

High School Drug Testing Perceptions Among Superintendents in Colorado

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ABSTRACT

Due to emerging laws regarding marijuana use, the need for school officials to implement effective prevention interventions with students is evident. The purpose of this study was to examine superintendents' perceptions regarding drug testing of high school students. A survey based on the Integrated Behavioral Model was mailed to all superintendents in Colorado. Descriptive statistics, odds ratios, and binary logistic regression were conducted to analyze the data. The majority of superintendents perceived that alcohol, marijuana, illicit, and prescription drugs were a problem that needs to be addressed in high schools. Superintendents agreed that drug testing students would be effective in reducing substance use amongst certain high school students. The strongest predictor of support was positive and/or negative beliefs regarding testing.

KEY WORDS

Superintendents, adolescents, substance use, drug policy, drug testing, drug prevention

Drug use among youth remains prevalent among high school students. According to the Center for Disease Control and Prevention's (CDC) Youth Risk Behavior Survey, almost 36% of high school students have used marijuana at least one time (CDC, 2017). Though the state of Colorado has a lower adolescent marijuana use percentage (19%) than the U.S. (20%), 10 out of the 21 districts in Colorado have a higher average of adolescent use (21%-27%) (Colorado Department of Public Health and Environment, 2017). Conversely, in 2017 the use of other illicit drugs like cocaine (4.8%), hallucinogens (6.6%), inhalants (6.2%), ecstasy (4.0%), heroin (1.7%), methamphetamine (2.5%), and steroids (2.9%) has decreased since the turn of the millennium (CDC, 2017). However, use of these drugs constitutes an enduring public health problem.

The use of psychotropic drugs poses a variety of health risks, especially for adolescents whose bodies and minds are still developing. For example, marijuana—the most commonly used illicit drug (in most states)—impairs critical thinking, decreases memory functions, impairs visual processing, and causes paranoia and hallucinations (Volkow, et al., 2014; Meier, et al., 2012). S

Due to the brain developing until around age 21, use psychotropic chemicals, like marijuana's THC, can have detrimental effects on the adolescent brain (Volkow, et al., 2014). Marijuana use can be addictive, especially for adolescent users (Volkow, et al., 2014). Regular long-term use of marijuana causes deterioration of pulmonary health along with increasing the risk of developing anxiety, depression, and psychosis (Volkow, et al., 2014). Other illicit drugs, such as cocaine, heroin, and methamphetamine are addictive as well and may cause health problems such as

respiratory issues, brain damage, and heart failure (National Institute on Drug Abuse, 2015).

Drug use has long been associated with negative behaviors in school, such as truancy, absenteeism, aggression, dropping out of school, bringing guns to school, stealing, and fighting (Volkow, et al., 2014; Valasquez, 2010; Chou, et al., 2006; Kingery, et al., 1992; Lowery, et al., 1999).

As well as negatively impacting the school environment, drug use interferes with students' learning ability and motivation, thereby potentially reducing student academic achievement (Barrington, 2008; Sznitman, Dunlop, et al., 2012). Students also perform poorly on standardized tests while under the influence of drugs, such as marijuana and cocaine (Jeynes, 2002). Given the threat substance misuse/abuse poses to youth both physically and academically, school officials recognize the need to address this pervasive public health issue.

Due to the recent legalization of recreational marijuana use in some states and districts for adults aged 21 and older (Alaska: 2014, California: 2016, Colorado: 2012, D.C.: 2014, Maine: 2016, Massachusetts: 2016, Michigan: 2018, Nevada: 2016, Oregon: 2014, Vermont: 2018, and Washington: 2012), marijuana presents a unique challenge.

In Colorado, adolescent perceptions regarding the ease of obtaining marijuana have risen, and perceived risks of marijuana use have gone down (CDC, 2017; Substance Abuse and Mental Health Services Administration, 2014). Historically, as perceptions of risk about a specific drug go down, use of that drug goes up (Substance Abuse and Mental Health Services Administration, 2009).

The Colorado Department of Education has reported an increase in drug-related suspensions and expulsions of high school students from 2008 to 2016, with the majority (62%) of these offenses related to marijuana (Rocky Mountain HIDTA, 2017). Students admit having acquired marijuana from their friends who, in turn, obtained it from parents who purchased the marijuana legally (CDC, 2017).

Random student drug testing (RSDT), a supplement to prevention programs, may help deter students from using drugs (Russell, et al., 2005; Dupont, et al., 2013). Since the early 1970s, drug testing has played an important role in preventing substance use in the military, workplace, and criminal justice settings (Dupont, et al., 2013).

The use of random drug tests has resulted in a significant (90%) drop in self-reported drug use in the military, and similar policies placed in schools may help deter adolescent drug use (Dupont, et al., 2013).

However, drug testing within the public schools has only been implemented in a limited number of settings and subpopulation groups (e.g., athletes, students in extracurricular activities, students who obtain a school parking permit).

Scholars have raised questions regarding the effectiveness of student drug testing. Some studies reveal that drug testing students did not result in lower drug use rates (Yamaguchi, et al., 2003; Brendtro & Martin, 2006; Sznitman & Romer, 2014), although various methodological issues raise concerns about the validity of these findings.

Other researchers report that student drug testing helped identify students who needed drug counseling, decreased drug-related

disciplinary actions, and gave students a reason to refuse peer pressure (Velasquez, 2010; Barrington, 2008; Dupont, et al., 2013; Committee on Substance Abuse and Council on School Health, 2007; James-Burdumy, et al., 2012; Terry-McElrath, et al., 2013).

Research regarding adolescent perceptions about this type of intervention indicates that most students believe RSDT would reduce drug use among teens (Evans, et al., 2006).

However, Dupont and colleagues (2013) report that drug testing was ineffective as a stand-alone prevention program. Thus, random student drug testing should supplement other substance abuse prevention programs in the school and surrounding community.

Best practices suggest that schools maintain student confidentiality, not involve law enforcement, and offer unobtrusive testing procedures if student drug testing is to be effective (Edmonson, 2002).

As of 2016, about 30% of U.S. high schools implement a form of RSDT (CDC, 2012); accordingly, the question remains as to why more high schools are not presently implementing RSDT. Superintendents are crucial to any school reform process (Hodgkinson & Montenegro, 1999); without their support, any attempts to prevent and possibly decrease student substance use through RSDT will likely fail.

One way of determining support for prevention initiatives is by assessing key stakeholders' support of the intervention through behavior-based theories such as the Integrated Behavioral Model (IBM) (Glanz, et al., 2008). The IBM provides a framework to identify key attitudes, norms, and control beliefs that affect intentions to perform a

behavior (Wohlwend, et al., 2014). The purpose of this study was to investigate superintendents' support of RSDT using the IBM.

Methods

Participants

The sample for this study included all public school district superintendents in the state of Colorado. The list was obtained from the Colorado Department of Education and included a total of 179 superintendents.

Instrumentation

The Integrated Behavior Model theory was used to develop a four-page paper/pencil survey to assess behavioral intention (one item), normative beliefs (31 items), attitudes (20 items), and control beliefs (five items).

The survey also included items assessing superintendents' perceptions regarding the prevalence of adolescent drug use and related problems, as well as demographic information.

To establish content validity, the survey instrument was reviewed by experts in the fields of drug prevention, psychometrics, and school health research, including a former superintendent. Revisions were made based on the feedback from the expert panel. In addition, a principal component analysis was conducted to assess the construct validity of the instrument.

The following a priori constructs loaded together using .35 for item loading: control beliefs/efficacy, attitudes about drug testing students in extracurricular activities including athletes, attitudes about drug testing all students, beliefs about student outcomes of drug testing, and beliefs about the school being affected from drug testing.

Further, a sample of Ohio superintendents ($n=15$) was selected to conduct a test/retest analysis, two weeks apart, to assess the stability reliability of the instrument. All items elicited greater than 70% agreement indicating strong temporal consistency among the measures. Cronbach's alpha internal reliability of the subscales was calculated on the final returned surveys: perceived district drug use (.87), perceived state drug use (.72), attitude about drug testing athletes and students in extracurricular activities (.97), attitude about drug testing all students (.97), drug testing beliefs regarding student outcomes of the testing (.80), drug testing beliefs about how it may affect the school/district (.78), drug testing support (.97), and self-efficacy (.87).

Procedure

The instrument was mailed in 2016 to Colorado superintendents, which included a cover letter, a self-addressed stamped envelope to return the survey to the researchers, and a dollar incentive. Two weeks later, a second wave of the cover letter, survey, and a self-addressed stamped envelope was mailed to non-respondents. Finally, a postcard reminder along with an email was sent to non-respondents, a month after the initial mailing, in order to obtain a higher response rate.

Data analysis

Data were analyzed with Statistical Package for the Social Sciences (SPSS) Version 21. Level of significance was set at $p < .05$. Descriptive statistics were used to describe demographic variables, the perceived threat of adolescent drug use, and perceived support.

Chi-square tests were performed to examine relationships between different demographic/attitude/behavior variables and support for high school drug testing. Logistic regression analyses were conducted to

determine which IBM variables were influential in predicting the outcome variables of support for RSDT. Support for RSDT was dichotomized into support/oppose.

Results

Demographic and background characteristics of respondents

A total of 178 (population sample) questionnaires were sent to Colorado superintendents. A total of 89 participants

(50%) responded (89/178), yielding a 50% response rate. Thus, the findings from this study are adequate to generalize to the broader population of Colorado superintendents with a 95% level of confidence.

The majority of Colorado superintendents were white (93.3%), located in a rural area (89.9%) and male (73%). The pluralities were either Republican (36%) or Independent (36%), and non-denominational Christian (40.4%) (Table 1).

Table 1

Demographics

	Frequency	Valid %
Gender		
Male	65	73.9
Female	23	26.1
Age Categories		
35-44	6	7.2
45-54	33	39.8
55-64	37	44.6
65 and older	7	8.4
Politics		
Republican	32	38.6
Independent	32	26.7
Democrat	21	25.7
Religion		
Catholic	11	13.4
Lutheran	7	8.5
Jewish	1	1.2
Non-Denomination Christian	36	43.9
Non-Religious	10	12.2
Other	17	20.7

Race/Ethnicity

White	83	96.5
Hispanic	2	2.3
Other	1	1.2

Most school districts did not drug test high school students within the past five years (76.4%), and of those districts that did not drug test, the overwhelming majority did not plan to start drug testing students within the next two years (61.8%).

Moreover, most superintendents believed that other school districts in the state were also not drug testing their high school students.

Perceived drug problem—local district vs. state

The survey included eight items which assessed superintendents' perceptions of drug use among high school students within their state and district.

Within their district, superintendents perceived alcohol use to be a moderate problem (55.1%), marijuana use to be a moderate problem (44.9%), illicit drug use to be a minor problem (47.2%) and prescription drug use to be a minor problem (52.8%).

Ironically, superintendents reported substance use as more problematic outside of their district: alcohol (65.2%), marijuana (52.8%), illicit drugs (55.1%), and prescription drugs (53.9%).

Moreover, some superintendents (15%) claimed drugs were not a problem in their district, while indicating they were elsewhere in the state (Table 2).

Table 2

Perceived Substance Use as a Problem

	Frequency	Valid %
Substance use is a problem in my district:		
Alcohol		
Not a problem	1	1.1
Minor problem	26	29.2
Moderate problem	49	55.1
Major problem	13	14.6
Marijuana		
Not a problem	2	2.2
Minor problem	23	25.8
Moderate problem	40	44.9
Major problem	24	27.0

Illicit Drugs			
	Not a problem	15	16.9
	Minor problem	42	47.2
	Moderate problem	26	29.2
	Major problem	6	6.7
Prescription Drugs			
	Not a problem	15	16.9
	Minor problem	47	52.8
	Moderate problem	23	25.8
	Major problem	4	4.5

Frequency Valid %

Substance use is a problem in my state:

Alcohol			
	Not a problem	0	0
	Minor problem	7	7.9
	Moderate problem	58	65.2
	Major problem	24	27.0
Marijuana			
	Not a problem	0	0
	Minor problem	4	4.5
	Moderate problem	47	52.8
	Major problem	38	42.7
Illicit Drugs			
	Not a problem	0	0
	Minor problem	28	31.5
	Moderate problem	49	55.1
	Major problem	12	13.5
Prescription Drugs			
	Not a problem	0	0
	Minor problem	32	36.0
	Moderate problem	48	53.9
	Major problem	9	10.1

A paired samples t-test was conducted to examine the differences between superintendent perceptions of a drug problem (four-point scale from not a problem to major problem) between schools in their district and state.

There was a statistically significant difference in perception of drug use as a problem from district to state for alcohol (district: $M = 2.83$, $SD = .678$ and state: $M =$

3.19 , $SD = .562$, $t(89) = 5.27$, $p < .001$), marijuana (district: $M = 2.97$, $SD = .790$ and state: $M = 3.38$, $SD = .574$, $t(89) = 5.45$, $p < .001$), illicit drugs (district: $M = 2.26$, $SD = .819$ and state: $M = 2.82$, $SD = .650$, $t(89) = 7.18$, $p < .001$), and prescription drugs (district: $M = 2.18$, $SD = .762$ and state: $M = 2.74$, $SD = .631$, $t(89) = 8.08$, $p < .001$). The Cohen's d statistic (.40 - .50) indicated a medium effect size (Table 3).

Table 3

Differences in Perceptions of Drug Use Problem

		Paired Differences of Perceptions of Drug Use District vs State						
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval		Sig. (2-tailed)	
					Lower	Upper		
Pair 1	alcohol district - alcohol state	-.360	.644	.068	-.495	-.224	-5.267	>.001
Pair 2	marijuana district - marijuana state	-.416	.720	.076	-.567	-.264	-5.447	>.001
Pair 3	illicit district - illicit state	-.562	.738	.078	-.717	-.406	-7.183	>.001
Pair 4	prescription district - prescription state	-.562	.656	.070	-.700	-.424	-8.075	>.001

Drug testing attitudes

Participants were asked to what extent they agreed or disagreed that drug testing students was an effective way to prevent substance use. The majority agreed or strongly agreed, that drug testing athletes, helps prevent alcohol use (50.6%), marijuana use (73%), illicit drug use (71.9%), and prescription drug misuse (57.3%). Similarly, the majority agreed or strongly agreed that drug testing students involved in extra-curricular activities would prevent marijuana (71.9%), illicit drugs (70.8%), and prescription drug (58.4%) misuse.

Superintendents were split on whether drug testing would prevent alcohol use, with nearly half (48%) of them indicating RSDT would be helpful.

Participants' attitudes toward drug testing all high school students were less supportive than those of specific populations (e.g., athletes and those involved in extra-curricular activities, Table 3). The majority of participants disagreed or strongly disagreed that drug testing high school students would be effective in preventing alcohol use (62.9%), marijuana use (51.7%), illicit drug use (52.8%), and prescription drug misuse (53.6%).

Drug testing beliefs

Eight items were used to measure participants' beliefs toward student drug testing on a four-point scale from strongly disagree to strongly agree.

Regarding positive aspects of high school student drug testing, the majority agreed or strongly agreed that testing would help get students into drug counseling if needed (76.4%). Also, 66.3% agreed or strongly agreed that drug testing would give students a reason to resist peer pressure to use drugs and 56.1% agreed or strongly agreed that drug testing would decrease the number of adolescents using drugs. However, 68.5% disagreed or strongly disagreed that drug testing would decrease student suspensions/expulsions.

Regarding negative aspects of high school drug testing, the majority disagreed or strongly disagreed that drug testing would cause an adverse school climate (53.9%). Also, 59.5% disagreed or strongly disagreed that drug testing violates students' privacy rights.

Participants were split on whether drug testing would take up too much time (49.4% agreement vs. 49.5% disagreement) and 76.4% agreed or strongly agreed that drug testing would cost the district too much money.

Support or opposition to drug testing

Superintendents reported varying support regarding drug testing. For athletes (58.4%) and students involved in extracurricular activities (54%), superintendents indicated support for drug testing. However, the majority opposed drug testing all high school students (62.9%) (Table 4).

Table 4

Effectiveness of Drug Testing as a Prevention Tool

		Frequency	Valid %
Drug testing is effective for student athletes regarding:			
Alcohol			
	strongly disagree	9	10.2
	disagree	34	38.6
	agree	34	38.6
	strongly agree	11	12.5
Marijuana			
	strongly disagree	3	3.4
	disagree	20	22.7
	agree	48	54.5
	strongly agree	17	19.3
Illicit Drugs			
	strongly disagree	3	3.4
	disagree	21	23.9
	agree	46	52.3
	strongly agree	18	20.5
Prescription Drugs			
	strongly disagree	3	3.4
	disagree	34	38.6
	agree	37	42.0
	strongly agree	14	15.9
Drug testing is effective for students in extracurricular activities regarding:			
Alcohol			
	strongly disagree	9	10.2
	disagree	36	40.9
	agree	31	35.2
	strongly agree	12	13.6
Marijuana			
	strongly disagree	3	3.4
	disagree	21	23.9
	agree	48	54.5
	strongly agree	16	18.2

	Frequency	Valid %
Drug testing is effective for students in extracurricular activities regarding:		
Illicit Drugs		
strongly disagree	3	3.4
disagree	22	25.0
agree	46	52.3
strongly agree	17	19.3
Prescription Drugs		
strongly disagree	4	4.5
disagree	32	36.4
agree	38	43.2
strongly agree	14	15.9
Drug testing is effective for all students regarding:		
Alcohol		
strongly disagree	18	20.5
disagree	38	43.2
agree	25	28.4
strongly agree	7	8.0
Marijuana		
strongly disagree	11	12.5
disagree	35	39.8
agree	34	38.6
strongly agree	8	19.1
Illicit Drugs		
strongly disagree	11	12.5
disagree	36	40.9
agree	33	37.5
strongly agree	8	9.1
Prescription Drugs		
strongly disagree	11	12.5
disagree	42	47.7
agree	27	30.7
strongly agree	8	9.1

A chi-square analysis revealed that superintendents who identified as republican were more likely (20%) to support drug testing all students $\chi^2 (n=85) = 7.15, p = .028$ compared to those who identified as non-Republicans (15%).

Additionally, a chi-square analysis indicated a statistically significant association between superintendent support and current district drug testing of students, athlete testing $\chi^2 (n=89) = 8.98, p = .003,$

extracurricular student testing $\chi^2 (n=89) = 11.70, p = .001,$ and all student testing $\chi^2 (n=89) = 7.15, p = .008.$

A binary logistic regression was performed to determine the impact of beliefs, attitudes, and personal agency (self-efficacy/perceived control) toward drug testing in assessing the likelihood that participants would support drug testing high school students (Table 5 below).

Table 5

Binary Logistic Regression Predicting Likelihood of Support

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Athletes	Attitude of Athletes and Extracurricular	1.117	.748	2.232	1	.135	3.056	.706	13.232
	Attitude of All	.511	.814	.394	1	.530	1.667	.338	8.214
	Beliefs of Student Outcomes	2.226	.649	11.775	1	.001	9.260	2.597	33.013
	Beliefs about School being Affected	-.512	.911	.316	1	.574	.599	.101	3.569
	District Perceived Problem	.531	.685	.600	1	.439	1.701	.444	6.517
	State Perceived Problem	-.681	.784	.753	1	.385	.506	.109	2.355
	Control Belief/Efficacy	1.036	.722	2.061	1	.151	2.819	.685	11.603
Extra-curriculars	Attitude of Athletes and Extracurricular	2.318	.923	6.298	1	.012	10.151	1.661	62.020
	Attitude of All	.425	.892	.227	1	.634	1.529	.266	8.782
	Beliefs of Student Outcomes	2.776	.718	14.941	1	>.001	16.051	3.929	65.577
	Beliefs about School being Affected	-.552	1.121	.242	1	.623	.576	.064	5.181
	District Perceived Problem	.498	.828	.362	1	.547	1.646	.325	8.341
	State Perceived Problem	-.933	.926	1.014	1	.314	.394	.064	2.417
	Control Belief/Efficacy	1.921	.902	4.531	1	.033	6.826	1.164	40.012
All	Attitude of Athletes and Extracurricular	.097	1.055	.008	1	.927	1.102	.139	8.707
	Attitude of All	2.604	.904	8.292	1	.004	13.516	2.297	79.532
	Beliefs of Student Outcomes	2.216	.765	8.395	1	.004	9.168	2.048	41.044
	Beliefs about School being Affected	-.627	.921	.464	1	.496	.534	.088	3.249
All	District Perceived Problem	-.973	.775	1.575	1	.210	.378	.083	1.728
	State Perceived Problem	-.964	.911	1.120	1	.290	.381	.064	2.274
	Control Belief/Efficacy	.142	.835	.029	1	.865	1.152	.224	5.917

Independent variables were dichotomized from a four-point agreement scale into agree/disagree. The model explained 54% (Nagelkerke R^2) of the variance, predictors were statistically significant for beliefs regarding drug testing of athletes (beliefs: $\chi^2 = 11.859$, $p < .001$), beliefs regarding drug testing of students involved in extracurricular activities (beliefs: $\chi^2 = 15.002$, $p < .001$, and beliefs and attitudes regarding the drug testing of all high school students (beliefs: $\chi^2 = 4.253$, $p = .039$, attitudes: 4.614 , $p = .032$).

The odds ratio results pertaining to student outcomes from drug testing (e.g., it will help get them into counseling, it will violate student privacy rights, it will decrease the amount of students using substances) were examined relative to support for RSDT. Compared to those who disagreed with the positive student outcomes, those who agreed were significantly more likely to support RSDT for athletes (OR = 9.26, $p = .001$) and for students in extracurricular activities (OR = 16.05, $p < .001$). Regarding RSDT for all students, the greatest predictor was superintendents' attitude that drug testing was an effective prevention strategy (OR = 13.52, $p = .004$).

Perceived support among key stakeholders

Participants were also asked to consider whether other school/community members would support or oppose drug testing. For athletes, students involved in extracurricular activities, and all high school students, the biggest perceived supporters were school nurses (77.5%, 68.6%, and 49.5%). Teachers were also perceived as supportive for drug testing athletes (69.7%), students in extracurricular activities (64%), and all high school students (49.5%).

Conversely, participants perceived *students* would be opposed to drug testing

athletes (76.2%), those in extracurricular activities (74.1%), and all high school students (84.3%). Superintendents also perceived *parents* as being opposed to drug testing athletes (59.6%), students in extracurricular activities (61.8%), and all high school students (77.6%).

Self-efficacy/perceived control

Six survey items measured participants' self-efficacy/perceived control regarding drug testing high school students in their district. The majority agreed or strongly agreed that they could convince their school board members to implement high school drug testing if they wanted (54%), even without student support (53.9%). Further, the majority disagreed or strongly disagreed they could convince their school board members to implement high school drug testing if they did not have community (64.1%) or parental (66.3%) support. Superintendents disagreed or strongly disagreed they had the knowledge (48.3%) or skills (47.2%), respectively, needed to implement high school drug testing.

Discussion

Most superintendents in this study were supportive of drug testing high school students, assuming they had the support of students, parents, and the broader community.

One particularly noteworthy finding from the current study was that superintendents whose schools currently drug test high school students were substantially more supportive of drug testing than those who did not drug test. This finding is indicative of *confirmation bias*, whereby superintendents tend to be supportive of their current policy.

The results from the current study also revealed that superintendents perceive the majority of students are opposed to drug testing any student population (athletes, extra-

curricular, and all students). However, the literature indicates high school students are supportive of random student drug testing (Evans, et al., 2006).

Superintendents also perceive parents to be opposed to drug testing; although, this too is a misperception. In a related study, most parents indicate they are supportive of drug testing all students including athletes and students in extracurricular activities (Sweeney, 2019). This vital information needs to be shared with superintendents because it may influence their decision to implement drug testing.

Additional research should be conducted to examine these misperceptions and how to remedy them (i.e., social norms intervention). Superintendents also perceive that adolescent drug use is less of a problem in their district than in other districts in the state. To be better informed, superintendents should review the Healthy Kids of Colorado Study which includes regional data of adolescent drug use (Colorado Department of Public Health and Environment, 2017) or conduct their own needs assessment to determine the actual drug use among high school students in their district.

Superintendent beliefs and attitudes were important factors in relation to the support of student drug testing. With mixed results of effectiveness regarding student drug testing in the literature (Dupont, et al., 2013; Yamaguchi, et al., 2003; Brendtro & Martin, 2006; Sznitman & Romer, 2014; Committee on Substance Abuse and Council on School Health, 2007), superintendents' opinions varied as to whether drug testing would decrease drug use among adolescents (56% agree, 43% disagree).

The most substantial perceived barrier to drug testing students was that drug testing

would cost the district too much money (76% agreeance). With a standard drug test costing approximately \$14-\$30 per test, this financial burden constitutes a legitimate barrier for districts that are underfunded (Yamaguchi, et al., 2003). However, according to the Substance Abuse and Mental Health Services Administration, for every dollar spent on drug testing, an average of \$24 per student would be saved throughout their lifetime (Miller & Hendrie, 2008).

Limitations

The response rate of 50% represents a potential threat to the external validity of the findings if non-responding superintendents hold different beliefs and attitudes than respondents. The survey was closed format; additional information was not elicited and may have precluded some superintendents from providing important information related to their attitudes, beliefs, and support regarding high school student drug testing.

This study was limited to superintendents in public Colorado school districts and excluded ones from private or charter districts. The small sample size could reduce the power of this study, thereby increasing Type II error. Finally, drug testing is a sensitive issue, and respondents may have provided socially desirable responses.

Conclusion

In the current study, superintendents were most supportive of drug testing high school students who were athletes and involved in extracurricular activities, and less supportive of drug testing the entire high school population.

Testing athletes and students involved in extra-curricular activities may be a good segue to testing all students in the future, if testing is found effective for that district. Indeed, students who are not involved in school

activities may benefit from drug testing as a way to resist peer pressure.

Parents need to be reassured their written permission is needed to conduct drug testing with their child. This is important for superintendents to keep in mind to help dissuade any fears regarding retaliation from parents regarding the drug testing of their child. Further, drug testing should not be punitive with its implementation per se.

For example, suspending students from school, extracurricular activities or sports for a first-time positive drug screening may result in iatrogenic outcomes as supervised activities and positive social interactions (i.e., teachers and coaches) are protective factors for adolescents (Kwan, et al., 2014).

Superintendents perceive school nurses to be the most supportive stakeholders of drug testing high school students, which suggests school officials may want to leverage this group's support and frame this issue from a

public health perspective. There seems to be a readiness/support among superintendents to implement drug testing. Additional training regarding appropriate procedures for high school drug testing is needed for superintendents to increase their self-efficacy apropos this policy.

Colorado school districts have reported an increase in school discipline problems since the passing of the recreational use of marijuana (Rocky Mountain HIDTA, 2017). Due to the increased availability of marijuana, and the current opioid crisis in the United States, school districts invariably need to enhance their prevention efforts. Though drug testing may come with a cost, it pales in comparison to treating addiction, unintentional injury and premature death associated with drug abuse. Further, the advantages of drug testing (getting a student into drug counseling, a reason to resist peer pressure, decreased adolescent drug use and suspensions/expulsions) from a cost/benefit perspective outweigh this barrier.

Author Biographies

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