

Is kiR for REAL? A review of the “keepin it REAL” drug prevention curriculum offered by D.A.R.E.

America

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Abstract:

The keepin' it REAL prevention program, kiR – aimed at the use of ATOD among middle-schoolers – is used across the US and in many countries abroad. According to its distributor, D.A.R.E. America, it is evidence-based. The present paper reviews the available literature and finds that, despite the existence of a wealth of scientific papers on kiR, the actual evidence of the program's effect is limited to two RCTs, both conducted in the Southwest US with samples consisting mainly of Mexican-American youth. The first of these trials yielded positive results, whereas there are conflicting results from the second trial. The review concludes that the kiR program evaluations do not meet the standards for efficacy trials set up by the Society for Prevention Research, and that the intervention's effect on students with other cultural backgrounds than Mexican-American has, so far, not been thoroughly tested. It is questionable whether the program warrants its widespread distribution and the label of evidence-based.

Introduction

In recent years, the concept of “evidence-based” interventions has gained a strong momentum in the field of prevention and beyond. Within the field of youth drug use, evidence-based prevention has been described as “programs, strategies, and policies that have already been tested under rigorous research conditions and shown to prevent, delay, or decrease adolescent drug use behavior” (Pentz, 2003:143) , and several authoritative sources list programs that are said to live up to this definition. A closer look at some of these programs, however, reveals that they may not be quite as effective as their presence on such lists suggests (Gandhi, Murphy-Graham, Petrosino, Chrismer, & Weiss, 2007). In some cases, methodological and analytical strategies are hotly debated; for instance, the evaluation of the National Youth Anti-Drug Media Campaign (Hornik, Jacobsohn, Orwin, Piesse, & Kalton, 2008; Orwin et al., 2006) has been criticized for drawing conclusions that were stronger than the data could support (e.g. Magura, 2012; Peck, 2012). Gorman & Huber go so far as to claim that “any drug prevention program might be considered ‘evidence-based’” (2009:396) if evaluated with the use of statistical procedures that give the greatest possibilities for significant, positive effects.

In other cases, scientific support for the effects of a specific program may be misinterpreted or exaggerated when the program is applied to real-world settings. The present paper suggests that this is the case with the substance use prevention program “*keepin it REAL – kiR*”. According to its most prominent distributor, D.A.R.E. America, *kiR* “works” (Nordrum, 2014), it is evidence-based, and it is extremely popular: it is taught as part of the D.A.R.E. program across all 50 states in the US and in 49 countries abroad (D.A.R.E., 2015). The question is, though, whether the program actually qualifies as evidence-based, and, if this is the case, whether it is as universally applicable as it is universally distributed?

There is a wealth of scientific publications concerning *kiR* and thus it would seem that the program and its effects are extremely well researched. In the words of Hopson et al. “[t]he program has been evaluated in multiple randomized trials with students from diverse racial and ethnic backgrounds” (2015: 317). A closer examination of the literature reveals this to be something of an overstatement: In fact, only two randomized trials and a number of pilot studies have been reported so far, and these two trials have been conducted in a very specific setting – Phoenix, AZ – with students of predominantly Mexican or Mexican-American background.

The aim of this paper is to review the evidence-base of *kiR*: what is the actual body of evidence for efficacy/effectiveness for the program, and to what extent can the intervention claim to be

universally applicable? We do *not* take issue with the analytical strategies or statistical procedures used in the different evaluations of *kiR*; instead, we take the published results at face value. The evaluations have been published in peer-reviewed papers, so it is assumed that the reported results and methodologies may be trusted. The review also does not take the form of a meta-analysis, since the number of actual randomized trials is so limited. According to Faggiano et al. (2014), only one report on the evaluation of *kiR* (Hecht et al. 2008) provides data suitable for meta-analysis, whereas two other central papers (Hecht et al. 2003, Elek et al. 2010) do not. Thus, the aim of the present paper is simply to try to determine – on the basis of the existing scientific literature – whether *kiR* deserves the label as evidence-based and whether there is reason to believe that it will perform in all the different settings in which it is applied.

In the present paper, we will first give a brief description of the evolution of the D.A.R.E. curriculum and then discuss the ideas behind *kiR*, followed by a detailed description of the existing trials of the program and their results. The final part of the paper discusses three important issues: can the research on *kiR* be described as independent? Is the program in fact evidence-based when judged by the standards of the criteria put forth by the Society for Prevention Research? And, finally, does the available evidence warrant the program's widespread distribution in the US and elsewhere?

Keepin it real – the history

KiR is the most recent program offered by the D.A.R.E. organization. D.A.R.E. (Drug Awareness and Resistance Education) originally developed its own comprehensive prevention curriculum consisting of 34 hours of teaching delivered partly by trained law enforcement officers. Evaluations failed to demonstrate any positive effects of the program, be it short term (Ennett et al. 1994) or long term (Lynam et al. 1999). Subsequently, the program was changed in the direction of a more interactive delivery style, but still no positive effects were found (Vincus et al. 2010). The program, however, was still in use in the US and elsewhere until at least a few years ago: According to Ringwalt et al. (2010), almost 80 per cent of US school districts used the program – some possibly because the schools found the importance of creating bonds between youth and local police to overshadow the lack of preventive effect (Birkeland et al. 2005). An enhanced version, D.A.R.E. Plus (Perry et al. 2003), showed some positive effects for boys (but none for girls), but interpretation of the results is made difficult by the fact that actual behavior and intentions are collapsed into single categories for some of the measures.

Later, D.A.R.E. adopted another prevention program: New DARE/Take Charge of Your Life (TCYL). This program consisted of 10 lessons delivered in 7th grade and an additional 7 lessons in 9th grade. An evaluation conducted by Sloboda et al. (2009) suffered from an unexpectedly high level of attrition (46 per cent), but none the less provided clear conclusions: the program had a negative impact on the use of alcohol and tobacco among non-users at baseline, whereas there was a positive effect on the use of marijuana in the past month among 11th graders who had already tried marijuana at baseline. Based on these findings, D.A.R.E. replaced TCYL with *kiR*, as described on their website:

“As a result of the evaluation findings, D.A.R.E. is discontinuing use of the TCYL curriculum. In September 2008, D.A.R.E. and The Pennsylvania State University entered into an agreement wherein D.A.R.E. has adopted and will deliver as its junior high/middle school program, the evidence-based “keepin’ it REAL” (*kiR*) curriculum. The transition to *kiR* is well underway with implementation to commence during upcoming fall school semester.” (D.A.R.E. 2013, quotation no longer available on the website).

Keepin’ it REAL

The *kiR* program was developed by researchers affiliated with the Drug Resistance Strategies Project (DRS) at Pennsylvania State University from the late 1980s onwards. They worked with what they defined as an “understudied group – Southwestern Mexican and Mexican American youth” (Hecht et al. 2006: 268) in Phoenix, Arizona – and their aim was to design a culturally grounded intervention. The curriculum consisted of 10 lessons including such topics as resistance skills, decision making, risk assessment and the promotion of conservative drug norms. The intervention focused on four avoidance strategies: Refuse, Explain, Avoid, and Leave. Lessons were enhanced by the showing of 5 videos depicting youth of the same age as the target group using these strategies to deflect offers of ATOD. The strategies were then rehearsed in the classroom. The video content was enhanced by a number of 30-second Public Service Announcements (PSAs) shown on local TV stations. The intervention was delivered by specially trained teachers following a detailed manual. A special feature of the intervention was that it was developed in different versions: one oriented at Mexican American youth, one oriented at White and African American

culture, and one multicultural version mixing the two (Hecht et al. 2003). The different versions contained references to different sets of values. The *KiR* program has been the subject of a large number of scientific papers – close to a hundred at the time of writing – but many of these contain no information about the effects of the program. Most of those that do are based on data from two large-scale randomized controlled trials carried out among 7th grade students in Phoenix, AZ, in 1998-2000, and 5th and 7th grade students in Phoenix, AZ in 2004-2008. A third RCT involving a “rural” version of *KiR* has been conducted in Pennsylvania and Ohio in 2009-2010, but, so far, no comprehensive results have been published. Furthermore, some pilot studies have been conducted in Mexico.

The first trial – 1998-2000

The first evaluation of *KiR* was conducted from 1998-2000. In the trial, four surveys were conducted: pretest (67 per cent response rate), 2-month follow-up (61 per cent response rate), 8-month follow-up (55 per cent response rate) and 14-month follow-up (50 per cent response rate). 23 per cent of the sample completed all four surveys (Hecht et al. 2006:270). Hecht et al. (2003) uses a sample of 6,035 7th grade students, all of whom completed “at least some portion of at least one of the questionnaires”; 4,324 completed (or partially completed) the pre-test questionnaire (Hecht et al., 2003:238). 74 per cent of the students in this sample self-identified as Mexican, Mexican American, or other Latino, and the majority were from low-income families (74 per cent qualified for free lunch). The study found significant positive effects (slower increase of substance use) on alcohol and marijuana use for the Mexican American and the multicultural versions when compared with control students.

Hecht et al. (2006), analyzing a sample of 6,298 Grade 7 students (75 per cent Mexican, Mexican American, or other Hispanic – the difference in sample size from the first study is not discussed) from the same trial, but this time using growth modelling, found *KiR* in the multicultural version to be effective in slowing the growth in recent substance use and the Mexican American version to be effective with alcohol use, whereas the African American/White version demonstrated no significant effects. The authors conclude that the findings provide “indirect evidence supporting targeting prevention efforts to the ethnicity of the student participants” (Hecht et al. 2006: 275). A third analysis (Kulis et al. 2005), based on the same dataset, is restricted to 3,402 students that self-identified as Mexican, Mexican American, or Chicano. Again, the results show that the

Mexican and multicultural versions slowed the increases in substance use when compared to control, but no significant differences between the three versions of *KiR* are demonstrated.

Warren et al. (2006) analyzed the impact of videos vs. PSAs and found that students who reported to have seen 4-5 videos had a lower increase in the use of alcohol and marijuana than had control students and students who reported seeing 0-3 videos.

The primary studies (Hecht et al. 2003, 2006) compare each of the three versions of the intervention (both individually and combined) with a control group, but none of them explore possible differences in the curriculum's effect on different kinds of *students*. Three other studies based on the same dataset explore the effects of *kiR* on students with different cultural backgrounds: Kulis et al. (2007a) analyze possible differential effects based on gender, ethnicity and acculturation in a sample of 3,605 Hispanic and non-Hispanic White students. They find that, among less linguistically acculturated Latinos, the program is more effective for boys than for girls, whereas there are no significant gender differences among non-Latino White students. In fact, there are no significant effects of the program on this group at all. The authors suggest that this may be due to a small sample size (545) for this group. As “[s]ome attrition occurred at the second survey wave” (Kulis et al., 2007: 133), missing data have been imputed.

Kulis et al. (2007b) evaluates whether the program had an impact on substance use experience. They find that participation in the program was associated with a significantly larger reduction in the use of alcohol than was the case for control students, and that a significantly larger percentage of program participants discontinued their use of alcohol. No overall effects were found with cigarettes or marijuana. However, among the students who self-identified as Whites (13 per cent of the original sample of 1,364), the rate of reduction or discontinuation of the use of cigarettes was significantly lower than among other students.

Finally, Dixon et al. (2007) analyzes a sample of 4,222 students of which 685 claim some form of American Indian ethnicity. They find that *kiR* did not reduce the use of alcohol/marijuana among American Indian students as it did for students of other ethnic backgrounds.

The overall conclusion regarding this first trial of *KiR* is that the program – especially the multicultural version – does slow the increase in substance use in a sample consisting of 7th grade students of whom roughly three out of four are of Mexican/Latino background. It has the greatest impact on the use of alcohol, and it seems to have greater impact on boys than on girls. There is also some evidence, albeit limited, that the program has little or no effect on Non-Latino White students and no effect on students of American Indian heritage.

The second trial – 2004-2008

A second RCT was conducted in 2005-2008, this time in both elementary and middle school with slightly altered versions of the program: *KiR-Plus* (designed to address transitions in adolescent youth) and *KiR-AE* (*Acculturation Enhanced* - that is, specially designed for Hispanic students in the process of acculturation in the US). In addition, the elementary school curriculum was adapted to fit the development stage of the pupils (Elek et al. 2010). The study was conducted on both 5th graders and 7th graders, predominantly Hispanic, in 29 schools in Phoenix, Arizona. A preliminary study of the results in 5th grade (Hecht et al. 2008) found no positive effects in the short term when *KiR*-students were compared to control students.

Two other analyses of the same data-set after completion of the last survey, this time including both 5th and 7th graders, reach opposite conclusions: Marsiglia et al. (2011) include 1,670 students of Mexican heritage, divided into four groups: intervention in 5th grade only, intervention in 7th grade only, intervention in both 5th and 7th grade, and control. 6 waves of surveys were conducted, and attrition was high: 47 per cent completed the last survey. Using growth curve modeling, the study finds that intervention in 5th grade only did not influence students' substance use, whereas intervention in 5th and 7th grade reduced cigarette and inhalant use, but only after the second intervention. The 7th-grade-only condition reduced the use of alcohol, cigarettes, marijuana, and inhalants. The authors conclude that intervening in 5th grade is not supported.

Elek et al. (2010), studying a total of 1,984 students in 5th and 7th grade (75 per cent Mexican/Mexican American, 55 per cent attrition from first to last survey) find no consistent effects in either grade. A comparison of substance use, intentions to use, and use of refusal strategies between the three experimental groups and the control group (same setup as in the other study) from baseline in 5th grade to last survey in 8th grade reveal no significant differences between the experimental conditions and control, except for the following: students who received the intervention in 5th grade only, reported significantly higher lifetime and 30-day prevalence of substance use than did control students – an iatrogenic effect. Those students who received the intervention in 7th grade (regardless whether they received it in 5th grade as well) did not differ significantly from control students with regard to substance use. Some experimental groups reported significantly lower increases in their refusal efficacy than did control students and those receiving the intervention two times reported higher descriptive norms – their estimates of substance use among their peers were higher than those of the control students.

Another study on the same data (Hopfer et al., 2013) is concerned with 5th graders only. Students were classified according to their hypothetical drug refusal skills and confidence in refusing ATOD offers. Based on their answers to a set of hypothetical drug offer scenarios, they were divided into four classes: Low competence, confident, skillful, and highly competent. A comparison in 8th grade examined whether transition from lower to higher skill levels differed between *kiR* participants and control students. No significant differences were found.

Further trials of *kiR*

KiR has also been pilot tested in Guadalajara, Mexico. Here, two middle schools (432 students participated) were randomly assigned to either *KiR* or control. A study of the short-term effects (Marsiglia et al. 2014) demonstrated that immediately after completion of the curriculum, female *KiR*-students reported less use of alcohol and cigarettes, whereas the intervention did not influence the substance use among male students. A survey administered 8 months after program completion demonstrated positive effects on the use of alcohol (but not the use of cigarettes) among female students, but no significant impact on males. There was also a possible positive development for marijuana among male students, but as very few students used marijuana, the authors (Marsiglia et al. 2015) interpret this finding with caution.

Another pilot study (Kulis et al. 2013) assesses the impact of a *KiR*-intervention specifically designed for American-Indian youth in Phoenix, Arizona. This study, involving 57 students and no control group, finds that the adapted version of *KiR*, called *Living in 2 Worlds (L2W)*, increases students' use of the drug resistance strategies taught in the program.

Finally, a version of *KiR* designated for "rural" schools has been developed in 4 schools in Ohio and Pennsylvania. In collaboration with local students and teachers, videos were produced that depicted stories that reflect "rural norms, attitudes, and values, rural settings, rural activities, characters relevant to rural student's experiences, and demonstrated how offers of ATOD are made and are successfully deflected by rural youth" (Colby et al. 2012: 198). This version was subsequently evaluated in a RCT in 39 schools in the two states (Pettigrew et al. 2015). According to a newsletter on the project's web site (Drug Resistance Strategies Project 2009), four survey waves were planned: pre-intervention surveys in the fall of 2009 and post-intervention to be administered immediately after (Spring 2010) and again in 2011 and 2012. Some of the newsletters posted on the website indicate difficulties with securing teachers' participation in the program, and two published papers (Pettigrew et al., 2013, Shin et al., 2014) discuss teachers' adherence to the content of the

program. Pettigrew et al. (2015) confirms that four survey waves have been administered, but no specific dates are provided except that the year of intervention is confirmed. Thus, it seems probable that data collection for the entire RCT must have been completed by the end of 2012. However, at the date of submission of the present paper, no comprehensive results of this evaluation have been published.

Several papers describe different parts of the evaluation process, e.g. the randomization procedure (Graham et al. 2014), narratives used by teachers (Miller-Day et al. 2015), the content of student-generated messages (Krieger et al. 2013), and a typology of delivery modes and an analysis of teacher-student interaction based on videotapes of *KiR* (Pettigrew et al. 2013, Shin et al. 2014). None of these papers, however, include data about the overall results of the intervention.

Pettigrew et al. (2015) analyze how the quality of delivery and adherence to the curriculum affected students' norms and substance use in 25 schools. They find that implementation quality does affect outcomes measured in the immediate post-test: the better implementation, the less use of alcohol and marijuana, and the more conservative norms among students. The authors note that, as both the rurally adopted version and the original version of *kiR* are considered together, but not compared to any control group, the study does not amount to a thorough evaluation of the rural version of *kiR*.

The above-mentioned studies are the main studies published on the *kiR* RCTs. There exists, however, a wealth of additional papers published on the program. These will not be reviewed here, since they don't add to the central question regarding the effects of the *kiR* intervention.

In our view, the review presented here raises a number of questions regarding the evidence for the program's effectiveness and universal applicability, among these the independence of research, the label of "evidence-based", and the potential for dissemination across countries and cultures.

Is the research on *kiR* independent?

In the field of prevention, it is not uncommon that evaluations of new interventions are carried out by the same researchers who developed the intervention in the first place. In recent years, however, the combined role of program developer and program evaluator has been the subject of increased scrutiny due to the risk of bias. In a meta-analysis of individually focused crime reduction, Petrosino & Soydan (2005) find that trials in which evaluators have had a large influence on design and implementation of the intervention show much larger effect sizes than trials evaluated by independent researchers. The authors present two possible explanations: the "cynical view" that program developers are under pressure to report positive effects in order to secure program

dissemination, new grants, or financial gain, and the "high fidelity view" that developers are uniquely positioned to achieve the best possible conditions for the intervention to work (Petrosino & Soydan 2005: 443-44). They find some support for both views and conclude by raising the question of whether it is possible to maintain the high fidelity in real-world dissemination. The *kiR* program has, to a very large degree, been evaluated by its developers. *kiR* was designed by Monica Gosin, Michael L. Hecht and Flavio F. Marsiglia (Gosin, Marsiglia and Hecht 2003), and the report of the first RCT (Hecht et al. 2003) had Hecht as first author and Marsiglia as second author. Subsequent analyses on the same dataset have been coauthored by either Hecht (Hecht et al. 2006, Warren 2009), Marsiglia (Kulis et al. 2007a, b), or both (Kulis et al. 2005). The evaluation of the second RCT was also coauthored by either Hecht (Elek et al. 2010), Marsiglia (Marsiglia et al. 2011, 2012), or both (Hecht et al. 2008) (it should be noted that the results of the second RCT were not all positive, see details above). The rural version of *kiR* was developed by, among others, Hecht and Michelle Miller-Day, who also coauthored the only study so far to report any results of the rural RCT (Pettigrew et al. 2015). Marsiglia is coauthor of the evaluation of the pilot study in Mexico (Marsiglia et al. 2014a, b). We have not found any evaluations of the program conducted by independent researchers, and neither have Flynn et al. (2015) who, for this reason, excludes *kiR* from a recent review of drug prevention curricula in middle school. However, given the fact that *kiR* is allegedly used in a large number of countries around the world, the existence of independent evaluations written in other languages than English cannot be ruled out.

The question is, then, whether the lack of independent research on *kiR* gives reason for worry? Part of the answer can be provided by examining possible conflicts of interest. According to Eisner, "a conflict of interest exists in evaluation research whenever a researcher or a research team benefits from or has an interest in one specific outcome" (Eisner 2009: 170). He identifies two main sources of such conflicts of interest, namely financial interests (royalties, funding etc.), and ideological interests (e.g. commitments to specific prevention strategies). Eisner also makes it clear that such conflicts of interest may generate cognitive biases "not easily recognized as such by the researcher" (op. cit. 172), and he lists a number of ways such biases may influence results.

In the case of *kiR*, several possible conflicts of interest can be identified: As described above, D.A.R.E. America has promoted *kiR* as part of their general program since 2009, and they do so exactly because the curriculum is "evidence-based". Thus, negative findings regarding effects of the curriculum may result in discontinuation of the cooperation between D.A.R.E. and the developers of *kiR*, a development that in turn may have a negative impact on future funding for the program. In

a description of how the cooperation was established, two of the central developers write: “This resulted in a licensing agreement that made it easy for D.A.R.E. to adopt keepin’ it REAL while allowing the DRS team to retain control of the curriculum and to benefit financially from any long-term success” (Hecht, Colby and Miller-Day 2010: 585). This formulation hints at both kinds of conflicts of interest mentioned by Eisner (2009): ideological – retaining control over the curriculum – and financial. Whether or not the conflict of interest concerning direct financial benefits was present at the time the program was originally developed and evaluated cannot be determined; none of the central evaluation papers contain declarations regarding conflict of interest.

Today, the program has several stakeholders. It is offered for a fee by D.A.R.E. America across the US and abroad, apparently at a very low cost per pupil. As described above, a Spanish version is tried in Mexico, and, until recently, *Mantente R.E.A.L.* was offered by University of Santiago de Compostela, according to a no longer existing website (USC 2015). In the UK, the *kiR* intervention is advertised by Life Skills Education C.I.C. The cost is listed as £5 per pupil with an additional cost of £30 per lesson if the curriculum is to be delivered by a D.A.R.E. officer (LSE 2016). The company also delivers D.A.R.E. Primary, but whether or not this program contains elements from *kiR* is not stated. Recently, Hecht and Miller-Day have started a private consultancy firm promoting (among other services) *kiR* in both elementary and middle school versions. Their website – real-prevention.com – does not provide any pricing of the program.

Overall, it cannot be ruled out that recent studies of *kiR*, including the (as yet unpublished) RCT of the rural version, may suffer from conflicts of interest of the kind described by Eisner (2009).

Is *kiR* evidence-based?

“D.A.R.E. has new elementary and middle school curriculums, keepin’ it REAL (*kiR*). The D.A.R.E. *kiR* middle school curriculum which is an evidence-based program listed on the National Registry of Evidence-based Programs and Practices (NREPP)” (D.A.R.E. 2015).

A careful reading of this advertising statement shows that D.A.R.E. does not claim that the *kiR* elementary curriculum is evidence-based. Neither does it discuss the fact that the only RCT conducted with 5th graders failed to find any beneficial results at this level: “The study provided clear evidence that early intervention in elementary school alone did not lead to desired effects on substance use trajectories, and that a double dose of intervention in elementary and middle school was no more effective than middle school intervention alone” (Marsiglia et al. 2011: 60). Thus,

D.A.R.E. seems to be offering an elementary school curriculum that *has* been evaluated – but found to have no effect.

With regard to the middle school curriculum, desired effects were demonstrated in the first of the two large-scale RCTs, whereas there are conflicting results from the second. Both RCTs were conducted on a population consisting of mainly Mexican/Mexican-American students. The two seminal papers describing the second RCT (Elek et al. 2010, Marsiglia et al. 2011) were published around the same time and do not discuss each other's findings, so the reasons for the conflicting conclusions are unclear. In any case, this means that the evidence-base for the *kiR* middle school program basically consists in results from one RCT.

kiR was recognized by the Substance Abuse and Mental Health Services Administration (SAMHSA) and included in the National Registry of Evidence-based Programs and Practices (NREPP) until sometime in the Spring of 2016 (the SAMHSA webpage - <http://nrepp.samhsa.gov/> - now only lists programs that have been reviewed from 2008 onwards), but it should be noted that only results from the first RCT were reviewed. SAMHSA rated the research focusing on pupils use of substance resistance skills (reported in Hecht et al. 2003) much lower (1,7 on a scale from 0-4.0) than the research on other outcomes (rated 2.5-2.7). Only short term effects were demonstrated for this outcome. SAMHSA also noted that “the program acronym “REAL” reflects four resistance strategies; only Refuse, Explain, and Leave were evaluated, and it is unclear why Avoid was not included” (SAMHSA 2006). *kiR* was also included in a SAMHSA cost-benefit analysis of substance abuse prevention. Here, it was noted that the cost-benefit ratio was comparatively high (\$27 saved for every dollar spent), but the “quality of the evidence of effectiveness” (Miller & Hendrie 2008: 42) was rated “C” – the lowest rating used in the analysis.

The extent to which recognition by e.g. SAMHSA can be taken as proof of program efficacy/effectiveness is debated. In a review of 5 programs frequently named on lists of proven school based drug prevention programs (including SAMHSA), Gandhi et al. (2007) find that “there is limited evidence of the effectiveness of all of these programs on reducing substance use in the long term“ (op. cit.: 60). In general, recognition by the lists demands only one or two evaluations; there is an absence of independent evaluators; many programs capitalize on chance by reporting multiple outcomes; and there is a lack of long-term follow up. Based on these and other concerns, the authors “wonder if the programs cited across the best-practice lists are any more effective than D.A.R.E.” (op. cit. 66). The evaluations of *kiR* suffer from most of the listed problems.

In 2005, the Society for Prevention Research published a set of standards for evidence of research regarding interventions in prevention (Flay et al. 2005). One of the aims with the formulation of these standards was – and is – to guide peer review processes. The standards have recently been updated (Gottfredson et al. 2015), but since almost all publications concerning *kiR* have been published before 2015, it seems most fair to judge them based on the original version from 2005. The standards distinguish between efficacy trials (where programs are tested under optimal conditions) and effectiveness trials (where programs are tested under more real-world conditions), and further notes that not all programs with evidence of effectiveness are ready for dissemination (Flay et al. 2005: 153). Based on these criteria, the *kiR* evaluations can be categorized as belonging to the category of efficacy trials, albeit on a large scale and meeting some of the criteria for effectiveness. The *kiR* evaluations do not, however, satisfy all criteria for efficacy stated in the standards: “*Consistent findings are required from at least two different high-quality studies/replications that meet all of the above criteria and each of which has adequate statistical power*” (Flay et al. 2005: 162, italics original). Even though *kiR* has been tested in two trials, the existence of conflicting evidence from the second trial makes it impossible for the program to satisfy the Society’s criteria for efficacy.

Is *kiR* suitable for universal distribution?

To meet the Society for Prevention Research’s criteria for effectiveness and dissemination, the program in question must fulfill additional standards to those of efficacy. Of special interest here is the demand that the “study sample should come from the population to which the outcomes of the effectiveness trial will be generalized, and should reflect the composition of that population“ (Flay et al. 2005: 164). Both the RCTs were conducted in Phoenix, AZ, with a sample that was very specific. In fact, the first RCT did not claim external validity beyond the specific group of Southwestern Mexican and Mexican American students: “This study cannot clarify whether the program would intervene as successfully in other nonurban settings or with other cultural groups” (Hecht et al. 2006: 268). Subsequently, the impact of *kiR* on samples consisting solely of Mexican/Mexican-American youth have been studied extensively, and, based on the available evidence, it would seem that the program is efficacious with this group of students.

The limited research on the program’s effect on students with other cultural backgrounds, however, shows no impact on students with American Indian background (Dixon et al. 2007), whereas the program’s effect on non-Latino White or African-American students has not been established with

any certainty. Interestingly, an important argument in favor of *kiR* in the early stages of evaluation was that “prevention science requires an assessment of interventions that thoroughly reflect a specific cultural group” (Hecht et al. 2003: 234). The authors also stressed the need for comparison with multicultural interventions. In the case of *kiR*, such a comparison has been made with regard to the Mexican American vs. the multicultural version. However, comparisons between the multicultural version and the Euro American and African American versions have not been carried out due to the fact that non-Hispanic Whites and non-Hispanic Blacks only comprised 17% and 9%, respectively, of the total sample. Thus, it is possible that a lack of effect (or even a limited iatrogenic effect) of these versions of the program could go undetected.

It seems that the developers’ original reservations concerning the lack of evidence on other kinds of students than the studied group (Hecht et al. 2006) have been abandoned. Why this is, we can only speculate. Maybe the fact that the multicultural version had the most profound impact on the students has led the developers, researchers, and D.A.R.E. America to believe that it would also have an impact on students from quite different cultural settings? We would argue that the cultural backgrounds of students from other parts of the US than the Southwest (let alone students from the UK or other European countries) differ substantially from that of those from Phoenix. Since the interventions were based on research with adolescents from the local area (Hecht et al. 2003: 236), even the multicultural version may, to some extent, reflect the dominant culture in that area.

Does the evidence surrounding *kiR* warrant the program’s distribution across the US and beyond? Given the fact that all effect studies so far have been undertaken with a student sample with a very specific cultural background, this is questionable. Whether or not the curriculum has a positive effect on students with other backgrounds, e.g. White or African-American, cannot be determined based on the existing literature.

Conclusion

The current review of the *keepin it REAL* drug prevention program is an attempt to distill the essence from the abundant scientific literature concerning the program in order to determine whether it deserves the label “evidence-based”. Our aim has not been to question the methodological approaches used in the individual papers; instead, we have taken published results from the scientific literature for granted in order to evaluate the strength of the evidence. There are several reasons to do so: *kiR* is currently being distributed around the world, backed by an organization, D.A.R.E. America, with a large outreach and a strong position within the field of drug

prevention; *kiR* is being advertised as “evidence-based” not only in the US, but in Europe, too; the use of the program seems to be increasing; and the large number of scientific papers concerning the program may lead to the impression that claims about the program’s impact are based on a large body of scientific research.

Our conclusion from a thorough examination of the existing literature would be as follows: *kiR* has been shown to be efficacious in reducing the use of some drugs in a sample consisting mainly of 7th graders of Mexican or Mexican-American heritage in Phoenix, AZ. Whether or not this efficaciousness extends to students with other cultural backgrounds and/or from other parts of the US/other countries, cannot be determined.¹ Judged by the standards endorsed by the Society for Prevention Research (Flay et al. 2005), the program does not meet the Society’s criteria for effectiveness and thus not for dissemination, either.

This conclusion has several implications. For D.A.R.E. America, it would seem appropriate to reconsider the way the intervention is presented and distributed. The wording of the advertising used by D.A.R.E., in which the elementary and middle school curriculums are linked, may lead some readers to conclude both curriculums are backed by scientific research. This is not the case; in fact, the available literature suggests that the 5th grade curriculum has no positive impact on students’ use of ATOD later in life.

With regard to distribution, D.A.R.E. does not seem to have concerns about the external validity of the existing trials of *kiR*. In our view, the program’s demonstrated efficaciousness with a very specific group of 7th graders does not warrant worldwide dissemination. Thus, if D.A.R.E. America wants to continue such a wide distribution, it should at least initiate (further) real-world trials in different geographical settings and with different bodies of students. Due to the fact that the existing trials have all been conducted by researchers involved in the development of the program, these new trials should preferably be carried out by independent researchers.

Maybe it would also be high time to reconsider the value of authoritative lists of evidence-based interventions such as the one maintained by SAMHSA. As it has been established elsewhere (Gandhi et al. 2007), not all programs on such lists are in fact proven to be effective. In the case of *kiR*, SAMHSA lists only results from the first trial of the intervention, thus neglecting the fact that a subsequent evaluation produced contradictory results. For such a list to be a useful guidance tool, it

¹ Since the publication of this review, a quite similar conclusion regarding *kiR*’s readiness for dissemination has been raised by Caputi & McClellan (2016).

should at least be updated whenever new results concerning the included programs become available.

Finally, the role and mores of the scientific community should be considered. The ever-expanding demand for publications may result in diminishing importance and lack of substantial content in papers published. In the case of *kiR*, the wealth of publications – many of them published in renowned journals – may lead some to believe that the sheer volume of research can be viewed as proof of the program’s effect. Thus, editors and peer reviewers should consider not only whether a submitted paper is scientifically sound, but also whether yet another paper on an intervention that is already well described in the literature actually offers a contribution substantial enough for publication. If such considerations are not made, the scientific community may end up (even though inadvertently and indirectly) promoting interventions that do not warrant promotion.

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