Journal of Adolescent Health 50 (2012) 172–178

ELSEVIER

JOURNAL OF ADOLESCENT HEALTH

www.jahonline.org

Original article

The Effectiveness of Mandatory-Random Student Drug Testing: A Cluster Randomized Trial

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Article history: Received March 9, 2011; Accepted August 18, 2011
Keywords: Adolescent; Alcohol use; Cluster randomized trial; Drug testing; High school; Substance use

A B S T R A C T

Purpose: This article presents findings from the largest experimental evaluation to date of school-based mandatory-random student drug testing (MRSDT). The study tested the effectiveness of MRSDT in reducing substance use among high school students.
Methods: Cluster randomized trial included 36 high schools and more than 4,700 9th through 12th grade students. After baseline data collection in spring 2007, about half the schools were randomly assigned to a treatment group that was permitted to implement MRSDT immediately, and the remaining half were assigned to a control group that delayed MRSDT until after follow-up data collection was completed 1 year later, in spring 2008. Data from self-administered student questionnaires were used to compare rates of substance use in treatment and control schools at follow-up.
Results: Students subject to MRSDT by their districts reported less substances use in past 30 days compared with students in schools without MRSDT. The program had no detectable spillover effects on the substance use of students not subject to testing. We found no evidence of unintentional negative effects on students' future intentions to use substances, the proportion of students who participated in activities subject to drug testing, or on students' attitudes toward school and perceived consequences of substance use.
Conclusions: MRSDT shows promise in reducing illicit substance use among high school students. The impacts of this study were measured for a 1-year period and may not represent longer term effects.

One approach some U.S. schools are using to reduce adolescent substance use is school-based mandatory-random student drug testing (MRSDT). Under MRSDT, students and their parents give written consent to the students' participation in random drug testing as a condition of participating in athletics and other extracurricular activities. The most recent national estimates indicate that 14% of U.S. public school districts conducted random drug testing during the 2004–2005 school year [1]. Two U.S. Supreme Court decisions have upheld the use of MRSDT for students participating in athletics and in other extracurricular activities [2,3].

MRSDT may reduce student substance use in one or more of three ways. First, the threat of testing alone may cause students to stop using substances. Such deterrent effects are most likely to occur when students are directly subject to testing (e.g., during the school sports seasons) and for the specific substances covered by the school's drug testing policy. Second, school staff can identify students who test positive for drugs and refer them to counseling services. The opportunity for such detection effects is

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This research was supported by a U.S. Department of Education, Institute of Education Sciences contract with Mathematica Policy Research (ED-04-CO-0041); however, the views expressed here are those of the authors and do not necessarily reflect the views of the Institute of Education Sciences. The authors are responsible for any errors.

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doi:10.1016/j.jadohealth.2011.08.012

limited to only those students who are caught using drugs. Third, MRSDT may have spillover effects on students who are not directly subject to testing, as they observe and are influenced by the behavior of their peers.

The few previous studies of MRSDT offer little definitive evidence on the effectiveness of these programs. Quasi-experimental studies of MRSDT programs conducted in New Jersey, Indiana, and Oregon high schools have found a link between MRSDT and lower substance use [4–6]. However, national surveys have found no statistically significant differences in substance use between schools with and without drug testing programs [7,8]. A previous experimental study of MRSDT produced mixed results—reduced past-year substance use at two of the four follow-up periods, but showed no effect on past-month use [9]. Some research suggests that MRSDT may have unintended negative consequences on students' attitudes toward school, sports and activities participation, and other risk factors for future substance use [6,9].

The present study sought to add to prior research by addressing three questions: (1) Does MRSDT reduce substance use among students who are subject to testing? (2) Are there spillover effects on other students? (3) Does MRSDT have unintended negative effects on students' attitudes or activity participation?

Methods

Participants

A total of 4,720 9th through 12th grade students from 36 high schools participated in the study (All student sample sizes are rounded to the nearest 10 in accordance with National Center for Education Statistics publication policy). The schools received grants to implement MRSDT from a competitive discretionary federal grant program administered by the U.S. Department of Education's Office of Safe and Drug Free Schools, which awarded grants to schools for MRSDT between 2005 and 2008. School districts awarded grants in 2006 were required to participate in the study as a condition of their grant awards. The districts were located in seven states, primarily in the South and Midwest.

Study design

The study was designed as a cluster randomized trial with staggered implementation of the intervention. Because MRSDT programs are implemented schoolwide, with expectations of spillover to students not directly covered by the MRSDT program, we randomly assigned schools rather than individual students. After we collected baseline data in spring 2007, 20 schools were randomly assigned to a treatment group that was permitted to begin implementing MRSDT immediately, and 16 schools were assigned to a control group that had to delay announcing, promoting, or implementing MRSDT until after the follow-up survey was completed in spring 2008. Impacts were calculated during the 1-year period of staggered implementation. The study was approved by the Portland State University Human Subjects Research Review Committee.

Random assignment was conducted separately within 15 blocks of two to four schools. Blocks were formed, first, by grouping schools within the seven grantee school districts and, second, by grouping schools with similar characteristics within the three largest districts. The study was powered to detect impacts similar to those reported in previous studies of MRSDT [6]. The final analytical sample of 4,720 students and 36 schools yielded minimum detectable impacts of 7.2 percentage points on a dichotomous substance use outcome with 30% prevalence among the control group [10].

Intervention

Each participating school district began by specifying a list of sports and other extracurricular activities it planned to cover under its testing policy. In treatment schools, participation in these covered activities was then restricted to students providing written consent to MRSDT, and these consenting students were subject to random drug testing periodically throughout the school year.

The OSDFS grant program required all districts to follow a basic set of testing procedures: administering tests to a minimum of 50% of eligible students, testing for a minimum of five required substances (marijuana, amphetamines, cocaine, methamphetamines, and opiates), establishing safeguards to maintain the confidentiality of the drug test results, subjecting any positive tests to review by a certified medical-review officer, and referring students with positive drug test results to treatment services. Although not explicitly required by the grant program, all districts contracted with an outside drug testing company to administer the tests.

Other implementation decisions were left to the discretion of the individual grantees. The frequency of drug testing ranged across schools from four times per year to five or six times per month. Three districts tested for alcohol in addition to drugs. Five districts tested both student athletes and participants in competitive extracurricular activities (e.g., marching band and choir); two districts limited MRSDT to student athletes. In four districts, students who participated in covered activities were subject to testing all year, whereas in the three other districts, students who participated in covered activities were subject to testing only while participating in the activity. During the period of the grant awards, the amount of OSDFS funding received ranged across districts from $18 to $120 per enrolled student.

Across the seven grantee districts, 3,480 drug tests were conducted during the study's 1-year evaluation period. Of these tests, 40 positive drug tests were reported. Positive drug tests were most common for marijuana (20/40 positive drug tests). The rate of positive drug tests—40 of 3,480 tests—was lower than the rate at which students reported using substances, which is consistent with reports in the literature [11].

Schools assigned to both the treatment and control groups were permitted to continue implementing other substance use prevention efforts they had in place before the study. Staff in 74% of treatment schools and 68% of control schools reported offering substance use prevention assemblies, 100% of treatment schools and 63% of control schools reported offering substance use prevention curricula, and 16% of treatment schools and 25% of control schools reported offering behavioral or therapeutic counseling for students. Therefore, the study measured the effects of MRSDT as a supplement to these other substance use prevention efforts.

Data collection

Data were collected from students through questionnaires administered at baseline in spring 2007 and follow-up in spring