Drug Recommendation System based on Sentiment Analysis of Drug Reviews using Machine Learning

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Abstract:

At this research, we investigate whether or not drug testing in schools is a useful strategy for addressing the issue of substance addiction among adolescents. Studies culled from the Internet and the most prominent academic databases are examined. The examination reveals a number of key points, including: Few studies have been conducted in this field, especially across Chinese settings; the quality of the studies that have been conducted is often poor; and the results of studies that have examined the efficacy of drug testing in schools are contradictory. Quantitative and qualitative assessment studies of the efficacy of school drug testing are also reviewed, along with the methodological challenges that arise from them.

KEYWORDS: drug testing; adolescent substance abuse; abuse detection; adolescents.

INTRODUCTION

Researching the websites of various international organizations (such as the United Nations Office on Drugs and Crime, the International Narcotics Control Board, the United States National Institute on Drug Abuse, and the European Monitoring Center on Drugs and Drug Addiction) reveals that drug abuse is a complex global issue that needs to be addressed. Substance addiction among young people has also emerged as a major issue throughout the world[1,2]. This is likely attributable to the impact of youth subculture and popular culture. Teenage drug addiction is a concern for policy makers and health professionals, as shown by the results published in key databases on adolescent development such Monitoring the Future, Youth Risk Behavior Surveillance (YRBS), and the National Household Survey on Drug Abuse (NHSDA)[3]. 9.3 percent of 12 to 17-year-olds in the United States are active illegal drug users, according to data from the 2008 National Survey on Drug Use and Health[4]. School drug testing has been used in certain Western nations to combat the rising epidemic of teenage drug misuse. The US Supreme Court ruled in favor of mandatory drug testing for high school sports in 1995. The Supreme Court of the United States extended its 2002 rule to include all students who compete against those from other schools in extracurricular activities[5]. There has always been some level of contention over whether or not student drug testing is really effective. The ideas, assumptions, and limits of the underlying rationales for school drug testing were discussed by Roche et al.[6]. They looked at several other research in the area and came to the conclusion that the quality of the studies was typically poor (this is the unpublished version 2). Although Roche et al.'s[6] work represents a first effort to systematically examine relevant research, it suffers from three significant shortcomings. Weaknesses Exist Primarily, the reviewed research did not cover all available literature; for example, studies published in academic publications and available online were not all included. Second, while the quality of the reviewed research was evaluated, specifics (such as issues with the design, methodology, data analysis, biased results, etc.) were omitted from the publication. Third, there was no disentangled reporting of results that support the usefulness of school drug testing and those that refute it. In light of this, the current research sought to compile a review of previous work on the topic of drug testing in schools. Both the proponents and detractors of this view present their findings from the literature separately. The studies are also reviewed for their quality. Finally, we explore methodological concerns that arise naturally in quantitative and qualitative research on the efficacy of school drug testing.

METHODS

Search strategy

The purpose of this comprehensive research project is to look at the merits of the contentious issue of drug testing in educational institutions. The most widely used scholarly databases, including PsycINFO, Social Work Abstracts, Medline, CINAHL, and Sociological Abstracts, were searched for articles on topics including random drug testing, drug testing, school drug testing, and drug detection. Empirical studies found on the Internet were evaluated using the same standards. The papers that were considered for this review are included in Appendix 1. Some of the best places to

discover information on drug testing in schools may be found at the websites listed in Table 1.

RESULTS

From this analysis, a few key points emerge. First, there haven't been that many studies done to determine whether or not drug testing in schools has really been beneficial. No research has been done in a variety of Chinese settings that explicitly considers Chinese culture. Second, there is a lack of experimental investigations and the majority of empirical studies were cross-sectional in character (e.g., surveys and qualitative interviews). Following this, Table 2 displays both pro- and anti-drug-testing study results (Table 3). Table 4 shows that the overall quality of the previous research was low, calling into question their findings that drug testing is beneficial. In addition, there was a dearth of high-quality quantitative research and qualitative assessment studies.

DISCUSSION

Despite the great public interest in and debate over school drug testing, very few scientific studies have investigated the effectiveness of such testing. Data-based policies like drug testing in schools can only be justified with solid scientific evidence. Given that Chinese people make up more than a fifth of the world's population, and given that mandatory drug testing is permitted by law in mainland China, the lack of research on drug testing in schools is very undesired. Furthermore, research on school drug testing was vital when experimental voluntary school drug testing was introduced in the Tai Po district of Hong Kong in the 2009-10 school year. 3 Previous research on the effectiveness of drug testing in schools have revealed mixed results, as indicated by this study. Keep in mind that there are studies that suggest drug testing in schools has no effect, and studies that show it has a positive effect. One of the few prospective studies available, Goldberg et al.'s[7] study reaches the same result. According to Goldberg[7], this study lends credence to the notion that DAT may have a dissuasive impact on substance abuse, specifically with regards to drug use in the preceding year (across two time points) and drug and alcohol use (across two time points). However, these findings may not be consistent across all U.S. institutions or regions. However, as certain substance abuse mediators seemed to worsen and past-month substance use did not improve, further research is required to identify the full implications of drug and alcohol testing programs (p. 428, italics added). In an editorial for the Journal of Adolescent Health, Knight and Levy[8] said, "although we might hope that the present study by Goldberg would help to end the national debate, this hope is unlikely to be realized on the basis of this report, which includes ample 'evidence' to fuel the fire on both sides" (p. 419). In particular, the reviewed literature demonstrates a lack of high-quality studies. Furthermore, it is important to note that the examined study does not give a definitive answer to the question of whether or not drug testing in schools is beneficial. For this reason, even if a large sample size was used, "one cannot make solid causal inferences regarding implications of drug testing; only a panel design in a randomized or natural experiment can do so" (Yamaguchi, Johnston, and O'Malley, 2009, p. 9). Perhaps drug use was higher before testing was implemented, but it has now decreased to a level that is comparable to that of other schools (p.164). While the lack of evidence for the effectiveness of drug testing is not definitive, results suggest that drug testing in schools may not provide the panacea for reducing student drug use that some (including some on the Supreme Court) had hoped. This was the conclusion reached by Yamaguchi et al.[9] (p.164). Despite the large sample size, this study is often used to argue against drug testing in schools. Evidently, the long-term survival of school drug testing is highly dependent on the amount and quality of scientific discoveries proving its utility and effectiveness. There are two primary areas where more evaluation research should be directed. Before anything else, we need to conduct rigorous quantitative research with robust experimental designs. However, there are at least six factors that should be taken into account while conducting experiments. We must first consider the potential of selection bias (differences between groups before testing). This risk is magnified in pre-experimental research like the one conducted by Yamaguchi et al. [9]. Second, it is anticipated that the therapeutic effect in the control groups would be diminished as a consequence of the enhanced knowledge of drug prevention brought about by the drug testing procedure. And lastly, if schools using the experimental paradigm end up increasing anti-drug measures, it's possible that the therapeutic value of drug testing in schools has been exaggerated. It's possible that students' perspectives on the drug testing plan might change if they were aware of the political and cultural responses to the initiative before, during, and after its approval. Factors like outcome measures and the openness with which drug abuse behavior is stated will, fifth, shape the evaluation's findings. Due to the possibility of a low baseline incidence of adolescent drug use in places like Hong Kong, a small sample size and sensitivity measurements may make it difficult to identify actual differences between the experimental group and the control group. Finally, researchers should carefully consider whether "blinding" can be carried out in meaningful and practical ways in relevant experimental investigations. The second kind of study is called a

qualitative evaluation study. In addition to the qualitative findings reported in scholarly papers, there are various qualitative perspectives on the advantages and disadvantages of school drug testing (Tables 2 and 3). For example, one principal of a high school commented, "The committee worked incredibly hard to design a tool which would have a positive affect on our children. Given that the effectiveness of drug testing in schools to deter teenage substance misuse has not been proved and that drug tests are accompanied with major technical issues, Knight and Levy[11] urged caution in interpreting this position. But the fact that there are so few false positives suggests the program is worthwhile suggests. All due care must be taken in doing qualitative research on drug testing in schools. Shek, Tang, and Han[12] provide a set of 12 rules to follow while doing qualitative assessments. Among these were 1) a detailed discussion of the study's theoretical underpinnings; 2) a breakdown of the sample size and demographics; 3) an exhaustive account of how the data were gathered; 4) an examination of any potential biases; 5) an account of any measures taken to mitigate these biases, or an explanation of why they could not be eliminated; 6) careful consideration of reliability issues; and 7) the deployment of triangulation techniques. Following these guidelines would undoubtedly increase the credibility of any future qualitative evaluation studies conducted in this field. A more nuanced perspective suggests that implementing widespread testing in schools may not be the most effective strategy for reducing drug and alcohol abuse among teenagers. It is crucial to strive toward combining school drug testing with other preventive measures, such as drug education and positive youth development, in order to help young people successfully avoid drugs[13-17]. Drug testing in schools and other treatments to help young people who are struggling with substance abuse need to be evaluated thoroughly and based on solid data.

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