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Socio-ecological determinants of alcohol, tobacco, and drug use behavior of adolescents in Kilifi County at the Kenyan coast

Derrick Ssewanyana[1,2], Patrick N Mwangala[1,4], Vicki Marsh[1,3], Irene Jao[1], Anneloes van Baar[2], Charles R Newton[1,3,4] and Amina Abubakar[1,3,4]

Abstract

Alcohol, tobacco, and other drug use form a risk factor for health and social problems during adolescence. From a socio-ecological model, perceptions of 85 young people and 10 stakeholders on the types of alcohol, tobacco, and other drugs used and the predisposing and protective factors were explored; among adolescents at the Kenyan Coast in the Kilifi County. We found that the consumption of home-brewed alcohol, tobacco and marijuana smoking, and khat chewing was common and requires multi-component and community-centered intervention. Countering alcohol, tobacco, and other drug use needs enforcement of strong measures to regulate access to alcohol, tobacco, and other drugs for minors; addressing social and cultural norms; strategies for poverty alleviation; and community empowerment.

Keywords

adolescence, alcohol, drug use, socio-ecology, tobacco

Introduction

Adolescence (10–19 years) is a developmental period that may often entail alcohol, tobacco and other drug (ATOD) experimentation, ATOD use reinforcement, and vulnerability to substance use disorders (Casey and Jones, 2010; World Health Organization (WHO), 2014). Indeed alcohol and illicit drug use are top risk factors for disease burden among young people (10–24 years), globally accounting for 9 percent of disability-adjusted life years (DALYs) (Gore et al., 2011). Also, adolescents who use ATOD have been shown to experience a range of physical, educational, and social challenges including poor academic and work productivity (Crosnoe, 2006; Lynskey et al., 2003); an unprecedented burden of injuries (Gore et al., 2011); psychiatric co-morbidities (Chan et al., 2008); risky sexual behavior (Ritchwood et al., 2015); and intimate partner and other forms of violence (Temple et al., 2013).

[1]Kenya Medical Research Institute (KEMRI), Kenya
[2]Utrecht University, The Netherlands
[3]University of Oxford, UK
[4]Pwani University, Kenya

Corresponding author:
Derrick Ssewanyana, Centre for Geographic Medicine Research-Coast, Kenya Medical Research Institute (KEMRI), P.O. Box 230, 80108 Kilifi, Kenya.
Email: DSsewanyana@kemri-wellcome.org

In sub-Saharan Africa (SSA), a national survey of ATOD use among Kenyan youths reports a general increase in ATOD use, with age of onset estimated at 10 years (National Authority for the Campaign against Drug Abuse (NACADA), 2012). Alcohol (11.7%), tobacco (6.2%), khat (4.7%), and bhang (1.5%) were the substances most often consumed by youths (NACADA, 2012). However, only a few other Kenyan studies have explicitly focused on ATOD in this age group and describe a set of major predisposing factors (Mugisha et al., 2003; Ndetei et al., 2010; Otieno and Ofulla, 2009).

Furthermore, at the Kenyan coast, the presence of illegal drug production and trafficking (United Nations Office on Drugs and Crime (UNODC), 2015) has been linked to serious health and social problems (Beckerleg et al., 2006; Brodish et al., 2011). Influences from ATOD use behavior are drawn from multiple social contexts like family, peers, school, and neighborhood contexts (Ennett et al., 2008). Thus, utilization of a socio-ecological approach in examining ATOD use and its contextual attributes is paramount, especially for devising sustainable behavior change approaches (Ennett et al., 2008).

Our study was conducted in Kilifi County at the Kenyan coast, aiming at a deeper understanding of ATOD use behavior among adolescents. The study draws on the perceptions of young people and a range of other community stakeholders to understand the diversity and factors underlying, adolescent ATOD use. Specifically, we explored perceptions of: (1) types of ATOD consumed, (2) predisposing or risk factors for ATOD use, and (3) protective factors against ATOD use.

Theoretical model

Our assessment of underlying factors for ATOD use is based on the socio-ecological model by McLeroy et al. (1988). This model postulates five levels of interacting domains which determine human behavior, namely: (1) intrapersonal factors, which entail biological and personal history factors, like knowledge, skills, attitudes, education, and income; (2) interpersonal factors, which involve formal and informal social networks plus support systems like family, working groups, and friendships; (3) institutional factors, which include social institutions with organizational characteristics, formal or informal rules and regulations; (4) community factors, which entail relationships among organization, informal networks, and institutions; and (5) public policy level, which involves local, state, and national laws or policies.

Methods

Study setting and participants

This study was conducted in the Kilifi County at the Kenyan coast within a well-defined Demographic Health and Surveillance System (KDHSS) between August and November 2016. Briefly, by 2011, the area covered by the KDHSS had 270,000 residents, of whom 49 percent were less than 15 years (Scott et al., 2012). Findings from the Kenyan population and housing census indicated that 22 percent (271,815) of the residents in Kilifi were adolescents, between 10 and 20 years (KNBS, 2009). A majority of the residents are of Mijikenda ethnicity and their main form of livelihood is subsistence farming. This setting is served by one major hospital (Kilifi County Hospital (KCH)), a health center and 12 dispensaries (Scott et al., 2012). The study was based at the Kenya Medical Research Institute (KEMRI)—KEMRI-Wellcome Trust Research Programme (KWTRP) in Kilifi.

The study involved the young people and stakeholder groups described below:

1. Young people comprised adolescents aged 10–19 years. These were divided into three sub-groups: school-going (both primary and secondary students); school drop-outs; or adolescents living with HIV and attending an HIV Comprehensive Care Clinic at KCH.
2. Stakeholders comprised key informants, female and male adults working extensively with adolescents within Kilifi,

like community social workers, clinicians, teachers, employees of community-based organizations (CBOs), and staff from the county government. A subset of this group were themselves young adults, aged between 20 and 30 years; this group were Kilifi residents who were serving as community representatives at KWTRP. These community representatives were asked to participate, as they might have a good understanding of youths in Kilifi because they extensively engaged in KEMRI's community research activities (Kamuya et al., 2013).

Recruitment and eligibility

This specific study was part of a larger qualitative study conducted between August and November 2016 at KWTRP. A detailed description is documented elsewhere (Ssewanyana et al., 2017). Briefly, through a snowballing technique, stakeholders with extensive experience in working with adolescents in Kilifi were identified. Young adults were purposively selected from a database comprising around 200 community representatives residing in Kilifi (Kamuya et al., 2013). The selection took diversity by sex, religion, education status, and residence into account. School-going adolescents were purposively identified from upper-primary and lower-secondary educational levels of two primary and two secondary schools situated in Kilifi. Adolescents living with HIV were included as a special group so as to explore and contrast their views on ATOD use to those of the other adolescents. This was to inform our future work that will quantitatively focus on health risk behavior of adolescents, inclusive of those living with HIV. Adolescents living with HIV were recruited from the youth club at the clinic of KCH. Some adolescents with HIV were also directly recruited by a worker from the KCH who paid home visits to known families of HIV-infected adolescents. With assistance from the county department of public health's community support staff, we purposively recruited adolescents who had dropped out of school from two community health catchment units. Age, sex, and religious diversity were again taken into consideration.

Ethical consideration

Prior written informed consent was obtained throughout all recruitment processes. Consent was obtained directly from participants aged 18 years and above. Assent was sought from participants between 13 and 17 years, while their parents or legal caretakers provided consent. In addition, the County Director of Education and the head teachers at each school involved gave permission to conduct the study within the school setting. Permission was also asked from participants to take notes and to audio record the discussions and interviews.

This study was granted ethical clearance by the Kenya Medical Research Institute Scientific and Ethics Review Unit (KEMRI/SERU/CGMR-C/0047/3263).

Data collection

We utilized a focus group discussion (FGD) approach because it is an interactive process that provides an opportunity for identifying areas of concern or interest that are spontaneously provided without presumptions. Clarification can be acquired when needed during the discussions, more in-depth information can be obtained and personal and group feelings, perceptions, and opinions can be captured. Such insights and understanding would be difficult to ascertain with questionnaires.

FGDs comprising between seven and nine participants and lasting approximately 75–120 minutes were conducted with adolescents and young adult community representatives. FGDs for school-going adolescents were sex disaggregated and took place at school. Adolescents living with HIV, those who had dropped out of school and young adult community representatives were invited to the KWTRP, where their FGDs took place in a private and quiet setting. A sum of 300 Kenyan shillings

(about US$3) was reimbursed to compensate for the time spent and transport expenses of the participants (young adults) and caretakers of adolescents who were invited to the KWTRP. For key informants, in-depth interviews were conducted lasting around 60–90 minutes, at their preferred venue and time.

A research officer moderated all the interviews and discussions in English and/or Kiswahili as preferred by the participants. Notes were taken and participants' discussions audio recorded.

Study materials

The researchers developed both the qualitative interview guide and the FGD guide with guidance from the World Health Organization and the Centers for Disease Control and Prevention documents (CDC, 2015; WHO, 2015) to cover a wide range of adolescent health risk behaviors such as alcohol use behavior, smoking, drug use, sexual risk behavior, behavior resulting in self- and unintentional harm, hygiene practices, physical activity, and poor dietary behaviors. An open-ended question concerning respondents' perceptions about each form of behavior was asked and followed up with additional probing on specific examples or context of behavior raised by the participants. In general, they were asked to explain the specific forms of risky behaviors which they perceive as commonly undertaken by adolescents aged 10–19 years in Kilifi. The ATOD-related questions that were discussed during the FGDs with the adolescents are presented in the appendix.

A socio-demographic data-capture sheet was also designed and used to collect respondents' demographic information like age, sex, residence, religious background, education status, and position held/affiliation.

Data analysis

Audio-recorded discussions and interviews were transcribed verbatim and translated into English by a professional team. After in-depth reading and reflection on the scripts, an initial coding from a priori and emergent issues was conducted by two of the authors (D.S. and P.N.M.). We utilized a thematic analytical approach (Braun and Clarke, 2006). Both inductive thematic and theoretical thematic data analysis were applied. An inductive approach was taken to understand participants' views surrounding the types of ATOD used, whereas a theoretical thematic analysis was the basis for categorizing the respondents' views on predisposing and protective factors for ATOD use. DS conducted the final stage of coding in NVivo 11 software (QSR International Ltd, Southport, UK). The codes were discussed and consensus was reached through a series of meetings, regarding the themes of the socio-ecological model (McLeroy et al., 1988). We categorized the data in four levels reflecting: (1) individual level (representing intrapersonal factors), (2) relationship level (interpersonal factors), (3) community level (entails both institutional and community factors), and (4) societal level (represents public policy factors). A case and theme–based charting was then done by D.S. The final analytical framework was reviewed and agreed upon by the research team.

Results

A total of 11 FGDs (eight sex disaggregated) were conducted among 85 young people, and 10 in-depth key informant interviews were held with four employees of CBOs, two KCH staff, three teachers responsible for guidance and counseling affairs, and one county government staff. On average, the FGDs lasted 1 hour and 45 minutes, whereas the key informant interviews lasted 1 hour. A breakdown by age, sex, and education level of the study participants is presented in Supplementary Table 1.

Types of alcohol consumed by adolescents in Kilifi

Supplementary Table 2 summarizes the characteristics of alcohol as consumed and described by adolescents in Kilifi, including: (1) the origin of production, (2) methods of production, (3) potency, and (4) type of alcoholic beverage (i.e. beer, wine, or spirit).

Many stakeholders and young people emphasized that the local brew was the most consumed alcoholic beverage.

Types of tobacco and other drugs consumed by adolescents in Kilifi

Young people and stakeholders discussed a variety of forms of tobacco and other drugs consumed by adolescents locally, which we classify following categorizations by the UNODC (2015). Overall, cannabis, followed by khat and cigarette smoking were the most commonly used substances (refer supplementary Table 3)

Factors influencing ATOD use among adolescents in Kilifi

The participants perceived various underlying factors for adolescents' ATOD use behavior. A majority of these acted at "community" and "individual" levels, followed by "relationship" level, while few issues discussed, seemed to operate at a "society" level (refer Supplementary Figure 1 for an overview). Some of these factors were perceived to have both predisposing and protective elements, as presented in the next sections.

Individual-level factors

Access to money or disposable income

Adolescents' access to disposable income was perceived by most of the stakeholders and young people to facilitate easier access and consumption of ATOD. This money is often acquired either from handouts by caretakers, or earned from employment especially riding motorbike "taxis" (often called "boda-bodas") and casual labor.

Fairly obviously, some secondary school students in this study described having limited or no access to money as a limiting factor for ATOD use behavior.

Sex

Male adolescents were perceived as more likely to initiate ATOD use at an earlier age, to use ATODs more frequently, and to do so in larger quantities than females. These views were held by a majority of the young people and stakeholders.

Taste and preference

ATODs seen as tastier or better flavored, more potent, and fashionable were described as more attractive, often leading to experimentation.

Stress management

Management of stress arising from academic pressure, problems like conflicts at home, low self-esteem, and relationship issues such as break-up with romantic partners were thought to predispose adolescents to alcohol use.

Other perceived benefits of ATOD use by adolescents which participants discussed and which could be related to the type of substance used included relaxation, better academic performance, sexual prowess, remedy for certain ailments like tooth ache and cough, helping them to keep awake for long hours, elevated social status, and being brave.

Freedom and idleness

A few students and key informants felt that adolescents are more likely to use ATODs during their free time, especially if they are idle. Others suggested that unemployment has led to adolescents having little to do and being more prone to irresponsible behavior.

Adolescence as a life stage and its associated psychosocial changes

All participants agreed that ATOD use is mostly initiated during adolescence. Moreover, a few young people and other participants attributed ATOD use behavior to psychosocial changes such as overestimating levels of self-maturity, attention seeking, and adventurousness that they associated with adolescence.

School attendance

Not attending school was perceived to predispose adolescents to ATOD use behavior, as

this generates large amounts of un-used time and idleness, without influence of adults such as teachers or their parents or caretakers. In this way, attending school was perceived to protect aginst ATOD use through ensuring rules and regulations as well as educational messages that may discourage adolescents from using these substances.

Low perception of risk

Only peri-urban primary school adolescents perceived adolescents to use ATOD either because of not being aware of their potential harmful consquences, or because they dismissed the risk of suffering harmful consquences.

Relationship-level factors

ATOD use by close family members

The use of ATOD by close family members such as parents and elder siblings was discussed by both young people and other participants as an important predisposing factor. Family members were thought to expose adolescents to ATOD use through: (1) sending their children to buy alcohol, cigarettes, marijuana, or khat on their behalf; (2) asking the child to join other family members in consuming ATODs; and (3) storing substances in places easy to access by adolescents:

As a result, ATOD use was seen as normalized at home, and some adolescents therefore will assume these practices as acceptable:

Also, participants recognized that within Kilifi County, as in much of Kenya, alcohol brewing and selling is an important livelihood. In this case, the "normalization" of alcohol use would be particularly likely. Adolescents from such families were thought to find it much easier to access alcohol and to more likely to perceive alcohol use as acceptable.

Peer influence

The influence of peer groups was seen as importantly predisposing to ATOD use. These influences were described in different ways including: adolescents tend to initiate ATOD use because they want to belong to certain groups; peers team-up and share costs to buy ATODs that they could not afford on their own; older peers are more likely to influence younger ones to use ATODs; and girls are often enticed by boys to use ATODs.

Household socio-economic status

As a predisposing factor, some students noted that home-based alcohol production and consumption characteristically occurred in areas with more poverty, and adolescents from these homes would inevitably have greater exposure to alcohol. Relatedly, this close proximity to premises brewing and selling alcohol would encourage adults in the family to send children or adolescents out to buy alcohol for their own use, particularly since—unlike licensed alcohol sellers that would be more typical sources in higher-income areas—there would be no restrictions on under-age sales.

At the same time, a few participants shared the view that adult behavior in higher economic status families could sometimes increase the risks of alcohol use in adolescents, when normalization of regular consumption of large amounts of alcohol was seen.

Parenting practices

Apart from the influence of parents' own alcohol use patterns, some participants felt that the amount of time spent together and quality of relationships between adolescents and their parents were likely to influence ATOD use, through the amount of guidance and supervision offered by parents or caretakers.

Community-level factors

Accessibility

Accessibility to ATODs was widely discussed by participants as acting as a potential driver for ATOD use. Proximity of supply and the cost of buying ATODs, also emerged as individual- and relationship-level factors. As a community-level factor, proximity of adolescents' homes to premises brewing and selling local alcohol was seen as a cultural and common feature of many neighborhoods.

From a structural perspective, the costs of ATODs were also influential; low-cost ATODs, such as local brews, cigarettes, and khat would be more accessible to adolescents.

In the same way, the high costs set for certain forms of ATOD like beers and spirits, cocaine, cigars, and heroin were seen as deterring adolescents from accessing and using these substances.

Three additional forms of accessibility were discussed as an influence on ATOD use in adolescents at a community level, including packaging, product options, and supplier networks. In relation to packaging of alcohol, the unit size sold and the appearance of the product were both seen as important. Selling small unit sizes of alcohol (such as sachets or small bottles) would increase accessibility to adolescents through the low cost involved in purchasing. For locally brewed alcohol, larger sizes sold, for example, in jerry cans might also be relatively affordable. In relation to packaging appearance, the materials, colors, and promotional images were thought to be particularly important for adolescents. In addition, the fact that such a large range of ATOD products were available was seen as facilitating their use, given the wide choice in terms of taste, preference, or affordability. Finally, the supplier networks were seen as a key aspect of accessibility. Some young people and stakeholders felt that drugs are in high circulation within the community owing to middlemen or peddlers, some of whom were also within school neighborhoods.

Social norms around alcohol use

Social norms for adolescent ATOD use also emerged as key in discussing a range of more structural or community-level factors, specifically concerning norms acting through cultural events and gendered expectations. At a higher level, social norms were in turn reinforced by long-standing patrilineal traditions within this community and the embedding of practices of alcohol production and sales as an important part of the local economy.

In this community, weddings and funerals are major social events, and alcohol consumption is of symbolic value during such gatherings. Therefore, such social events were perceived by many young people and stakeholders as occasions where ATOD are easily accessed and consumed in excess by adolescents in Kilifi. In addition, offering alcohol may be a common practice in welcoming guests to some homes in the absence of a special event.

A few adolescent participants felt that many selling alcohol in local outlets would act irresponsibly, for example, that they would sell to any buyer able to pay for their drinks, regardless of age.

Alcohol business is a recognized economic activity

Some young people felt that much as alcohol has its disadvantages, the reality is that it cannot be discouraged at the Kenyan coast where the community recognizes it as a source of livelihood and major economic activity of the residents. This being the case, they felt that alcohol will always be accessible to adolescents in this community.

Within local outlets selling alcohol, it would generally be inappropriate for girls or women to be part of the group buying and drinking alcohol. For this reason, boys and young men were seen to be at greatest risk of excess ATOD use, since less judgment would be placed on alcohol consumption by a male compared to a female adolescent.

Existence of preventive and risk reduction services

The presence of some school and community-based programs that address youth-related problems was perceived as a protective factor against ATOD use behavior.

Society-level factors

Laws and regulatory framework on ATOD use

Some stakeholders and young people suggested that protective laws and policies in Kenya exist, for example, prohibition of the use of illicit drugs, restriction of opening times and service

hours for drinking establishments, restriction of under-age alcohol consumption, and regulation of the alcoholic products marketed. Although these laws were thought to protect adolescents from accessing and consuming ATODs, the participants felt that there are serious weaknesses in the implementation of these laws.

Corruption

Some young people felt that corruption was a significant barrier toward efforts to mitigate ATOD use. They felt that drug peddlers connived with certain authorities in order to conduct their illegal business.

Aggressive marketing and social media influence

A few stakeholders and adolescents discussed that advertisements for products such as cigarettes as well as social media content from videos and movies portrays ATOD use as appealing, thus sending the wrong impression to adolescents.

Discussion

Young people and stakeholders generally recognized that the use of various ATODs is common among adolescents in Kilifi and attributed this to an interplay of a range of underlying factors across ecological domains. The classifications of consumed alcohol suggest that both informal and formally produced alcohol consumption is prevalent. However, consumption of informal alcoholic beverages takes precedence among adolescents in Kilifi. This is of major concern, as informally produced alcohol is often less regulated and cheap, which results in heavy consumption and easier access by minors (WHO, 2014). Also, informally produced alcohol may contain potentially toxic compounds (Lachenmeier et al., 2011; WHO, 2014). Therefore the need to address informal alcohol production in the community and its access for adolescents is crucial.

Furthermore, the use of tobacco, cannabis, and Khat among adolescents in Kilifi is of major concern. Early initiation of tobacco smoking (Peltzer, 2011), cannabis use and Khat chewing (NACADA, 2012; UNODC, 2015) are significant public health concerns in SSA and an important agenda for ATOD use prevention and risk reduction. The fact that tobacco and khat are licit substances (NACADA, 2012) potentially presents challenges for mitigating use among young people in Kenya. Efforts to limit access to these products by minors should be strengthened.

Our findings also show that broader community factors play a significant role in predisposing adolescents to ATOD use. Noteworthy among these factors is the economic benefit associated with the production and sale of ATOD products like alcohol; and the numerous ATOD access possibilities within the home or school environments especially through peer and social supply networks. This is also seen as a consequence of poverty within the Kilifi County, similar to findings from other studies showing an association between high ATOD use behavior of Kenyan youths of households with poor socio-economic status (Mugisha et al., 2003; NACADA, 2012; Otieno and Ofulla, 2009). This therefore emphasizes the urgent need for program and policy-based approaches to poverty reduction in this setting. In addition, social supply networks were seen as facilitators for increased access and use of ATODs among adolescents (Coomber and Turnbull, 2007). Therefore, authorities need to understand carefully the ATOD social supply network dynamics so as to appropriately craft penalties and guidelines that differentiate social supply from organized drug criminal networks (Coomber and Turnbull, 2007).

Furthermore, our findings showed the important role that cultural and social norms play toward shaping ATOD use behavior among adolescents. Alcohol is used frequently during social events like funerals and weddings that are highly attended by youths. Also, the Mijikenda patrilineal culture was thought to condone ATOD use among the young males. Other studies have also shown that traditional and gender norms can underlie ATOD use

behavior of adolescents. Therefore, programs addressing ATOD use behavior of adolescents must pay attention to the potential influence of such norms (Castro et al., 2009).

Our findings also indicated that adolescents' coping mechanisms to life stressors and daily needs may involve ATOD use, presuming that this has benefits for stress relief, treatment of ailments, relaxation, and work/academic productivity. Similar findings have been documented among adolescents in Kenya and other settings (Leonard et al., 2014; Otieno and Ofulla, 2009; Roditis and Halpern-Felsher, 2015). This suggests an urgent need to address adolescents' norms and beliefs surrounding ATOD use and improve their awareness of risks associated with it.

Findings from this study highlight that relationship-level factors such as ATOD use of close family members play a central role in the initiation and reinforcement of it among adolescents, regardless their household socio-economic status. Besides, peer relationship plays a key role in ATOD accessibility and consumption. Similarly, other studies reported parenting practices and family members' ATOD use behavior as a predictor of adolescents' attitudes and consumption of ATOD (Pape et al., 2015; Van der Vorst et al., 2006). Indeed, this underscores the relevance of simultaneously intervening family risk factors and predisposing factors for ATOD use that arise from peer relationships.

From a societal-level perspective, although Kenyan laws prohibiting and regulating ATOD use exist (National Council for Law Reporting (NCLR), 2012), various ATOD use problems were still raised as prevalent in Kilifi. This potentially suggests underlying bottlenecks such as complacency and corruption, unethical approaches to ATOD prevention, ethical dilemmas of risk reduction and treatment, and weak regulatory systems which are also documented in other parts of SSA (Derrick and Clark, 2013; UNODC, 2015). Strengthening capacities of law enforcement organs, improving public awareness of such laws and empowering communities to demand for accountability from their leaders are potential solutions to these bottlenecks.

From a protective factors' perspective, our findings show importance of a lack of disposable income, high costs of certain ATOD, positive school environment that mitigates ATOD use, better household socio-economic status, policy and regulations, and the existence of positive youth engagement programs or activities. These protective factors belong to various ecological domains within the socio-ecological model which emphasizes the need for a "systems approach" while exploring opportunities and strengths for improving effectiveness of ATOD-related interventions. Second, interventions need to explore existing local resources, empower and build capacity of local communities so that the solutions to prevailing ATOD problems are community centered.

Potentially beneficial interventions to address ATOD use of adolescents in Kilifi could be an intervention program to enhance social competencies of adolescents in order to teach them drug resistance skills, self-management (e.g. stress management), and social skills. Enhancement of social competencies has been found effective in prevention throughout adolescence (Botvin, 2000). Second, a behavioral family intervention that focused on strengthening good parenting skills such as parental monitoring and supervision, parent-to-child communication, problem-solving, and negotiation may be helpful within the context of Kilifi. This behavioral family intervention may also need to incorporate income-generating activities or financial literacy components, since poverty was a strong risk factor that overlapped with other family risk factors. Evidence shows that behavioral family interventions address various risk factors for ATOD use and overall improve quality of life in families (Sanders, 2000). Third and more broadly, an intervention focused on social mobilization and advocacy so as to sustain policy implementation, and collective responsibility toward ATOD use prevention in Kilifi is necessary.

Strengths and weaknesses

Among the strengths of this study, our participants were a diverse group that involved primary

and secondary school adolescents, those who had dropped out of school and adolescents living with HIV. Both rural and peri-urban settings of Kilifi County were represented. Besides, the adolescents' opinions were contrasted with those from key informants who were adults who worked extensively with adolescents in Kilifi County.

Nonetheless, our findings need to be interpreted cautiously. This study is informed by young people's opinions and views about their peers and thus some of their views may have been either an underestimate or exaggeration of the reality. However, adolescents' opinions were corroborated by those from adults who extensively work with young people in Kilifi.

Conclusion

ATOD use among adolescents in Kilifi on the Kenyan coast is well known among the inhabitants. A multi-faceted and community-centered approach is needed to counter ATOD use.

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ORCID iD

Derrick Ssewanyana https://orcid.org/0000-0002-7848-7643

Supplemental Material

Supplementary material for this article is available online.

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Appendix

Examples of information from FGDs and informant interviews

The most common alcohol here in Kilifi is the mnazi. The mnazi is very common in almost every home. In the rural and even some parts of Kilifi town, most people take mnazi (KI, medical social worker, male, 27 years).

You'll always find the youths drinking mnazi and *chang'aa* (Group 5, male, peri-urban primary school).

I heard of a school where there was a boy. His parents give him money for lunch but he does not use that money to eat his lunch but he takes the money, buys alcohol and comes to sell to his fellow pupils in class (Group 6, female, peri-urban primary school).

Probably, I can say, they [adolescents] are not influenced to drink strongly because it is expensive for them to buy (Group 5, male, peri-urban primary school).

Myself, I would say the drinking of alcohol among boys is in large amounts. I have seen so many have indulged in drinking alcohol (Group 4, female, rural secondary school).

You find a person with lots of friends smoking this bhang and more of them are young men than young ladies (Group 4, female, rural secondary school).

Somebody may have been left by the girlfriend or boyfriend so she or he will have stress. So she or he will go and buy that bhang to smoke in order to relieve the stress (Group 9, adolescent living with HIV).

From 16 and 17, they use the wines and spirit because they think they're grown ups (Group 5, male, peri-urban primary school).

But those who go to school, they rarely drink because may be of the restrictions from the school (KI, CBO employee, male, 27 years).

Maybe the parent will drink and the bottles (meaning bottles of alcohol) which are remaining, he will keep them in the fridge. Anyone can open it because it is at home (Group 7, male, peri-urban secondary school).

They are just sent to go and buy the alcohol. When they are sent, and because they see that is something the parents can send them for and drink it, then they see it as something which is not bad (Group 11, female, young adult).

In the rich families you might find a house which has everything in it, even a bar. If there are children, they can start using the alcohol (Group 5, male, peri-urban primary school).

They start (ATOD use) from the age of 15, some can even start as early as 10 depending on how they are brought up at home: how strict the parents are, knowing where your child is all the time. In fact some of them do not even know who the friends of their children are (KI, Peer educator, female, 28 years).

Because every place you go you will find *mangwen* (a local name for alcohol drinking establishment) … so that's the first thing that makes people to start drinking alcohol when they are still very young (Group 10, adolescent who had dropped out of school).

In a village you will find at least 2 drug traffickers for bhang and even near the school, you can find at least 3 or 4 people selling bhang. If they sell around the school, that means they are targeting students (KI, secondary school teacher, female, 51 years).

Once we engage these youth in extracurricular activities, it keeps them off these behaviors of thinking, "I need to go take bhang, I need to go take alcohol …" …their minds will be focused on these physical activities (KI, clinician, female, 30).

So politicians contribute to things like these. I mean the chief and sub-chief leaders. He may know very well that within his area of jurisdiction there is a place where bhang is sold or a place where a particular thing (referring to other drugs) is sold, but he will not be bothered despite his children also being in the locality (Group 11, male, young adult).

I know there are some people in power, they take bhang because they have power, they'll distribute to the sellers who they know. Then the seller will take the bhang to the high schools and villages (Group 5, male, peri-urban primary school).

ATOD use–related questions used in the focus group discussions with adolescents

- **Greet** the participants
- **Introduce** yourself
- Give **background information** about the study. Carefully read through the informed consent form and answer any questions. Give **information about the interview**
- Assure that the participants that they **do not have to participate** if he or she does not want to
- Ask for **approval** to participate in the interview
- Tell the participants that **he or she can stop** the interview any time they wish
- Assure **confidentiality**
- Make sure the participants know what the tape-recording procedure is. Ask for **approval**
- Ask if the participant has any **questions** before the interview
- If the participant agrees to take part please ensure they sign the consent form
- If the participant agrees to take part please ensure they sign two copies of the consent form, give them a copy and keep one copy for our records
- Check **the tape-recording equipment**
- Start the interview
- At the start of the interview, do NOT record *respondents name or any identifier*; just indicate ***the date, time, gender age and educational level of the person being interviewed. Finally, record where the interview was taking place.***

1. Sometimes adolescents engage in behavior or habits likely to harm their health. In your opinion, which are the examples of such behaviors that adolescents from Kilifi aged 10 – 19 years engage in?

(For each behavior probe accordingly so that the discussion follows naturally)

I would like us now to discuss in more detail. Drawing from your experiences and opinions talk about the following habits/behavior in detail with a focus on young people of your age here in Kilifi.

Alcohol use behavior

i) Alcohol use is another form of behavior that young people may engage in. Here in Kilifi, which are the forms of alcohol use behaviors that you think pose risk to the health and life of adolescents?

Probes:

- ***Mention the local names of the types of alcohol consumed by young people in Kilifi***
- Can you share some examples (but do not mention names of persons involved)?
- Who in particular is likely to engage in these forms of behavior (in terms of gender/age or other socio-demographic characteristics)?
- What do you think makes some adolescents here in Kilifi to drink alcohol?

Notes: (Moderator think of: onset, patterns (like heavy drinking, frequent), where it is accessed), some local names

Smoking behavior

ii) Smoking is another type of behavior that young people engage in.

Think about all forms of smoking behavior and describe which of these adolescents in Kilifi may engage in?

Probes:

- ***Mention the local names of what is commonly smoked.***
- Who is particularly likely to do this (in terms of gender/age or other socio-demographic characteristics)?
- What do you think makes some adolescents here in Kilifi to engage in smoking behavior?

Notes: (Moderator think of: age of onset, local names/slang cigarette use, can they identify brand names, forms of smoking such as Sisha, pipes etc)

Drug use behavior

iii) Drug use is one of the behaviors reported among some young people around Kenya and also here in Kilifi. What do you think are some of these drugs used here in Kilifi by adolescents? Mention the local names of these drugs Kilifi

Probes:

- *How are these drugs used?* Can you share some examples (but do not mention names of persons involved)?
- Who in particular is likely to engage in these forms of behavior (in terms of gender/age or other socio-demographic characteristics)?
- What are some of the reasons why an adolescent here in Kilifi would engage in drug use behavior?

Notes: (Moderator think of: local names, routes (like injecting, sniffing, smoking, chewing), where they are accessed)

2. Are any other behavior and activities adolescents in Kilifi participate in that are likely to harm their health and that you feel we have not addressed in our discussion? If so, tell us more about these behavior/habits.