

Feasibility, Acceptability and Utility of the Evidence-based “keepin’ it REAL” Substance Use Prevention Program for Early Adolescents in Kenyan Schools

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Abstract

The growing prevalence of youth substance use in Kenya calls for the implementation of efficacious substance use prevention programs. The overall aim of this study was to evaluate the feasibility, acceptability, and utility of an evidence-based substance use prevention program, keepin’ it REAL (kiR), in Kenyan secondary schools. The study had three objectives: (1) Test if the program can be successfully delivered by assessing whether teachers agreed that kiR was well suited to their educational context and engaged student participation (i.e., feasibility); (2) Test if teachers and students found the prevention program’s components applicable, appropriate and satisfactory

(i.e., acceptability); (3) Test if teachers and students found the kiR program useful in imparting knowledge and motivating changes in attitudes and behaviors related to substance use (i.e., utility). Data were drawn from post-test evaluations completed by kiR students (N=348) and teacher-implementers (N=7) during a pilot test in two Nairobi-area secondary schools. Quantitative data were analyzed using descriptive statistics. Qualitative data were coded and content-analyzed. Students evaluated kiR positively: large majorities participated highly (feasibility); viewed kiR as highly satisfactory, interesting, and capturing their attention (acceptability); and reported it provided useful and highly applicable information (utility). Teachers were nearly unanimous that kiR was feasible, addressed youth substance use well and engaged student interest, but also noted technical issues in delivery (equipment, power interruptions), insufficient time to complete lessons, and a need for more training. Findings demonstrated that kiR is feasible for implementation in Kenya with attention to technical and class size challenges; with highly acceptable, applicable and satisfactory content; and demonstrable impact on acquiring knowledge and skills to help adolescents resist substance use. Future research is needed to adapt the implementation model for Kenya and test the efficacy of kiR in a randomized controlled trial with a larger and more representative sample of schools.

Keywords: *Early adolescence, Substance Use, Prevention, Feasibility, Acceptability, Utility*

Introduction

Adolescence is a phase of development when youth establish patterns of behaviors and life skills that may protect them from negative health outcomes (Steinberg, 2017). From a health promotion and disease prevention perspective, it is a window of opportunity to intervene and prevent negative health behaviors that frequently begin during this phase and may continue into adulthood, such as substance use (Stanis & Andersen, 2014). Early substance use remains a global public health concern. Substance use has been associated with poor health and overall well-being, increased risk for development of cognitive deficits (e.g., poor academic performance), development of aggressive behavior, subsequent substance use disorders, and has been identified as a leading risk factor for premature death among adolescents (Hamidullah et al., 2020; Ozeylem et al., 2021).

To address the prevalence and negative consequence of adolescent substance use, researchers have developed evidence-based substance use prevention programs for delivery in schools (Tremblay et al., 2020). An important early phase in intervention research is a feasibility study in which the intervention is delivered with a small number of participants from the target setting or community to assess if implementation is possible, and whether the intervention is considered feasible, acceptable, and useful to participants and implementers. These preliminary assessments determine if an intervention is appropriate for further testing (Melnyk & Morrison-Beedy, 2018). Feasibility assessment helps establish whether the structure, content, strength and delivery of the intervention are appropriate for the cultural and contextual background of the target audience (Bowen et al., 2009; Weiner et al., 2017). These are considerations of the intervention's social validity, the extent to

the key stakeholders view the intervention's goals as socially significant, its procedures as socially acceptable, and its outcomes as socially important (Carter & Wheeler, 2019; Gadke et al., 2021). As a result of feasibility studies, some program components may be modified to better meet the needs of the community in which the intervention is implemented. However, core elements that build effective evidence-based substance use prevention programs need to be retained intact (Pearson et al., 2020). By balancing the need for adaptation with that of ensuring fidelity to the intervention's core components, programs are able to better address the distinct needs of the community and produce the desired outcomes.

In Kenya, a lower-middle-income country located in Eastern Africa, one in five adolescents are reported to have used at least one psychoactive substance in their lifetime (National Authority for the Campaign against Alcohol and Drug Abuse [NACADA], 2019). Approximately 25% of students entering university-level education in Kenya report having consumed alcohol and/or other substances, demonstrating a need for earlier intervention strategies to delay and/or prevent the initiation of alcohol and substance use (Musyoka et al., 2020). Moreover, research has also identified an increasing trend of substance use among Kenyan youth (Masese, 2020). Several strategies, coordinated by the NACADA, have been implemented by Kenyan authorities to mitigate alcohol and substance use among adolescents, such as restricting alcohol sales to minors or limiting sales around schools (Kageha, 2015; Ondieki, 2017). However, evidence-based prevention interventions are lacking; schools typically include only one-shot health education sessions addressing myths and facts of alcohol and drug abuse (NACADA, 2021). Further efforts are needed

to prevent the early onset of substance use in Kenya.

The overall aim of this study was to assess the feasibility, acceptability, and utility of implementing an evidence-based substance use prevention program in secondary schools in Kenya. Keepin' it REAL (kiR) is a school-based universal substance use prevention program for adolescents originally developed and tested in the U.S. (Marsiglia & Hecht, 2005; Kulis et al., 2005). Subsequently, kiR has been culturally adapted to serve the needs of diverse populations and tested extensively in the U.S., several countries in Latin America and Spain, and has proven effective at preventing and reducing substance use among adolescents (Cutrín et al., 2021; Kulis et al., 2021; Marsiglia et al., 2019). The kiR curriculum focuses on building specific life skills in order to manage social pressures to use substances and prevent other risk behaviors (Gosin et al., 2003). The behavioral skills learned in this intervention aim to empower adolescents to successfully resist substance use through a variety of strategies (Kulis et al., 2011; Marsiglia et al., 2009) which correspond to the acronym REAL: Refuse, Explain, Avoid and Leave. Refuse refers to declining substance offers, verbally or non-verbally, in a clear, direct and respectful manner. Explain involves providing reasons for not accepting the offer. Avoid refers to deciding to stay away from settings, situations or people where alcohol or drugs might be offered or available. Leave consists of exiting situations where alcohol or drugs are offered.

In 2019, the African Institute for Children Studies (AICS) and Arizona State University researchers and curriculum experts partnered to pilot the kiR program in secondary (middle) school settings in Kenya. In this partnership, technical support was provided

by the research team to develop curriculum adaptations, design research methods and data collection protocols, and conduct statistical analyses. AICS managed the field operations, survey data collection, and coordinated the school partnerships where the intervention was piloted. Linguistic modifications were applied to the curriculum in order to make it appropriate within the Kenyan context and to meet national curriculum requirements. The program review process, prior to conducting the feasibility study, included an assessment of all materials, identification of specific elements requiring linguistic adaptation, implementation of the changes, and government approval (Marsiglia et al., 2023).

The overall aim of the current analyses is to assess the feasibility, acceptability, and utility of the kiR program, with linguistic modifications, for implementation in middle-school settings in Kenya. We examined three specific objectives: (1) Test if the program can be successfully delivered by assessing whether teacher-implementers agreed that kiR was suited to their educational context and engaged student participation (i.e., feasibility); (2) Test if teachers and students found the prevention program's components applicable, appropriate and satisfactory (i.e., acceptability); (3) Test if teachers and students found the kiR program useful in imparting knowledge and motivating changes in attitudes and behaviors related to substance use (i.e., utility).

Methods

Study design

A convenience sample of two Nairobi-area secondary schools was recruited for the study based on the following selection criteria: willingness and ability of principals and teachers to implement the kiR program, expressed

concern about student access to and use of substances in the school, and school enrollments (size, socio-economic profile) typical of the area. Regular teachers of students in the equivalent of 7th grade delivered the 10 lessons of the kiR curriculum during scheduled school hours between June and November 2019. Schools received projector equipment to deliver the videos that accompany the curriculum.

The study utilized mixed methods (Cresswell & Clark, 2017), drawing on responses from kiR students on a self-administered post-test questionnaire in January 2020, and written evaluations of kiR on a questionnaire completed by their teachers after they finished implementing the program. The initial research design called for focus groups and face-to-face interviews with kiR teachers in early 2020, but was changed due to COVID-19 interruptions to questionnaires completed by the teachers in January/February 2021 as schools began to re-open.

Participants

The student respondents ($n = 348$) were enrolled in two Nairobi-area secondary schools in the equivalent of 7th grade. They ranged in age from 11 to 16 ($M = 12.9$; $SD = 0.97$), with slightly more female (55.2%) than male (44.8%) students. About half resided with both parents (52.4%) and most of the rest with one parent (42.4%). Students had an average of 2.8 siblings and their households contained an average of 4.9 people. One-third of the students reported that they went hungry due to a lack of food at home, either "sometimes" (26.2%), "most of the time" (4.6%) or "always" (2.3%).

Seven of the eight teacher-facilitators of the kiR program provided written kiR feedback. They were mostly female (6/7), had either a university degree or a college certificate in

teacher training, and an average of 20 years of teaching experience. Their main subject areas were social studies and language, science, or math.

Data collection

The student and teacher questionnaires each contained both closed-ended and open-ended questions. The closed-ended questions were used to assess multiple facets of feasibility, acceptability and utility. Content analysis of the open-ended questions provided verification of the quantitative results, identified the more commonly- and strongly-held views, and identified areas of enthusiasm and concern about the kiR program.

Quantitative data collection

The 18 questions for teachers had identically scored responses (1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, 5 = strongly agree). Student questions had several types of response options, detailed below.

Feasibility. 1) Intervention Fit (3 items): Teachers reported if they felt the kiR program met its prioritized goal of addressing student use of alcohol and drugs, whether they would recommend its continued implementation in their school and in other primary schools, and whether they experienced problems or technical issues in the implementation. 2) Practicality-Student Participation (3 items): Students reported in two items how much they participated in kiR class activities (1 = not at all, 2 = a little, 3 = some, 4 = a lot), and how many of the five kiR videos they remembered seeing (0 to 5). Teachers reported in one item whether they agreed that students were excited to participate in kiR. 3) Practicality-Facilitator Engagement (1 item): Students assessed whether their

teacher taught the lesson enthusiastically (1 = strongly disagree to 4 = strongly agree).

Acceptability. 1) Satisfaction (10 items): students indicated in 4 items how much they liked the kiR program (1 = did not like it at all, 2 = did not like it much, 3 = liked it, 4 = liked it a lot), including its various components (videos, homework, classroom activities) and overall. Teachers reported in 6 items their level of satisfaction with kiR overall, and specifically with the teacher manual, student manual, lesson activities, homework, and lesson timing/pacing (strongly disagree to strongly agree). 2) Comfort with topics and activities (6 items): students reported in 4 items whether kiR was interesting, fun, easy to pay attention to, or boring (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). Teachers reported in two items whether their students liked the materials in the program, and whether students reacted positively to the videos (strongly disagree to strongly agree). 3) Understanding of content (1 item): Teachers assessed whether students understood the materials in the program.

Utility. 1) Knowledge (4 items): students reported in two items whether kiR gave them useful information (1 = strongly disagree to 4 = strongly agree), and how much they learned from it (1 = not at all, 2 = a little, 3 = some, 4 = a lot). Teachers reported in two items whether the kiR program was valuable to their students overall, and specifically whether they believed their students learned valuable skills. 2) Applicability (6 items): students assessed in 3 items the relevance of the kiR content, whether it was “like my life”, “like youths I know”, and like situations that students they know get into. Three additional student items assessed authenticity, whether the situations portrayed in the kiR curriculum were realistic, whether characters in the kiR videos seemed real, and whether kiR was

believable (1 = strongly disagree to 4 = strongly agree). 3) Impact (7 items): Students reported whether they talked about the kiR program with various people in their social network: parents, siblings, cousins, other family members, friends, and others. These 6 items were assessed separately (0 = no, 1 = yes) and through a count of the number of different types of people they had talked to (0 to 6).

Qualitative data collection

Teachers who facilitated kiR lessons at the two intervention schools responded in writing to ten open-ended questions (see Table 4). Questions addressed general (“What was your experience as facilitators of the keepin’ it REAL program?”) as well as specific (“What lessons and activities were your favorites to teach/facilitate?”) reactions to teaching the curriculum lessons. While the majority of the teachers completed the open-ended evaluation in its entirety, two respondents left a portion (5 questions) blank. Responses to each question were typically one or two sentences in length.

The post-test questionnaire completed by kiR student participants included one final open-ended question: “Please tell us the most important thing you learned from keepin’ it REAL.” Students wrote in an open-ended response, usually providing one or two sentences or phrases (average of 15 words).

Data analyses

The quantitative data were analyzed using descriptive statistics (means, standard deviations and frequencies) in SPSS 27. The qualitative data from the post-test questionnaire completed by kiR student participants were coded by two independent coders from the research team in three

sequences: (1) an initial inductive open coding session of the 308 responses; (2) checks on interrater reliability, resolution of responses coded differently by the two coders (fewer than 8% of responses), and identification of final primary codes by consensus; and (3) re-coding to add additional secondary codes and analysis layers. If responses contained elements of more than one code, the two coders reached consensus on the primary code. The first two coding sequences established five primary codes for the student responses: 1 - REAL Strategies/Skills; 2 - Strategies/Skills (Not REAL); 3 - Substance use effects/consequences; 4 - Attitudes; and 5 - Program comments. The third sequence delineated secondary codes under the primary codes. Under the primary code of REAL Strategies/Skills there were five secondary codes: 1-1 Mention of R(efuse); 1-2 Mention of E(xplain); 1-3 Mention of A(void); 1-4 Mention of L(eave); 1-5 General mention of REAL. Secondary codes for the primary code of Substance use effects/consequences were: 3-1 Individual; 3-2 Social (peer, family, and social). The primary code of Attitudes had two secondary codes: 4-1 Towards substances; 4-2 Towards self-value. The Program comments primary code had three secondary codes: 5-1 Positive; 5-2 No comment or Negative; 5-3 Other. Multiple codes were applied to the student responses if students mentioned more than one thing that they learned, including multiple overall primary codes and more specific secondary codes, when possible. The qualitative data from teachers who facilitated kiR lessons at the two intervention schools were independently coded by two members of the research team. One coder developed a conceptual scheme from a literature review, including major codes of feasibility, acceptability, and utility, and sub-codes under each one, such as intervention fit, resource implications,

implementation characteristics, practicality, and fidelity (under feasibility). The other coder applied the conceptual framework to complete the coding work and categorized verbatim quotations from the teacher's post-intervention self-evaluation. Once the two coders independently completed coding, the analyses were then compared to assess intercoder reliability. The few discrepancies were resolved by consensus of the two coders and verified by a third researcher.

Results

Quantitative findings

Table 1 summarizes the students' quantitative assessments of kiR. Students participating in kiR evaluated the program very positively overall, as indicated by large pluralities answering with the two most favorable responses and means midway between those responses. As indicators of program practicality (participation, engagement), measuring feasibility, two-thirds (66%) of students reported that they participated "a lot" in kiR, and 84% viewed their teachers as highly engaged by agreeing that the lessons were taught enthusiastically by their teacher. On average, however, students recalled viewing only about half of the 5 program videos. Regarding program acceptability, students reported being highly satisfied and feeling comfortable with the kiR topics. Large majorities (85% or more) said that they liked or loved kiR overall, as well as its separate components. Over 80% found the program topics to be highly acceptable: interesting, fun, and easy to pay attention, as well as not boring (about 55%). In assessing the program's utility, over 80% said the program provided useful information and that they learned "a lot" from it; these reports show that students understood the curriculum contents, an indirect indicator of acceptability. More than two-thirds agreed or agreed strongly

that kiR was applicable to their own lives and that of other youth they knew, as well as authentic (realistic, believable). An indicator of the impact of the program was that nearly all students (all but 3%) talked about it with family members and/or with friends, most of them talking to three or more different categories of people in their social networks.

Table 2 contains the teachers' assessments of kiR on closed-ended questions. Large pluralities reported that the intervention was highly feasible: a very good fit in addressing substance use issues, recommended for future use in their own and in other primary schools, and engaging the participation of their students. However, most teachers also reported experiencing technical problems in implementation that would need to be addressed to make the intervention more feasible. On the other hand, teachers viewed the curriculum quite favorably on multiple dimensions of acceptability. They reported high levels of satisfaction with the program overall and each of its components, with somewhat less consistent satisfaction with the lesson activities and videos than with the manuals and assignments. Large majorities, however, expressed dissatisfaction with the timing or pacing of the lessons: 14% expressed strong dissatisfaction and another 57% expressed dissatisfaction. All the teachers found kiR to be acceptable to their students in terms of feeling comfortable with the topics in the program and its videos, and a large plurality thought students understood the contents well. Finally, regarding utility, all the teachers agreed that kiR provided students with valuable knowledge and skills.

Qualitative findings

Students

The student responses to the question about the most important thing they learned from

kiR were coded in two ways: 39% of the responses could be coded unambiguously into a single theme, but the remainder mentioned two (41%) or three (10%) things that the student learned. The independent coders agreed on a theme for the single or first mention, as well as noting themes for any second or third mentions. Table 3 enumerates the responses, breaking them down into major theme categories.

Whether examining distributions for the first mention or for all mentions, the most common response was that students thought the most important thing they learned was the REAL drug resistance strategies. This theme described nearly two-thirds of the first mentions (65%) and about half of all mentions (49%). The theme emerged in different configurations. Most common was to mention all four REAL strategies by name: refuse/refusing, explain/explaining, avoid/avoiding, and leave/leaving (23% of first mentions and 17% of all mentions). The second most common configuration referenced only the program's name or the REAL acronym, e.g., keeping it REAL, or using REAL (17% of first and 13% of all mentions). Remaining responses under this theme mentioned 1, 2, or 3 of the REAL strategies specifically. The following are representative of the responses under the overall theme of the REAL strategies:

"It taught me how to: refuse and avoid drugs, explain why I don't want to use drugs, in case of anything I should leave."

"I learned that your friend gives drugs you must avoid leave and then explain to her or him and he and she will understand you."

In another breakdown across all the instances

where students cited specific REAL strategies, whether alone or in combination, the strategy mentioned most often by students was avoid (by 57% of the students), followed by refuse (47%), explain (42%), and leave (37%) (data not presented separately in Table 3).

The second overall theme mentioned most commonly by students was that they learned about the effects of substance use (16-17% of first mentions and all mentions). The comments made references to undesirable effects of substance use, including (1) general statements that drugs are bad, dangerous, or a threat ("Drugs are very harmful substances and can destroy my life"); (2) specific negative health consequences of drug use ("Don't take drugs because they are bad and they can affect our body and may lead to death"); and (3) unwanted social consequences ("Drugs are not helpful at all and they will only ruin your life and your future plans and goals").

A third overall theme consisted of references to general or specific life skills learned through the kiR program, such as risk assessment (11-12% of first and of all mentions).

"It showed me the right way of life and how I will face the situations that will come in my life and it help me in situation[s] when my friends come with something bad I can use real.

"We [must] be careful with the choices we make because others may destroy our future."

The fourth student theme referred to important social relationships connected to substance use risk, such as parents, extended family, neighbors, friends and other peers (5% of first mentions and 20% of all mentions).

"That we should be careful in what I am being given and to whom is the person giving..."

"Doing wrong things. It will prepare my future. It will make me stop walking with bad company..."

The few remaining miscellaneous student comments (2%-3% of first and of all mentions) either mentioned aspects of the curriculum that they liked ("watching to videos"), or were responses of "don't know" and "nothing."

Teachers

Information from teacher open-ended questions is summarized in Table 4.

On feasibility, teachers had overall positive opinions about the kiR program implementation and their teaching experience. Overall, kiR was perceived as practical for implementation in Kenyan schools. Teachers viewed kiR as fitting the main intervention objective of preventing substance use among students, and viewed their students as open to participation in the program.

"it was a good experience as it gave an opportunity I saw long missed because I have witnessed the effect of drugs in school children and have not been able to address to this."
[Teacher #5]

Teachers mentioned other implementation characteristics of the kiR program to express their perception of how easy or difficult it was to implement. For example, the complexity of demands from other school activities could complicate or interrupt delivery of the kiR curriculum, requiring flexibility and the adoption of alternative strategies, yet the manualized structure of the curriculum was

viewed as positive feature.

"The sessions were completed. It was smooth but fast due to other formal and non-formal activities in the school." [Teacher #4]

"The sequence in lessons delivery were structured and showed how each strengthened the other" [Teacher #7]

Other positive implementation characteristics perceived by teachers related to student engagement. Teachers noted student participation in the kiR lessons and aspects of the curriculum that students enjoyed the most, especially lessons with interactive group activities, such as role-playing, singing, or drawing.

"Dramatization and watching the programmes. This is because it was real to them." [Teacher #1]

"role playing because it reflects to me the pupils' feelings about some issues and through this they may understand other feelings and also be willing to learn ways of responding to issues without adding more problems" [Teacher #5]

However, teachers identified some barriers that could affect program feasibility. For example, teachers thought needed technical resources were sometimes insufficient, including utilities and technology use issues.

"Electricity was a challenge sometimes but we postponed the programme to a different date. The learners are very many in our school we have no hall, so we used the school field for our meetings mostly. When watching, I grouped the students to be able to fit our IT

room." [Teacher #1]

"equipment use challenges especially flash disk jamming and lack of consistent power during some lessons" [Teacher #7]

Some comments identified challenges to feasibility related to teacher training and teaching materials, with recommendations for more extensive and detailed teacher preparation and more technical learning materials.

"Teachers to be trained two to three days. More teaching guide and learners to be added enough time to be trained." [Teacher #2]

"teachers didn't get enough training before starting implementing the program in our school." [Teacher #5]

In addition, most teachers reported time concerns because of rushed and limited time to deliver the lessons considering the other learning activities in school.

"Time was a challenge to many activities in the school, though I was able to complete the sessions in the prescribed time. Sometimes I had to use some few minutes during lunch time break." [Teacher #1]

"we worked as a team but felt that time was actually not enough because in the case of those weeks there were so many other school activities that interfered with our planned days. Sincerely speaking we really squeezed the time available for it" [Teacher #5]

On the other hand, teachers confirmed the acceptability of kiR as a prevention program in Kenya. Most of the teachers thought their students were satisfied and enjoyed

the curriculum lessons. Acceptability was reflected in teacher reports of a high level of student satisfaction and comfort with topics/activities.

"Fun and real because the learners were affected and really enjoyed the program." [Teacher #3]

"Learners enjoyed learning to solve life conflicts." [Teacher #2]

Although most teachers thought their students understood the concepts and activities in the curriculum, two teachers offered suggestions for increasing the understanding of content. One proposed the curriculum content should be improved by extending beyond substance use related issues ("adding awareness of sexual abuse and child rights in our country" [Teacher #1]). Another teacher reminded the research group of nuances in local worldviews ("some of the norms and values are not in African culture." [Teacher #1]).

Teachers championed the utility of the kiR prevention program in Kenya highlighting that kiR brought helpful knowledge and information to students. In addition, teachers viewed the situations presented in the program as very real to their students. These authentic scenarios help students to apply the knowledge and strategies in their own lives.

"the program was very informative and educative and varied ways of seeking solutions to issue of drugs and alcohol abuse in adolescents" [Teacher #6]

In addition to the teachers' reports that kiR imparted needed knowledge and skills that were applicable to their students' lives, they noted its impact on changing students' and teachers' cognition or behavior. According to teachers, the influence of kiR on students went beyond the class, and even parents reported

the positive change in students' behaviors.

"They applied what they learnt because some of the parents spoke during parents' day on how their kids have improved behaviour wise. Even some teachers have noticed the difference." [Teacher #4]

For teachers themselves, the experience of delivering kiR also prompted them to integrate knowledge of substance use into their teaching and expanded their classroom- and conflict management skills.

"when going on with normal lessons we integrate parts of this programme. For example, dangers of drugs and sub-stance abuse and self-valuing" [Teacher #5]

"I have learned how best to manage some situations while dealing with children" [Teacher #6]

Discussion

The aim of this study was to assess the feasibility, acceptability, and utility of the kiR curriculum for use with early adolescent in Kenyan secondary schools from the perspective of students and teacher-implementers, who provided both quantitative and qualitative evaluations. Several key aspects of kiR were highlighted as enhancing its feasibility, particularly by teachers: its good fit in addressing youth substance use in a manner understandable to students; ability to engage students through role plays, narratives and dramatization; and the manualization of the curriculum, which aided practical delivery. Highly interactive instructional methods are not common in the public schools participating in the study, which may have contributed to the enthusiastic student reception of the program.

However, most teachers noted a similar set of barriers to feasibility in schools serving these low income populations: technical problems such as equipment failure and electricity outages; difficulties completing lessons within the allotted time and implementation schedule; a desire for more extensive training on curriculum delivery; and interference or interruptions due to other school activities. Some problems were exacerbated by very large class sizes, which complicated delivery of the highly interactive lessons. These challenges, and potential solutions to them, have also been reported in other implementations of kiR in settings outside the U. S. (Cutrín et al., 2023; Marsiglia et al., 2018, 2022). The original design of the curriculum for U. S. classrooms of 25 or fewer students may require adjustments in Kenyan classrooms of double that size, perhaps by dividing lessons into multiple sessions, using breakout groups to practice the interactive lesson activities, and/or alternating groups of students to enact or demonstrate the activities.

Students provided strong and extensive endorsements of the acceptability of kiR, including high ratings of satisfaction with the program and each of its components, and comfort with its topics and activities. In open-ended responses, some students also made specific mention of their satisfaction with the program and its topics. Teachers were also very satisfied with the curriculum overall, especially the manuals, assignments and accompanying videos, and reported that their students also liked the materials. There were, however, suggestions for local community theater groups to re-enact the videos to contextualize the examples and language for youths in Kenya. Most teachers were not satisfied with the timing or pacing of the lessons. In addition to the challenges of large class sizes, teachers faced pressures

to restrict the allocation of lesson time for a training program viewed as extra-curricular.

The utility of interventions like kiR reflects their ability to promote learning and influence changes in behaviors. Students reported that they learned useful information about substance use that was highly applicable to themselves and their peers, including learning the drug resistance skills that are the core of the curriculum, knowledge which impacted them enough to want to share it with their family and peers. Nearly all the students' open-ended responses addressed the utility of the intervention, specifically the usefulness of the knowledge that was learned. These included the REAL resistance strategies—either all together, a subset, or a single strategy—as well as knowledge the student acquired about drugs or their effects, and related life skills. Students also mentioned specific actions prompted by participation in the intervention: how they planned to employ the knowledge of drugs and coping skills that they gained from kiR in their lives. Teachers echoed these sentiments, noting their students learned valuable knowledge and life skills, which they saw the students applying outside class and which the teachers incorporated into their other classes.

There are notable study limitations to consider in assessing the findings. Only two schools were in the implementation arm of the study, which was carried out only in the Nairobi area, limiting the ability to generalize findings to that or other regions of Kenya. Information from a wider selection of Kenyan schools could reveal variations in the social validity of kiR and surface more implementation barriers to be addressed. Data about the implementors of kiR was limited to self-reports from the teachers who delivered the curriculum and a single item where students reported teacher enthusiasm.

Due to COVID-19 disruptions, the original plans to conduct focus groups and intensive interviews with the implementing teachers were changed to soliciting their written feedback, sacrificing opportunities to follow-up on open-ended questions. The views of other stakeholders, such as school principals and educational system authorities, would help expand assessment of the fit of kiR curriculum within institutional structures.

Conclusion

According to our findings, students and teachers in Kenya voiced strong and largely consistent views that kiR: could be implemented feasibly, although needing to address technical, training and time-constraint barriers; had highly acceptable and satisfactory content; and provided

impactful learning of useful knowledge and skills to help early adolescents resist substance use. Given these favorable results, future research needs to focus on making adaptations to kiR to address identified implementation challenges, and conduct a randomized controlled trial with a larger and more broadly representative sample of schools to test the efficacy of the program before scaling up the intervention in Kenya.

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Table 1

Student Posttest Evaluation of keepin' it REAL

	M	SD	% in strong accordance	N	Range
Feasibility-Practicality:					
Number of program videos viewed by student	2.43	1.59	–	346	0 - 5
How much did you participate in the program?	3.33	1.06	66% ^a	346	1 - 4
My teacher taught the lessons enthusiastically	3.22	0.89	84% ^b	341	1 - 4
Acceptability-Satisfaction:					
Liked the program overall	3.65	0.61	94% ^c	342	1 - 4
Liked the videos	3.53	0.68	85% ^c	321	1 - 4
Liked the homework	3.49	0.73	85% ^c	342	1 - 4
Likes the classroom activities	3.61	0.62	92% ^c	335	1 - 4
Acceptability-Comfort with Topics:					
The program was interesting	3.33	0.85	87% ^b	342	1 - 4
It was fun	3.18	0.94	81% ^b	348	1 - 4
It was easy to pay attention to	3.28	0.85	83% ^b	344	1 - 4

The lessons bored me	2.41	1.12	45% ^b	347	1 - 4
Utility-Knowledge:					
The program gave me useful information	3.43	0.77	89% ^b	344	1 - 4
How much did you learn from the program?	3.58	0.93	80% ^a	346	1 - 4
Utility-Applicability:					
It was like my life	3.05	0.96	72% ^b	348	1 - 4
It was like kids that I know	2.94	0.99	67% ^b	345	1 - 4
I know youth who get into situations like these	3.12	0.90	79% ^b	345	1 - 4
The situations were realistic	3.21	0.91	84% ^b	344	1 - 4
It was believable	3.33	0.83	86% ^b	340	1 - 4
The video characters seemed real	3.14	0.97	79% ^b	338	1 - 4
Utility- Impact:					
Talked about program with parents	0.83	0.38	–	336	0 - 1
Talked about program with siblings	0.62	0.49	–	326	0 - 1
Talked about program with cousins	0.57	0.50	–	321	0 - 1
Talked about program with other family members	0.59	0.49	–	319	0 - 1
Talked about program with friends	0.87	0.34	–	342	0 - 1
Talked about program with others	0.63	0.48	–	306	0 - 1
Talked about program with no one	0.03	0.43	–	300	0 - 1
# of different people R talked to about program	3.81	1.77	–	352	0 - 6

^a % 'a lot.' ^b % 'agree' or 'strongly agree.' ^c % 'liked it' or 'loved it.'

Table 2

Teacher Evaluation of keepin' it REAL (N = 7)

	<i>M^a</i>	<i>SD</i>	% "Agree" or "Strongly Agree"
<i>Feasibility-Intervention Fit-Resource Implications:</i>			
kiR addressed student issues with alcohol and drugs	4.57	0.79	86%
Would recommend implementing kiR in future in my school	4.86	0.38	100%
Would recommend implementing kiR in other primary schools	4.86	0.38	100%
Experienced problems or technical issues while implementing kiR	4.43	0.79	86%
<i>Feasibility-Practicality:</i>			
Students were excited to participate in kiR activities	4.71	0.76	86%
<i>Acceptability-Satisfaction:</i>			
Overall satisfaction with the kiR curriculum	4.43	0.54	100%
Satisfaction with the teacher manual	4.29	0.49	100%
Satisfaction with the student manual	4.29	0.49	100%
Satisfaction with the lesson activities	3.86	0.39	86%
Satisfaction with the homework assignments	4.29	0.49	100%
Satisfaction with the videos	4.00	1.00	100%
Satisfaction with the timing (or pacing) of the lessons	2.29	0.95	14%
<i>Acceptability-Comfort with Topics:</i>			
Students liked the materials in the program	4.43	0.54	100%
Students reacted positively to the videos	4.86	0.38	100%
<i>Acceptability-Understanding Content:</i>			
Students understood the materials in the program	4.29	0.76	86%
<i>Utility-Knowledge:</i>			
Overall, the kiR program was valuable to my students	4.86	0.38	100%
My students learned valuable skills from the program	4.71	0.49	100%

^a All items scored 1='strongly disagree', 2='disagree', 3='neither', 4='agree', 5='strongly agree'.

Table 3

Student Open-ended Responses: Most Important Thing You Learned from keepin' it REAL

	1st	2nd	3rd	All mentions	% of 1st	% of all
REAL strategies						
General "REAL"	52	12		64	16.88	12.93
Mention of all 4 REAL strategies	71	12	2	85	23.05	17.17
Mention of 3 REAL strategies	23	1		24	7.47	4.85
Mention of 2 REAL strategies	25	4	2	31	8.12	6.26
Mention of 1 REAL strategy	30	7	1	38	9.74	7.68
Subtotal REAL	201	36	5	242	65.26	48.89
Substance use effects	51	23	6	80	16.56	16.16
Life Skills	35	22	5	62	11.36	12.53
Social relationships	15	70	12	97	4.87	19.60
Program comments	3	6	2	11	0.97	2.22
Nothing, don't know	3			3	0.97	0.61
Total	308	157	30	495	100.00	100.00

Table 4.

Teacher Open-ended Questions and Summary of Responses

	Question	Summary / main idea (# of teachers)
Acceptability - Satisfaction	In general, what was your experience as facilitators of the keepin' it REAL program?	fun, real and/or enjoyable to students (5); addresses/provides solutions to drug use problems of school children (2)
Acceptability - Comfort with topics	What lessons and activities were your favorites to teach / facilitate? Why? What activities were the most stimulating for your students? Why?	Reasons: interactive (role plays), students interested and ask questions (2); providing needed skills, solving life conflicts, making choices (2); teaching drug resistance strategies (2) Role playing, dramatization, imagining (6); singing (1)
Feasibility - Resources, training, time	Are there any additional skills, training, or content (supplemental materials) that would have been helpful to you as a keepin' it REAL facilitator? How was the rhythm of the sessions while you were doing them? To what extent were you able to complete the sessions in the prescribed time?	Insufficient time, tight schedule, rushed, too fast (7); interference from/with other formal activities (2); compensating by using lunch time, homework assignments (1)
Feasibility - Implementation complexity	What logistical issues did you have to deal with (for example: technical equipment not working) and how did you solve it?	Power outages (4); equipment (flash drive) failures (2)
Utility - Impact on students	What are your evaluations of the impact of the programme on the students? Did students apply what they learnt from the programme outside of class?	Yes-solved conflicts outside school (1); parents noted effects, e.g., improved behavior (2); students very enthused; looked forward to next lesson (2)

Utility - Impact on teachers	Has giving the keepin' it REAL program caused any change in you as professionals? Has there been a change of perspective in the learning approach?	Increased my interaction with students (1); Improved understanding of how students make own choices (1); improved classroom management (1); integration of kiR content in regular lessons (1)
General	If you were to facilitate the lessons and activities again, which lesson or activity would you significantly improve and why?	Incorporate African norms/values (1); more time for videos, activities (3); students to explore: personal values/decision-making/consequences, reasons to not use drugs; and ways to avoid (and not avoid) trouble (3)
General	Please indicate the three things that you liked the most about keepin' it REAL	Role playing, dramatization (videos)(4); teaching/learning about drugs without "forcing it" on students (1)
General	...and the three things that you liked the least about the program	Lesson timing (3); need more training (2); videos not African (1); equipment problems (1)

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