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Effect of using only the Educational Curriculum of a Comprehensive Substance abuse Prevention Program on Perception of harm in US Elementary Students

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Abstract

Students in one rural, Northeast Missouri, USA school district abused alcohol, marijuana, and prescription drugs at levels higher than the state average. Youth who perceive a low risk of harm from substances are more likely to use those substances. Because age of first use is generally 10-14 years old, a drug prevention intervention focused on these specific substances for elementary school students was conducted. However, due to lack of resources, only the educational curriculum component of a comprehensive intervention was implemented. Before the start and at the finish of the curriculum delivered as one lesson each week for eight weeks, participants completed the perception of harm reduction survey that accompanied the program. An increase in percentage of program participants pre-post who reported moderate to great perceived risk of harm for smoking marijuana was noted, however; the increase was not significant. This study reinforces the importance of environmental and social support for any school-wide health behavior change. It is recommended that elementary schools interested in substance abuse prevention interventions, but do not have the resources or administrative support to implement a comprehensive initiative, wait until they can acquire all components of an evidence-based program before attempting a change.

Key words: Elementary students, abused alcohol, environmental support**,** intervention**.**

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Introduction

Because age of first use of substances is generally between 10-14 years (Swendsen et al., 2012), elementary and upper elementary age is an import developmental period for alcohol, tobacco, and other drug (ATOD) abuse prevention education. Those who start drinking alcohol, for example, at a young age are more likely to escalate into problem drinkers later (Gale, Lenardson, Lambert, & Hartley, 2012).In addition to age, setting is an important factor to consider in prevention education. Rural youth are at least as vulnerable to substance abuse as more urban youth. For alcohol, tobacco, and marijuana, use rates were higher for rural youth (Coomber et al., 2011). Higher lifetime non-medical use rates of prescription drugs (Havens, Young, & Havens, 2011) and earlier age of onset of prescription opioids (Young, Havens, & Leukefeld, 2012) were different between rural and urban youth. Alcohol use rates for rural youth were higher than urban use rates for binge drinking and driving while intoxicated, for example. There is a need, therefore, for focused prevention education strategies for this age group and setting (Gale, Lenardson, Lambert, & Hartley, 2012).

Elevated levels of risk factors are demonstrated to predict youth substance abuse in later years. Prevention interventions that focus on decreasing risk factors for use can be useful strategies in substance abuse prevention education (Monahan, 2011).A risk factor at the individual, family, or community level influences behavior and is related to an increase in the problem behavior (Substance Abuse and Mental Health Services Administration [SAMHSA], (n.d.). Perception of harm is one risk factor for youth substance abuse. Youth who perceive a low risk of harm from substances are more likely to use those substances. In the United States, levels of perception of harm have been associated with use rates (SAMHSA, 2013). It is suggested that youth who abuse substances recognize the potential harm but perceive that risk as less harmful than those who abstain. For example, most adolescents in the US recently reported that they did not perceive great risk from using marijuana, engaging in binge drinking behavior, or smoking cigarettes (SAMHSA, 2014). In addition, perceived risk of harm for regular marijuana use and prescription stimulant abuse (National Institute on Drug Abuse [NIDA], 2014) is trending downward, therefore, changes in use rates will possibly follow (SAMHSA, 2013). The association between perception of risk and engaging in risky behavior might be a reciprocal one, however, and many other risk factors may also influence behavior (Millstein & Halpern-Felsher, 2001).

Prevention education programs that include a focus on perception of harm hope to strengthen protective behaviors - behaviors that may negate the risk factor (Millstein & Halpern-Felsher, 2001).Evidence-based interventions focused on the concept of prevention and risk factor reduction for specific age groups demonstrated at least small to moderate positive effects. Those interventions that were lengthier, theory-based, peer-lead, and included interactive, life skills-building strategies were most effective (Sandler et al., 2014; Stigler, Neusel, & Perry, 2011). In general, it seems those participants at highest risk gained the most intervention benefit (Sandler et al., 2014).

After school programs that used active-learning teaching strategies were also reported to have a small effect on reducing substance use risk factors (Sandler et al., 2014). For one intervention implemented in a voluntary afterschool program, participants reported modest effects on deterring future alcohol use. School-based interventions specific to underage alcohol use, for example, can be effective in the short term, but need to be sustained over the child- to-adolescent developmental stages to see any substantial change (Stigler, Neusel, & Perry, 2011).

A school-based substance abuse prevention and risk factor reduction program that has shown positive results in several studies is Project SUCCESS (School Using Coordinated Community Efforts to Strengthen Students). The purpose of the program is to counteract multiple risk factors for ATOD use. The program includes four components (an eight-lesson educational curriculum, a school-wide social norming campaign, a parent education program, and post-participation counseling sessions) that should be implemented as a coordinated, large-scale intervention (SAMHSA's National Registry of Evidence Based Programs and Practices, 2015).As a comprehensive program, decreases in use rates and drug-related problem behaviors were noted (Morehouse & Tobler, 2000; Vaughan & Johnson, 2007). Increased perception of harm for marijuana by non-users (Vaughan & Johnson, 2007) and increases in perception of harm for alcohol and marijuana (Clark & Ringwalt, 2011) were also reported.

Specifically, the 8-lesson educational curriculum focuses on identifying and resisting peer pressure, correcting misperceptions about availability and prevalence, consequences of use, family relationships, and mental health. Games, role-playing, discussions, worksheets, and activities are some of the variety of active learning strategies used in the program. The next component, a social norming campaign, uses health communications and promotional strategies to increase school wide awareness of anti-drug policies. The third component focuses on educating parents through

creation of an advisory committee that meets regularly. The last component includes short-term counseling sessions for individuals and groups (SAMHSA's National Registry of Evidence Based Programs and Practices, 2015).

With higher than the state average levels of substance abuse treatment admissions, community transitions/instability, high-risk demographic subgroup/young males, and child abuse/neglect referrals (MO Department of Health and Senior Services [MDHSS], 2002), youth in one rural, Northeast Missouri, USA community are at heightened risk for substance abuse. The most current use rates show these youth using cigarettes, alcohol, marijuana, inhalants, and synthetic/prescription drugs at 30-day use rates higher than the state average (Behavioral Health Epidemiology Workgroup [BHEW], 2014). A little over 40% self-reported that they ever used alcohol, 23% that they ever used cigarettes, 15% that they ever used chewing tobacco, and about 5% that they ever used prescription drugs or synthetic drugs. Also, over half reported friends using alcohol and tobacco in the past year, and that both alcohol and tobacco would be easy to obtain (MDHSS, 2014).

This rural, Northeast Missouri school with help from the local drug prevention coalition implemented only the educational curriculum component (due to lack of financial resources)of the comprehensive school-based Project SUCCESS program into their upper elementary afterschool program (because of lack of time in the school day and lack of administrative interest in comprehensive program implementation). Because most youth perceive low risk of harm for the substances most often used by youth in this community, and rural youth are at least as likely to abuse substances as their urban counterparts, the purpose of this study was to determine the effect of using only the educational curriculum of a comprehensive substance abuse prevention program on perception of harm in elementary school students from a high-risk rural USA county.

Methods

Sample

A convenience sample of 61 elementary school students enrolled in an afterschool program (that included the Project SUCCESS curriculum)in a school district in rural, Northeast Missouri, USA were asked to participate in the study. All agreed to participate. Twenty-four (39.3%) were in grade three, 24(39.3 %) in grade four, and 13(21.3 %) in grade five. In addition, 31 (50.8%) were boys, and 30 (49.2%) were girls. All were White.

Instrument

The Project SUCCESS/Prevention Education Series (PES) Pretest and Posttest Survey that accompanied the program (SAMHSA's National Registry of Evidence Based Programs and Practices, 2015) was used. The brief survey included four, four-point modified Likert-type items used to assess perceived risk for binge drinking, alcohol consumption, marijuana use, and prescription drug use. Scores were summated to assess total perceived risk with higher scores indicating higher perceived risk (possible scores range from 4.00-12.00). Appendix 1.

Procedure

After Institutional Review Board approval, school administration approval, parent/guardian consent, and participant consent, participants completed the confidential Pre-Project SUCCESS/PES Survey during snack time before the first lesson of the eight-lesson curriculum delivered each week by the afterschool program teacher and teaching volunteers during fall semester 2015. Immediately following the last lesson, participants completed the Post-Project SUCCESS/PES Survey. The teacher collected both pre-post surveys, sealed them in an envelope, and delivered them to the researcher for data input.

Analysis

Several of the participants were unable to complete either the pre-test or post-test. Due to the inability to match the assessments, an Independent Sample *t*-test was used to assess differences in mean total perceived risk scores. In order to confirm there were no differences in post-test scores between those who were and were not able to complete the pre-test (thus, showing no influence of the pre-test), an additional Independent Sample *t*-test was used. The results of the analysis revealed no statistically significant difference in post-test scores between those who were able to complete the pre-test (n=14) (M= 11.76, SD=3.85) and those who were not able to complete the pre-test (n=13) (M=9.92, SD=4.57) ($t(25)=1.148$, $p>.05$). In addition, there was not a statistically significant difference in pre-test scores for those who only completed the pre-test (n=35) (M=11.69, SD=3.81) and those who completed both the pre- and post-test (n=14) (M=11.57, SD=3.11) ($t(47)=0.100$, $p>.05$).

Results

Individual item analysis results can be seen in the table. The results indicated a decrease in the percentage of participants who reported moderate to great risk in the pre- and post-tests for taking one or two drinks of alcohol (65%-57%, respectively), using prescription drugs (68.6%-62.9%, respectively), and binge drinking (71.4%-60.7%, respectively). An increase in the percentage of participants who reported moderate to great risk in the pre- and post-tests for smoking marijuana was noted (62.7%-67.8%, respectively).

Table

Individual item analysis

How much do you think people risk harming themselves if they:	Assessment	n	No Risk n(%)	Slight Risk n(%)	Moderate Risk n(%)	Great Risk n(%)
Take one or two drinks of an alcoholic beverage	Pretest	50	9(18.0)	9(18.0)	14(28.0)	18(36.0)
	Posttest	28	7(25.0)	5(17.9)	11(39.3)	5(17.9)
Smoke marijuana	Pretest	51	15(29.4)	4(7.8)	12(23.5)	20(39.2)
	Posttest	28	7(25.0)	2(7.1)	9(32.1)	10(35.7)
Use prescription drugs	Pretest	51	10(19.6)	6(11.8)	7(13.7)	28(54.9)
	Posttest	27	8(29.6)	2(7.4)	7(25.9)	10(37.0)
Binge drink	Pretest	49	12(24.5)	2(4.1)	7(14.3)	28(57.1)
	Posttest	28	9(32.1)	2(7.1)	1(3.6)	16(57.1)

The results of the Independent Sample *t*-test used to assess differences in mean total perceived risk scores failed to reveal a statistically significant difference between scores in pre-test (n=49) (M=11.65, SD=3.59) and post-test (n=27) (M=10.89, SD=4.24) ($t(74)=0.832$, $p>.05$)

Discussion/Conclusion

Students in one rural, Northeast Missouri, USA school district abused alcohol, marijuana, and prescription drugs at levels higher than the state average (BHEW, 2014). Because age of first use is generally 10-14 years old, a prevention intervention focused on these specific substances for upper elementary school students was implemented. However, due to lack of resources and time in the school day, administration interest in a comprehensive prevention intervention was low. Only the educational curriculum component of a comprehensive intervention was, therefore, implemented into the afterschool program. An increase in percentage of program participants pre-post who reported moderate to great perceived risk of harm for smoking marijuana was noted, however; the increase was not significant.

Participants in this intervention were at very high-risk for alcohol, tobacco, marijuana, and prescription drug abuse as they lived in a rural area (Coomber et al., 2011) that possessed youth 30-day use rates for cigarettes, alcohol, marijuana, inhalants, and prescription drugs higher than the state average (BHEW, 2014). Unfortunately, post-intervention; their perception of harm for alcohol and prescription drug use decreased, but those who reported moderate to great risk for marijuana use increased. The differences, however, were not significant. With high levels of substance abuse in this community, participants may have easily perceived little harm in use, as this may be the reality they see every day in their family and neighborhood. As the lessons discussed consequences of use, availability, and family relationships; the lessons may have 'hit too close to home', and participants responded with denial. Low harm perception of these elementary-aged participants mirror that of their older counterparts as most adolescents perceive little risk in using marijuana, alcohol, or tobacco (SAMHSA, 2014). Perceptions of low risk of harm, however; increase the likelihood of substance abuse (SAMHSA, 2013).

Our findings are somewhat inconsistent with the literature as age-appropriate, evidence-based, risk factor-focused interventions previously demonstrated at least some positive effects. Although risk perception for marijuana increased, harm perception for other substances did not increase. Possibly, because alcohol and prescription drugs are legal, and participants may have observed family members and friends using these substances more than using marijuana; perception of harm may not have significantly changed. This program was similar to the most effective interventions that used interactivity and were theory-based; however, it may not have been lengthy enough at only eight weeks (Sandler et al., 2014; Stigler, Neusel, & Perry, 2011). Also, the intervention was implemented in an afterschool program. Although it used interactive teaching strategies that were previously demonstrated to have an effect on risk reduction in afterschool programs (Sandler et al., 2014), the intervention showed no significant effect in this setting. Afterschool program teachers and volunteers may not have held the participants as accountable for performance as a classroom teacher who evaluates student performance each day and assigns grades accordingly. The afterschool atmosphere, although classroom-style, was more leisurely than the formal school day, and participants were eating their afterschool snacks as they were simultaneously engaged in the lessons. Again, this would not be allowed during a regular class period during a school day and may have contributed to participants not paying optimal attention to lesson content.

In addition, our findings are contrary to the literature as those at highest risk, similar to this high-risk group, did not seem to gain a large benefit from the intervention (Sandler et al., 2014); possibly because it was implemented as a stand-alone, curriculum-only intervention. These findings provide preliminary support for implementing all four components of the comprehensive programas a coordinated, large-scale intervention (SAMHSA's National Registry of Evidence Based Programs and Practices, 2015). In this study, the full, comprehensive program was not implemented as a whole. Supports for the curriculum were to include a social norming initiative, parent programming, and a counseling component that could not be offered due to logistical and funding problems. When used a package, perceptions of harm increased in participants (Morehouse & Tobler, 2000; Vaughan & Johnson, 2007; Clark & Ringwalt, 2011).

Although the present study provides new insight on the impact of Project SUCCESS, several limitations should be addressed. The afterschool program was conducted in a rural, Midwestern US community, and thus; the participants were certainly not representative of a general population. In addition, the instrument used assessed change in perceived risk, while certainly useful, does not measure other potential positive outcomes that may have occurred as a result of the intervention. Furthermore, the instrument consisted of only four, four-point modified Likert-type items. It is possible that a more comprehensive instrument could more adequately capture perceived risk of harm. In regards to the data collection procedures, the inability to match pre- and post-tests along with the number of individuals who failed to take either the pre- or the post-test created a situation whereby it was difficult to measure changes in perceived risk in an ideal manner. It is recommended that future endeavors designed to implement Project SUCCESS take the adequate steps to make sure the full program is implemented and all pre- and post-assessments can be matched among all participants. Further, it is recommended that more comprehensive measures of success including knowledge, attitude, and behavioral intention (for example) be integrated along with a broader assessment of perceived risk.

Harm perception levels have been associated with use rates (SAMHSA, 2013), and the elementary to upper elementary age is an import time to implement substance abuse prevention education focusing on decreasing risk factors, including education on perception of harm for substances. For those teachers and staff working in elementary schools at high risk for student substance abuse, assessing trends in perceptions of harm by students my help forecast future use rates (SAMHSA, 2013). This study also reinforces the importance of environmental and social support for any healthy behavior change. It is recommended that elementary schools interested in

substance abuse prevention that do not have the resources or administrative support to implement a comprehensive initiative wait until they can acquire all components of an evidence-based program before attempting an intervention.

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