve para Adolescentes que inician el consumo abusivo de alcohol y drogas [PIBA] fue diseñado para disminuir los problemas de uso de sustancias entre los adolescentes mexicanos. Si bien los estudios han respaldado la eficacia de PIBA cuando se implementa uno a uno, no se ha examinado la viabilidad y eficacia de PIBA cuando se implementa en grupos. La implementación grupal tiene el potencial de aumentar el alcance y la rentabilidad de PIBA. **Objetivo.** Proporcionar una evaluación preliminar del formato de PIBA grupal. **Método.** Dos grupos de adolescentes recibieron la intervención. La efectividad preliminar se evaluó en todos los resultados, incluidos los patrones de uso de sustancias, la autoeficacia para controlar el uso de sustancias y las consecuencias asociadas con el uso de sustancias. **Resultados.** El PIBA implementado en una modalidad grupal disminuyó significativamente los niveles de uso de sustancias en adolescentes y fue eficaz para aumentar la autoeficacia para controlar el uso de sustancias y disminuir el número de consecuencias asociadas. **Discusión y conclusión.** Se discuten las fortalezas y limitaciones del formato de grupo PIBA, incluyendo el análisis de los resultados de dos adolescentes que se diferenciaron del resto de la muestra. Los resultados de este estudio son el primer paso para generar un programa basado en evidencia.

Palabras clave:

Intervención grupal, Adolescentes, Abuso de sustancias.

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Background

Substance use among adolescents is a growing problem around the world (United Nations Office on Drugs and Crime, 2018). In Mexico, rates of adolescent substance use have increased significantly in the past ten years, generating a public health problem (Reséndiz-Escobar, et al., 2018). This is especially concerning since adolescents are particularly vulnerable biologically, socially, and psychologically, to develop substance use problems (Becoña, 2000; Espada, et al., 2003; Maturana, 2011).

Due to the high incidence of this health problem, the Programa de Intervención Breve para Adolescentes que inician el consumo abusivo de alcohol y drogas [PIBA] was created (Martínez, et al., 2005, 2009, 2012). PIBA is an intervention designed for high school students ages 12 to 18 years. PIBA aims to reduce alcohol and drug use and increase self-efficacy for controlling substance use among adolescents who are using substances but fall short of meeting diagnostic criteria for a substance use disorder. PIBA consists of five sequential stages (Martínez, et al., 2012): 1) screening; 2) assessment; 3) induction to treatment; 4) treatment; and 5) follow-up.

In stage one, a questionnaire is applied as a first screening to identify adolescents at risk due to substance use. Stage two is the assessment process, which collects information regarding the adolescent's general context and substance use history; substance use in the past six months, self-efficacy levels for substance use control and dependency indicators. Stage three is applied in one session called "induction", in which the therapist uses motivational interview to increase the adolescent's motivation towards change. Stage four includes six intervention sessions that give the adolescent the opportunity to improve communication strategies, establish their own treatment goals, identify risk situations, and generate specific strategies, analyze how substance use might impact their future goals, and the last session is used to provide feedback in the adolescent's progress and establish a new substance use goal. Stage five includes three follow-up sessions which are applied six, twelve and eighteen months after the last intervention session (Martínez, et al., 2012).

PIBA's effectiveness has been supported on different evaluations on different application contexts (Martínez, et al., 2008a; Martínez, et al., 2018b; Martínez, et al., 2015; Salazar, et al., 2011). PIBA has become an evidence-based program, disseminated in manualized form by the Consejo Nacional contra las Adicciones and widely used across Mexico. Six-session PIBA significantly reduced alcohol and drug use in adolescents in Mexico City (Martínez, et al., 2008a). The brief one-session PIBA, emphasizing stage three, induction to treatment, has also shown to be effective for significantly reducing substance use in adolescents (Martínez, et al., 2008b). In addition, the PIBA has shown to significantly reduce substance use among adolescents living in rural communities in the state of Aguascalientes, México (Salazar, et al., 2011). PIBA was found to be as effective for adolescents from Aguascalientes as for adolescents from Mexico City, and equally effective for girls and boys (Martínez, et al., 2015). Ad-

ditional research explored the effectiveness of PIBA when implemented in ambulatory addiction clinics in México; this research offered support for PIBA's effectiveness in a new implementation setting, and identified several barriers to implementation (Jiménez, 2010; Véliz, 2014). The identified barriers included bureaucratic impasses, institutional policies at odds with PIBA implementation, insufficient training in the theoretical bases and practical components of the intervention, the diversity of PIBA clinicians, and the monetary and time costs of implementing PIBA individually (Martínez, et al., 2016).

Martínez, et al. (2016) reported that clinicians who apply PIBA often overcome barriers for implementation by making modifications to the intervention, including adapting PIBA to a group modality. That said, an effective group based PIBA would help address barriers to implementation and permit more teenagers to benefit from PIBA. Research suggests a group adaptation of an individual intervention program can be as effective as the individual version, with up to a 41% cost savings of group implementation over individual implementation (Sobell & Sobell, 2005).

For the current study, group PIBA was adapted from individual PIBA by: 1) following the clinical practice guidelines for group psychotherapy presented by the American Group Psychotherapy Association [AGPA], that seek to increase the clinical judgment of the therapists by presenting basic strategies that help to understand and manage the group dynamics (Bernard, et al., 2008). These guidelines have a client-based approach, which according to the American Psychological Association is an approach that combines evidence-based practices with the therapist's clinical experience to generate therapy models that adapt to the context, characteristics, culture and the preferences of each patient (APA, 2005); and 2) reducing putative iatrogenic effects of group intervention through attending to the composition of the group, addressing disruptive behaviors when they occurred, and ensuring leader behaviors reduced negative group processes. According to the model, the presence of disruptive behavior often has a negative effect on treatment outcomes, therefore, the positive behaviors of the therapist leading the group can be associated to good treatment outcomes (Macgowan & Wagner, 2005). Our overarching objective was to conduct a preliminary evaluation of the effectiveness of the group format PIBA. The intervention was tested with two different groups of adolescents attending a public high school in Aguascalientes, Mexico. We evaluated the impact of participation in PIBA groups on self-reported substance use patterns, self-efficacy for controlling substance use, and substance use consequences.

Specific objectives included analyzing the substance use pattern, self-efficacy levels and consequences associated to substance use reported by the adolescents. The hypotheses were: 1) Group PIBA will reduce substance use pattern; 2) Group PIBA will reduce the number of consequences associated to substance use; 3) Group PIBA will increase the self-efficacy levels for controlling substance use.

Method

Participants

The participants of this study were 12 high school students with a mean age of 16.3 (SD=1.15), from Aguascalientes, Mexico. All the participants were born in Mexico, lived with both parents, and dedicated most of their time to their studies; six of them also reported to have afternoon jobs. The 12 students were divided into two groups of six participants, which is within the recommended group size for similar interventions (Macgowan & Wagner, 2005). Both groups received the same PIBA intervention.

This study included adolescents who: 1. were ages 12 to 18 years; 2. reported problems associated to their substance use in the past six months; and 3. reported average alcohol use of 7+ standard drinks, or any quantity of drug use in the assessment. One adolescent with low levels of tobacco use who reported the intention of reducing substance use was also included.

Participant exclusion criteria were: 1. dependency symptoms; 2. skepticism regarding the benefits of a group intervention; 3. lack of interest in reducing substance use; 4. three or more antisocial behaviors reported in the assessment process (there is a section in the *initial interview* that explores 10 different antisocial behaviors); or 5. lack of interest in participating in the study.

Group leaders were two psychologists originally trained to provide individual PIBA; both had more than two years of experience applying the program. They received face-to-face training in group format PIBA across two three-hour training sessions. In the first session they received information about the changes to the PIBA program to allow its application in group format; in the second session, they role played the new strategies. At the conclusion of training, a focus group was used to evaluate the therapists' knowledge and readiness to apply the intervention.

The participation of the therapists was randomized, one of the trained therapists oversaw one of the intervention groups and the other applied the individual version of PIBA to the adolescents who, due to the exclusion criteria or because they did not agree to participate, did not join the groups. The second intervention group was conducted by the Principal Investigator, who is also a trained therapist with six years of experience applying the program.

Procedure

As a first step, contact with the high school was established; the school's principal was informed about the project and the chair of the psychology department signed the consent forms. The five stages of PIBA were then applied: 1) Screening: the *screening questionnaire for problems of adolescents* [POSIT in spanish] (Mariño, et al., 1999) was applied. The POSIT is a questionnaire that includes 17 questions exploring whether the adolescent has experienced problems due to substance use in the past six months. It was applied on a group basis in the context of school classes.

The POSIT, was applied to 324 students, almost covering the school population of all grades and groups. Of

those students, 131 reported experiencing at least one consequence associated with their substance use in the past six months; the 36 who reported having five or more consequences were selected for continued assessment.

2) Assessment: This stage involved four instruments. First, the *initial interview* (Saucedo & Salazar, 2004) collected information regarding the adolescent's substance use history, demographic data, general health, school, work, family, sexuality, suicide risk, free time activities and hobbies, and personal satisfaction. Second, the *retrospective baseline* [LIBARE in spanish] (Sobell, et al., 1979), a six-month calendar that indicates the quantity and frequency of the adolescent's substance use, measured substance use patterns. Third, the *DSM-V indicators on drug dependency questionnaire* was used to measure dependency, an exclusion criterion of the study and a trigger for referral for more intensive intervention. Fourth, the *brief situational confidence questionnaire* [CBCS] (Ayala, et al., 1997), assessed self-efficacy for controlling substance use across eight different situations.

Of the 36 students screened, 26 reported substance use that made them candidates for PIBA. Four were excluded due to meeting one or more exclusion criteria; they were assigned to receive individual intervention. The remaining 22 students participated in a 50-minute, individual, induction-to-treatment session, which included assessment feedback, active advice, and the engagement strategies of motivational interviewing (Miller & Rollnick, 1991). Fifteen of the 22 subsequently agreed to participate in the study and were randomly assigned to two groups.

Treatment included six weekly intervention sessions lasting 45 to 60 minutes. Sessions content and aims were to: 1) provide the adolescent with basic communication strategies; 2) agree to reduce their substance use and establish a treatment goal; 3) identify situations that put them at risk of substance use; 4) generate specific plans for each risk situations; 5) identify life goals and how substance use may affect goals; and 6) feedback on the adolescent's progress during the treatment and establish a new substance use goal. A Follow-up session, sixty days after the treatment sessions, had the objective of giving the adolescents support in their change process, and analyzing their application of strategies learned in treatment to their individual real-life context. Twelve adolescents completed the six intervention sessions and the follow-up; the current paper focuses on these twelve treatment completers.

Measures and data collection

The variables measured in this study were:

- Substance use pattern. This measure was collected applying the LIBARE before, and after the treatment (pre and post-measurements) and through the implementation of a self-register table that was filled by the adolescents at the beginning of every intervention session.
- Self-efficacy level for substance use control. This was collected with the CBCS before and after the treatment. The CBCS measures self-efficacy level in eight different situations in a scale of 0 to 100%.
- Consequences associated to substance use: This mea-

sure was collected with the application of the POSIT questionnaire before and after the treatment. This questionnaire includes 17 consequences associated to substance use and the adolescent must respond if he or she has experienced this consequence in the past six months.

Data analysis

Statistical analysis was conducted using the IBM SPSS Statistics 24 program: *t* tests were used to examine within subject changes from assessment to post-treatment follow-up. Self-efficacy for controlling substance use was further analyzed through graphs.

Ethical considerations

Since this research was conducted as a master’s degree dissertation, the ethical considerations were evaluated and approved by the tutorial committee. Before accessing the participants, the principal of the institution signed a consent form for us to be able to work with the students and the parents were informed of the adolescent’s participation through the school’s newsletter. All the adolescents who participated in the study signed an assent form that included information regarding the group and the confidentiality of the information. After the implementation, each file was coded with a number, and the information was saved without including names.

Results

Figure 1 shows average substance use of participants who were alcohol users at assessment, before, during, and after the treatment sessions.

As can be seen in Figure 1, most drinkers participating in group PIBA decreased their substance use from pre-treatment to post-treatment. It is important to point out two aspects: first, the frequency of adolescent drinking decreased, yet drinks per drinking occasion showed no change. Second, participant 2 was a six-substance poly-user before the intervention; the adolescent subsequently reported abstinence for all six substances, both during treatment at follow-up.

Only one adolescent had high tobacco use, a special inclusion criterion was applied for the group program in which adolescents with high tobacco use who were motivated to stop smoking would be included in the intervention. From pretreatment to post-treatment, the adolescent stop using tobacco.

Regarding drug use, PIBA encourages abstinence. The two adolescents who took the intervention for marihuana use reported that they achieved abstinence in the post measurement.

A *t* test for one sample was run comparing adolescents’ pre-treatment substance use with post-treatment use; they were significantly different from one another (see Table 1).

Figure 1

Average alcohol use of the adolescents before, during and after treatment

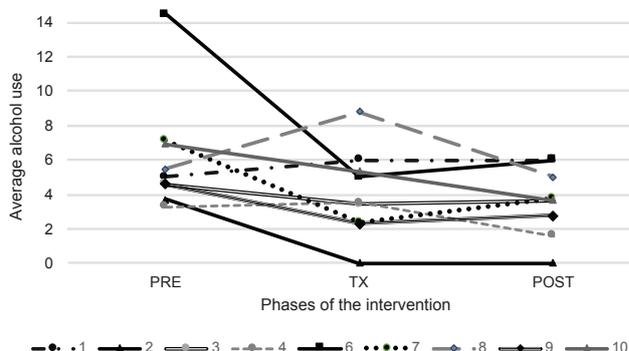


Table 1

T test results comparing the average substance use of the adolescents before and after the treatment.

Before treatment		After the treatment		t test		
Substance use mean	Standard deviation	Substance use mean	Standard deviation	t	df	Sig.
5.1165	3.4393	2.7069	2.3456	3.998	11	0.002

Figure 2 shows the changes in the self-efficacy for substance controlling substance use. In almost all situations, adolescents reported increased self-efficacy, with the notable exception of “pleasant moments with others.”

Figure 2

Self - efficacy levels for substance use control

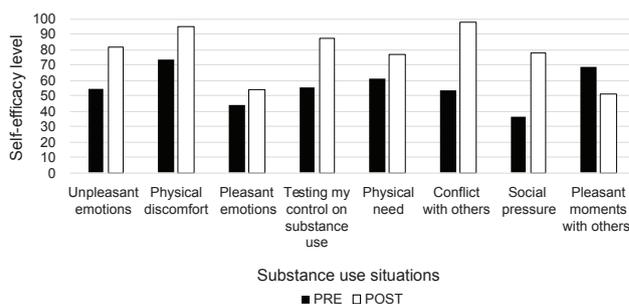


Table 2

T test results comparing the number of consequences associated to substance use reported by the adolescents before and after treatment.

Consequences associated to substance use before treatment		Consequences associated to substance use after treatment		t test		
Mean number of consequences	Standard deviation	Mean number of consequences	Standard deviation	t	df	Sig.
5.9167	2.1087	2.2500	2.3788	3.276	11	0.007

Finally, a *t* test for one sample was run comparing adolescents' consequences associated to substance use from pretreatment to post-treatment; they were significantly different from one another (see Table 2).

Discussion

Study results provide preliminary support for the effectiveness of PIBA's group modality. Group PIBA was effective in reducing substance use and negative consequences and increasing self-efficacy across different high-risk use situations. The current results are consistent with previous studies documenting the effectiveness of individual PIBA (Martínez, et al., 2008a; Martínez, et al., 2008b; Martínez, et al., 2015).

Evaluating the effectiveness of an intervention strategy is crucial for the therapists to use evidence-based interventions in their clinical practice. Group interventions are not quite common in Mexico, when reviewing literature for this project specifically, no articles were found mentioning evidence-based group interventions adapted for Mexican population. This implies that this is an especially important line of research that can promote group interventions as an area of psychology that needs to be further researched. Regarding the results of this study, one adolescent did not change their substance use in response to group PIBA. Adolescent 1 reduced the frequency of his substance use from once a week to once every 40 days but increased average substance use from five, to six standard drinks, which still qualifies as binge drinking. Binge drinking is especially dangerous for adolescents because of cognitive and brain vulnerabilities (Almanza, et al., 2018; Petit, et al., 2014). This situation is worrying and suggests adolescent 1 needs more intensive treatment, as can sometimes be the case with individual PIBA (Martínez, et al., 2012).

Adolescent 2 used alcohol, tobacco and marijuana almost once a week and cocaine, clonazepam, and ecstasy occasionally. Her substance use goal was abstinence from the six substances, a goal that she achieved during treatment and at follow-up. Adolescent 2 reported not experiencing consequences associated with her substance use during the follow-up and having a higher self-efficacy to control her substance use in seven of the eight situations evaluated. Considering that the goal of the PIBA (Martínez, 2012), this result shows that the adolescent was able to generalize the strategies appropriately. Recent research conducted at Mexican youth integration centers (CIJ in Spanish) in Mexico, found most of their patients are polyusers (Fernández-Cáceres, 2019); the results of this study allow us to understand the importance of generating intervention programs that target several substances simultaneously.

The tobacco using adolescent who participated in the project stopped smoking during the intervention and in follow-up. This result cannot be generalized because it is a single participant but suggest group PIBA may be effective for a variety of substances. Group intervention has been found to be a helpful component of tobacco use interventions in past research (Stead, et al., 2017).

Even though the individual results presented in this article

are not clinically significant as cannot be generalized, it was important to further describe the cases in which adolescents had different results than the ones reported in PIBA's previous research. We hope this data might help clinicians to identify this type of results as expected when applying this kind of group intervention.

All the adolescents reported an increase in their self-efficacy across nearly every situation, except "pleasant moments with others". This appears to be an especially demanding task for teenagers, and thus as would be predicted was associated with lower self-efficacy and less amenability to change (Bandura, 1977; Bandura 1986; Bandura, 2000). In the assessment, participants indicated a high prevalence of substance use in situations that fall in the category of "pleasant moments with others," which suggests a need to develop additional strategies to target this particular substance use context.

A week aspect of the study is the fact that the small sample limited the data analysis, this and the lack of a control group generate results that lack in generalization and is difficult to establish the true effectiveness of the intervention at this point. What can minimize the impact of this week aspect is the methodological background of this intervention. When it was created, the individual PIBA was piloted with only four adolescents to establish the effectiveness of the strategies (Martínez, 2003), later the researchers made a wider application which led to establish the effectiveness of the program (Martínez, et al., 2008a). This are the steps we intend to follow in this new line of research.

One of the strengths of this project is that it is sustained by the methodological demand established in previous research, where the process of technology transfer of the PIBA was analyzed (Martínez & Medina-Mora, 2013). This study aimed to minimize those barriers, specifically the ones regarding time and economic resources, with a group intervention.

Conclusions

Group PIBA appears to be as effective as individual PIBA for reducing substance use and consequences and increasing self-efficacy. In this preliminary study, Group PIBA was implemented with alcohol users, polyusers, and tobacco users, all showing favorable results. Additional studies are needed to evaluate the generalizability of the current study's supportive findings, especially with poly-substance users. Also, additional work examining enhancing leader behaviors, and managing disruption, will help refine future applications of group PIBA.

Substance use in adolescents is a public health problem that needs to be addressed in a way that prevents young people from developing addiction problems; in this area it is also particularly important to generate manualized evidence-based interventions that will help therapists when conducting their clinical practice. The results of this study are the first step since the goal is to generate an evidence-based program whose level of effectiveness can be compared to the individual PIBA's.

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