Assessing the effectiveness of alcohol and drug abuse awareness campaigns among University students in Kenya: A quasi-experimental study

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Abstract

Substance abuse amongst university students is a major public health concern. There is paucity of literature on the effectiveness of the existing interventions aimed at reducing substance abuse in middle and low income countries. This study was done to determine the effectiveness of alcohol and drug abuse awareness campaigns on behaviour change among first year undergraduate students. This was a quasi-experimental study. Baseline survey involving 473 first year undergraduate students from two public universities in the coastal region of Kenya was done. The Universities were then allocated to either experimental or control group. Intervention of awareness campaigns were carried out in one of the University for a period of one year after which an end-line surveys involving 387 students was done. Data was collected using self-administered questionnaires. The study showed high prevalence of substance use with alcohol being the most commonly used substance at both baseline and end-line surveys. Despite the intervention being in one University, the prevalence of drug use increased from 38.9% to 48.9% in the control University and 31.3 % to 55.2% in the intervention University. The problem of substance abuse is enormous among university students. Information awareness campaigns against substance abuse alone are not effective in reducing uptake of substance use among university students.There is need to devise more effective strategies to control substance abuse.

Keywords: Substance abuse, awareness campaigns, University students, Kenya

Introduction

Substance abuse among college students is a problem of public health importance because the use of drugs at this age predisposes one to drug dependence in adult life [1,2]. Research has shown that experimenting with illegal drugs is common among students who appear to overlook the negative consequences drug and alcohol use may have [3]. Evidence also show that first year undergraduate students are more vulnerable to excessive alcohol consumption due to their limited experience with alcohol and the freedom from the parental restraint for the first time [4].

Awareness campaigns through the media such as television, radios, billboards, posters, leaflets and print media, such as magazines and newspapers have been used widely in an attempt to change various health behaviours in mass populations [5]. Public health campaigns have markedly focused on tobacco use and heart disease prevention, safe sex practices in relation to HIV infection as well as alcohol and illicit drug use, among many other health-related issues. This is because they have potential to modify the knowledge, attitude and behaviour of a large proportion of the population [6]. Evidence show that mass media campaigns have had an, impact on smoking behaviour, diet and exercise in relation to lifestyle diseases [5]. However others have shown that the effect of awareness campaigns on behaviour change are minimal since information seems to have more impact on knowledge and beliefs than on actual behaviour [7]. Little research is available on the effects of mass media campaigns in changing behaviours related to drug use and much of the evidence has been generated from studies in the developed countries [5]. Research has shown that adequate exposure to media campaigns is effective in reducing population tobacco use [5, 8]. However, there is a paucity of literature on the effectiveness of interventions aimed at reducing alcohol and drug abuse in middle and low-income countries [5,9].

Awareness campaigns against alcohol and substance abuse are meant to impact drug education to targeted population with the hope of helping to modifying the attitude and behaviour. According to (Abraham et al. 1998) the key cognitive construct of individual motivation and behaviour include social influence, self-representation, the individual's attitude and interventions. Intervention is seen as an important construct because it facilitates the effects of the other variables of cognitive construct of individual behaviour [10].

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Behaviour change programmes seek to promote safer individual behaviour as well as changes in social norms that generate healthy behaviour such as avoiding substance abuse and adopting safe sex practices. Awareness campaigns are based on the communication-behaviour change concept that aims to move a target population from initial awareness of interest in a problem to the adoption and maintenance of advocated attitudes or behaviours [11].

Palmgreen et al. (1993) alluded to important principles in designing media awareness campaigns against drug abuse. According to them for a campaign to be effective it is important to design one that will achieve extensive, frequent, and prolonged exposure to a message. One should also ensure audience segmentation strategies to target messages to at-risk audiences [12]. For this reason the drug awareness campaign in this study were designed to last for one academic year and were targeting first year undergraduate students, one of the most at risk group to initiation into drug use.

Materyal and Methods

Study setting: This study was carried out at Pwani University and the Technical University of Mombasa. The two are public Universities in the coastal region of Kenya.

Study design: This was a quasi-experimental study.

Data collection and analysis: Baseline survey involving 473 first year undergraduate students from two universities was done. Self-administered questionnaire were used to collect data on the proportion of alcohol and drug use among first year university students who had just joined the University. Data collected included social demographic characteristics, information on the use of various drugs including alcohol, tobacco, stimulants, marijuana, cocaine and heroin, among others. The pre-tested questionnaire was administered to students willing to participate in the study by the trained research assistants after semi-mandatory activities such as exams or at the end of a class. The students were allowed to complete the questionnaire and return it to the research assistant immediately to reduce the non-response rate.

After the baseline survey the two institutions were allocated to either intervention or control group. Pwani University was the control University while Technical University of Mombasa (TUM) was the intervention University. In the intervention University awareness campaigns were carried out through talks and use of information pamphlets for a period of two semesters. The alcohol and drug abuse awareness were meant to stress on harm reduction, moderations skills and correction of misperceptions regarding commonly abused substances. Talks were also organized once in a semester in the intervention University. At the end of the academic year, end line survey involving 387 first year undergraduate students was done to evaluate the effectiveness of the campaigns on behaviour change by comparing prevalence of drug use in the intervention and the control University.

Data analysis was done using Stata software version 13. Univariate categorical variables were analysed in frequency and percentages and presented in tables and graph. The univariate continuous variables were analysed using measures of central tendency and dispersion. Proportions of students using various drugs were reported and compared using confidence intervals.

Ethical consideration: The research proposal was approved by Moi University School of medicine / Moi Teaching and Referral Hospital Institutional Research and Ethics Committee (IREC), formal Approval Number: IREC 000955. Permission to carry out research was also sought from the National Commission of Science and Technology, permit Number: NACOSTI/P/14/0572/2041 and the university administration of both universities. Participation in the study was voluntary, and written informed consent was obtained from each participant.

Results

Social-Demographic characteristics of the respondents.
The baseline survey involved 473 first year undergraduate students in their first one to two months in the university. The majority of the respondents 283(58.9%) were male. The respondent's age ranged from 17-30 years with the majority 387(82%) being in the age category 17- 20 years. Only seven students which was nearly 2% of the respondents were above 26 years of age. The mean age was 19.6 (SD$\pm$1.79 years). Concerning religious affiliation, majority 433(91.5%) of the students reported to be Christians with 298(63%) being Protestants and 135(28.5%) Catholics and only 36(8%) were Muslims. Other characteristics of the respondents were as shown in Table 1.

The end-line survey involved 387 first year undergraduate students at the end of their first year of study. Just like in the baseline the majority 218(56.3%) were male and the respondent's age ranged from 17-30yrs with the majority 229(59.2%) being in the age category 17- 20 years. Only 11 students which was nearly 3% of the respondents were aged 26 years and above. Concerning religious affiliation, majority of the students 320(82.7%) were Christians while only about 56(14%) were Muslims. Other characteristics of the respondents are as shown in Table 1.

Life time and current use of substances at baseline and end-line
At baseline the lifetime and current use of different substances was investigated and it was observed that overall approximately 169 (35.7 %) at baseline and 202 (52.2%) at end line survey had used one of the substances at least once in their lifetime. The lifetime prevalence use

of drugs was 63 (31.3%) and 111 (55.2%) in Technical University of Mombasa at baseline and end line survey respectively. On the other hand, in Pwani University approximately 106 (38.9%), 91 (48.8%) had used drugs at baseline and end line survey respectively. The most commonly used substances were alcohol, cigarettes, khat (miraa) and Bhang. The prevalence of each substance use in each university was as shown in table 2.

At the end line survey the commonly used substances were similar to those in the baseline but the prevalence of consumption had increased. Approximately 87(46.8%), 74(36.8) respondents reported having used alcohol at Technical University of Mombasa and Pwani respectively. Similarly 17 (9.1%), 20 (9.9%) respondents had used cigarettes at Pwani and Technical University of Mombasa respectively. The lifetime and current prevalence use of other substances was as shown in table 2.

**Table 1**. Socio-demographic characteristics of students at baseline and end line survey.

Variables	Baseline			End line		
	Control grp N=272 n(%)	Experimental grp N=201 n(%)	Total N=473 n(%)	Control grp N=272 n(%)	Experimental grp N=201 n(%)	Total N=387 n(%)
Gender						
Male	167(61.4)	116(57.7)	283(59.8)	103(55.4)	115(57.2)	218(56.3)
Female	105(38.6)	85(42.3)	190(40.2)	83(44.6)	86(42.8)	169(43.7)
Age group						
17- 20 years	213(78.3)	174(86.6)	387(81.8)	135(72.6)	94(46.8)	229(59.2)
21-25 years	55(20.2)	24(11.9)	79(16.7)	49(26.3)	98(48.7)	147(38.0)
26-30 years	4(1.5)	3(1.5)	7(1.5)	2(1.1)	9(4.5)	11(2.8)
Religion						
Protestants	167(61.4)	131(65.2)	298(63)	97(52.1)	91(45.3)	188(48.6)
Catholic	81(29.8)	54(26.9)	135(28.5)	66(35.5)	66(32.8)	132(34.1)
Muslim	20(7.3)	16(7.9)	36(7.6)	19(10.2)	37(18.4)	56(14.5)
No religion	4(1.5)	0(0)	4(0.9)	4(2.2)	7(3.5)	11(2.8)
Frequency of church/mosque						
Every Sunday/Saturday/Friday	188(69.1)	127(63.2)	315(66.6)	108(58.0)	108(53.7)	216(55.8)
Sometimes	34(12.5)	39(19.4)	73(15.4)	39(21)	31(15.4)	70(18.1)
Occasionally	25(9.2)	31(15.4)	56(11.8)	26(14)	38(18.9)	64(16.5)
Rarely	25(9.2)	4(2)	29(6.1)	13(7)	24(12)	37(9.6)
Source of income						
Sponsorship	9(3.3)	8(4)	17(3.6)	14(7.5)	15(7.5)	29(7.5)
Parents/well wishers	72(26.5)	60(29.8)	132(27.9)	52(28)	37(18.4)	89(23.0)
Higher Education Loan	186(68.4)	128(63.7)	314(66.4)	120(64.5)	144(71.6)	264(68.2)
Others	5(1.8)	5(2.5)	10(2.1)	0(0)	5(2.5)	5(1.3)
Monthly allowance						
1,000-5,000	210(77.2)	145(72.1)	355(75.1)	145(78)	116(57.7)	261(67.4)
6,000-10,000	50(18.4)	45(22.4)	95(20.1	30(16)	35(17.4)	65(16.8)
Above 10,000	12(4.4)	11(5.5)	23(4.9)	11(6)	50(24.9)	61(15.8)
Current residence						
University hostels	178(65.4)	131(65.2)	309(65.3)	118(63.4)	76(37.8)	194(50.1)
Rented room	71(26.1)	54(26.9)	125(26.4)	58(31.2)	78(38.8)	136(35.1)
Parent/relative house	23(8.4)	16(7.9)	39(8.3)	10(5.4)	47(23.4)	57(14.8)
Area of the county where High school was located						
Urban	108(39.7)	66(32.8)	174(36.8)	90(48.4)	91(45.3)	179 (46.3)
Rural	164(60.3)	135(67.2)	)(63.2)	96(51.6)	110(54.7)	208(53.7)
Area of county during high school						
Urban	105(38.6)	86(42.8)	191(40.4)	85(45.7)	96(47.7)	181(46.8)
Rural	167(61.4)	115(57.2)	282(59.6)	101(54.3)	105(52.3)	206(53.2)

Table 2. Lifetime and current use of commonly abused drugs at baseline and endline survey

Substances	Lifetime use n (%)				Current use n (%)			
	Baseline		End line		Baseline		End line	
	Pwani N=272	TUM N=201	Pwani N=186	TUM N=201	Pwani N=272	TUM N=201	Pwani N=186	TUM N=201
Alcohol	94(34.6)	54(26.8)	87(46.8)	110(54.7)	59(21.7)	29(14.4)	87(46.8)	74(36.8)
Cigarettes	29(10.6)	14(7)	20((10.8)	20(9.9)	15(5.5)	10(5)	4(2.2)	15(7.5)
Khat (miraa)	14(5.1)	16(7.9)	12(6.4)	19(9.4)	12(4.4)	12(5.9)	9(4.8)	13(6.5)
Marijuana	12(4.4)	12(5.9)	10(5.4)	11(5.5)	10(3.7)	9(4.5)	5(2.7)	12(5.9)
Tranquilizer	6(2.2)	5(2.5)	6(3.2)	6(3)	5(1.8)	2(1)	2(1.1)	1(.5)
Cocaine	5(1.8)	2(1)	2(1.1)	2(1.1)	2(.7)	2(1)	1(.5)	2(1)
Heroin	6(2.2)	3(1.5	2(1.1)	4(2)	6(2.2)	1(.5)	2(1.1)	2(1)
Other Narcotics	4(1.8	2(.5)	7(3.8)	5(2.5)	4(2.8)	2(.5)	6(3.2)	1(0.5)
Inhalants	6(2.2)	4(2.2)	4(2.2)	4(2)	5(1.8)	2(1)	2(1)	1(0.5)

Substance use before and after awareness campaigns.

In order to evaluate the effect of awareness campaigns against alcohol and substance abuse the prevalence of substance use at baseline and end line was evaluated. There was a significant increase in the prevalence of alcohol use. Similarly the proportion of students using other substances increased slightly at the end line survey compared to the baseline survey except for other narcotics and inhalants as shown in Fig 1.
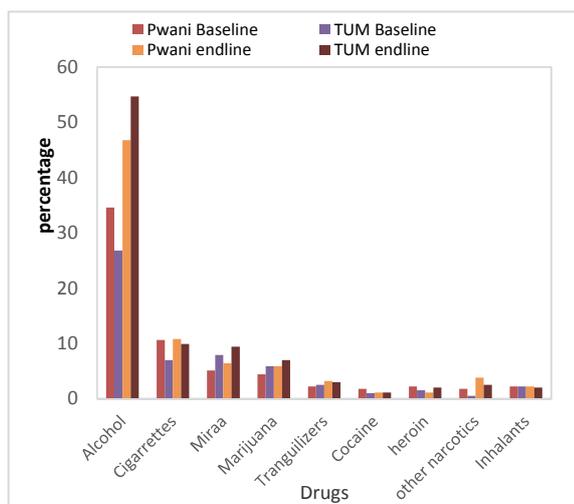
Figure 1. Prevalence of use of different substances at baseline and end line survey

Drug use before and after the awareness campaigns.

The prevalence of drug use was determine to evaluate the effectiveness of the awareness campaigns among university students. Despite the intervention being in one university, the prevalence of drug use increased notably in both universities. The prevalence increased from 38.9% to 48.9% in Pwani University and 31.3 % to 55.2% in Technical University of Mombasa (Table 3).

The difference in the prevalence at baseline and end line for both universities was determined using Stata test for difference in proportions. The test showed a true difference

of 10.02% (95 % CI 0.007- 0.19; p=0.03) in the control University and 23.8% (95% CI 0.14-0.33; p= 0.000) in the intervention University.

The effect of the awareness campaigns (Intervention) were further tested using the odds ratio. The findings showed no significant difference as result of the intervention the 95% CI at baseline (OR = 0.71; 95% CI: 0.47-1.06; P= 0.08) was overlapping with that of the end line (OR = 1.29; 95% CI: 0.84-1.96; p=0.22) as shown below (Table 3a and 3b). This implies the intervention had no effect.

Table 3. Prevalence of drug use at baseline and end line survey

	Base line survey		*End line survey*	
University	N	Used drugs n (%)	N	Used drugs n (%)
Pwani University (control)	272	106(38.9)	186	91(48.9)
Technical University of Mombasa (experimental)	201	63(31.3)	201	111(55.2)
Total	473	169(35.7)	387	202(52.2)

Table 3a. Cross tabulation of drug use and the universities at baseline

	Drug use		Total
University	YES	NO	
TUM	63	138	201
PWANI	106	166	272
Total	169	304	473

OR = 0.71; 95% CI: 0.47-1.06; P= 0.08

Table 3b. Cross tabulation of drug use and the universities at endline

	Drug use		Total
University	YES	NO	
TUM (With intervention)	111	90	201
PWANI (No Intervention)	91	95	186
Total	202	185	387

OR = 1.29; 95% CI: 0.84-1.96; p=0.22

Discussion

This the first study to assess the effectiveness of drug abuse awareness campaigns in Kenya. Awareness campaigns to prevent drug abuse are a widespread intervention that has been used world over. The aim of the campaigns is usually to reduce use and raise awareness of

the problem of drug abuse [13]. However, concerning alcohol use our study showed contrary findings. There were increased rates of drug use in both control and experimental universities. However, the findings are in agreement with other studies done in other parts of the world. Studies have shown that apart from mass media campaigns aimed at reducing drink driving, campaigns to lessen alcohol intake mostly targeting young people have had little success [5]. A study done in the USA examining relationship between adolescent exposure to antidrug advertisement and drug use showed similar findings. The study found no association between the antidrug advertisements and rates of past-month alcohol use (AOR=1.00; 95% CI=0.84 -1.19) [14]. Similarly, a meta-analysis of 5 randomized control trials (RCTs) that evaluated the effectiveness of mass media campaigns against drugs [15-19] showed no effect of the intervention. Ferri and colleagues found that pooled results of the five RCTs (N = 5470) showed no effect of media campaign intervention (standardized mean difference (SMD) -0.02; 95% CI -0.15 to 0.12) [13] .

Other studies that have evaluated the effectiveness of multimedia campaigns intervention against substance use show contrasting findings, from weakly effective to clearly harmful where the results favour the control group [20, 21]. In their study Hornik and Jacobsohn (2006) found that exposure to awareness campaigns was associated with less intention to avoid marijuana use (y= -0.07; 95% CI -0.13 to -0.01). The study found that there was a positive relationship between awareness campaigns and the intent to use cannabis with an increase in marijuana use of 20% among those more exposed to the campaign compared to those less exposed [20].

This study had a few limitations. First, the study relied on students self-report with no confirmation by any objective measures. However considerable evidence exists, that self-report questions on substance abuse result in largely reliable and valid data [22-24]. Other researchers have shown there is a likelihood of underreporting information on alcohol and drug abuse by respondents who want to appear to conform socially with the rest of the society [25, 26]. Conversely, other research shows that studies that have explored this issue of underreporting information on drug abuse, have not presented convincing supportive evidence of this tendency [27]. Further, research has shown there is agreement between self-report and assay results used in studying alcohol and drug use [28].

Secondly, the data for evaluating the effect of awareness campaigns were derived from repeated cross sections of first year undergraduate and did not follow the same students over time (i.e., we did not have panel data). This was due to the challenge of having to maintain anonymity during the data collection. Therefore, the study did not directly observe how the outcomes changed among a fixed group of individuals when exposed to campus environment with or without awareness campaigns. However, the

samples were drawn from the cohort of first-years who had relatively similar social demographic characteristics as seen in the baseline and the end line survey.

Despite these limitations, the study has important implications for the design of interventions against alcohol and drug abuse. The potential effects of the anti-drug use campaigns are often overshadowed by the unrestricted availability of the substances and peer influence. For awareness campaigns to impact on students behaviour, all-inclusive prevention approaches that combine traditional education programs with strategies aimed at modifying the economic, physical and legal environments on campuses and in surrounding communities are recommended [9]. This approaches recognizes that student behaviour is influenced at multiple levels that include personal, peer, institutional, community, and public policy levels.

Information awareness campaigns, therefore, are not the best interventions against alcohol and drug abuse among the young people. Studies have shown that approaches that attempt to bring about change in substance use behaviour through information alone are likely to have limited or no success [7,9]. Studies have revealed that effective intervention programs are those with multiple approaches. Interventions with behavioural, environmental, policy and organizational changes in addition to information on substance use are likely to be more effective [9]. A good prevention program should not only provide youths with the necessary knowledge base and skills with which to resist risky behaviour but also skills necessary to engage in safe healthy social behaviours. For an intervention to be effective it should target risk factors and promote protective factors simultaneously [29]. According to Riggs intervention that seeks to strengthen academic requirements, restrict alcohol promotions and advertising on campus, providing different alcohol-free recreational activities would be effective in tackling substance abuse among students [30]. Bukoski, (2006) recommends prevention programs with integrative methods that involve students with activities such as peer discussion groups as opposed to didactic teaching techniques. According to him, for a program to be effective "it should integrate skills which enable students resist drugs when offered, strengthen personal commitment against drug use and increase the social competency of assertiveness and self-efficacy" [29]. Similarly, a meta- analysis of peer involvement in addressing the challenge of reducing alcohol, tobacco, and other drug use among the youth showed that interactive peer- led prevention programs are more effective than non-interactive deductive programs led by a teacher or researchers [31].

Conclusion and Recommendations

Information awareness campaigns alone were not effective in reducing the prevalence of substance use among university students. Information on the negative effects of

drugs is not enough to dissuade students not to use drugs. There is need to devise more effective intervention strategies against substance abuse.

Interactive peer-led drug prevention programs among university students are recommended. Programme that integrates skills which enable students to resist drugs when offered, strengthen personal commitment against drug use and increase the social competency of assertiveness and self-efficacy should be supported.

Finally, more innovative approaches are needed to reduce the tendencies by university students to use drugs by reducing the accessibility of drugs to students. Laws on the proximity of bars to the learning institutions should be implemented with the seriousness they deserve. Higher Education Loans Boards and other student's financiers including parents should consider reducing the monies given to the student in cash form and instead adopt e-wallets where students get pre- paid electronic cards that can only pay for fees, stationeries, books and food stuff. This will reduce the number of students who utilize the money meant for fees and their up keep to overindulge in alcohol and other drugs.

Authors' contributions
GM obtained funding for the study. GM, PW, CN, HN contributed to the study design. GM participated in data collection, data analysis and drafted the manuscript. PW helped in the analysis and interpretation of the results. All authors critically reviewed the manuscript, revised and approved the final version of the manuscript.

Competing interests
The authors declare that they have no competing interests.

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