Prevalence and Predictors of Multiple Substance Use Disorders in Kenya

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Abstract

Substance use disorders (SUD) is a worldwide public health problem which has massive direct and indirect costs to the individual and society. Multiple substance use disorders, arising from multiple drug combinations, whether serial or simultaneous, pose a serious challenge for drug treatment outcomes compared to a single substance addiction because each substance produces a unique array of physical and emotional effects. This study was undertaken with an aim of determining the prevalence and predictors of multiple substance use disorders in Kenya. It adopted a cross-sectional study design where both quantitative and qualitative data were collected between November and December 2016, covering aged 15 - 65 years. The respondents were identified through stratified multi-stage random sampling. Data on substance use disorders was captured using the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM – 5). According to the findings, the prevalence of past year multiple substance use disorders among respondents was 5.3%. The most commonly reported multiple substance use disorders pattern was alcohol and tobacco (2.5%) followed by tobacco and khat (0.8%); alcohol and khat (0.7%); alcohol, tobacco and khat (0.5%); and alcohol, tobacco khat and bhang (0.3%). The prevalence of past year non-multiple substance use disorders was 10.0%. Findings showed that residing in an urban setting and being male were predictors of multiple substance use disorders. This means that management of multiple substance abuse will benefit greatly from targeted approaches that address risk factors associated with alcohol abuse among male residents of urban areas.

Key words: *Multiple substance use disorders, patterns and predictors.*

Introduction

Substance use disorders (SUD) is a worldwide public health problem which has massive direct and indirect costs to the individual and society (UNODC, 2012; Koob and Moal, 2006). Problematic alcohol and drug use has a negative influence on the affected individuals, their families and society (Toumbourou, 2007). Data from UNODC shows that among the estimated 271 million past-year users of any drug, some 35.0 million or almost 13 per cent are estimated to suffer from drug use disorders (UNODC, 2019). WHO (2018) also indicates that 3 million deaths every year result from harmful use of alcohol, representing 5.3% of all deaths.

Multiple substance use disorders as a result of multiple drug combinations, whether serial or simultaneous, pose a serious challenge for drug treatment outcomes compared to a single substance addiction because each substance produces a unique array of physical and emotional effects (EMCDDA, 2009). Overall, SUDs contribute substantially to morbidity and mortality (Grant et al., 2016; Hasin et al., 2016). While several studies have documented high rates of polysubstance use behaviors, these studies often fail to examine concurrent or multiple DSM-5 SUDs beahaviours (Armour et al., 2014; Chen et al., 2014; Connor et al., 2014; and McCabe et al., 2015). Based on these high rates of polysubstance use behaviors, future research is needed that shifts from measures that are substance-specific to more sophisticated measures that account for multiple SUDs (Connor et al., 2014).

The 2012– 2013 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) indicated that the majority of adults with past-year DSM-5 SUDs had at least one other co-

occurring SUD, ranging from 56.8% for adults with prescription opioid use disorder to 97.5% for adults with hallucinogen use disorder (McCabe et al., 2017). This NESARC analysis also found that males, younger adults, African-Americans and those with concurrent psychiatric disorders had increased odds of having multiple past-year SUDs.

Moreover, studies have found that persons with multiple SUDs have increased likelihoods of overdose, suicide, risky sexual behaviors, infectious disease and worse treatment outcome (Connor et al., 2014; Petry, 2001). Taken together, individuals with multiple SUDs likely constitute a more severe subset of patients with added barriers to accessing and engaging in SUD treatment services. A better understanding of the prevalence, patterns, and correlates of multiple past-year SUDs among primary care patients may therefore help to more accurately triage patients into risk categories and facilitate linkage to proper care (John et al., 2018).

Despite this need, data currently available on multiple substance use disorders is largely targeting primary care patients and adolescents with very limited focus on the general population. Further, there is limited data on the prevalence and predictors of multiple substance use disorders in an African and Kenyan context.

Methodology

A cross-sectional study was conducted where both quantitative and qualitative data was collected. This study was undertaken between November and December 2016. The study covered all the eight regions of Kenya, namely: Nairobi, Coast, Nyanza, Western, Central, Eastern, North Eastern and Rift Valley. The sample size was informed by the desired level of accuracy and the cost of the survey. Based on the accuracy of data, the margins of error associated with sampling and other random effects at 95%, confidence level was kept at a maximum of +/-1.4% for a sample size of 3,136 households.

A stratified multi-stage random sampling technique was used to identify the enumeration areas for data collection. At the national level, all the eight regions (Nairobi, Central, Eastern, Rift Valley,

Western, Nyanza, Coast and North Eastern) were purposively selected and the 3,136 sampled households were distributed proportionately across all the regions. The first stratification was applied at the county level, where the 47 counties were stratified based on their unique cultural, socio-economic and geographic characteristics. However, due to logistical and resources limitations, a purposive sample of 31 counties was randomly selected from each stratum. From each county, sub-counties were randomly selected and then two divisions were randomly selected from each sub-county. One location was then selected randomly per division. The enumeration areas (sub-locations) were randomly drawn from each selected location and the sample was proportionately distributed based on the total population distribution. At the sub-location level, a landmark (e.g. a school) was identified and selected to determine the starting point. The direction was determined by spinning a pen in the air and letting it drop on the ground. The date score was then used to determine the first household to be sampled.

The second stratification was done at the household level. Potential respondents were stratified by their age (15-35 years and 36-65 years) and gender categories. The Kish Grid was used to identify a potential respondent based on age and gender categories in a given household. Subsequent households were then selected using the random walk method, turning left or right at every junction. After administering the first interview, systematic random sampling was used where every 3rd household was selected to participate in the study.

Data Collection

Supervisors and research assistants were trained for three (3) days in Nairobi. This involved a detailed discussion of each question in the instruments and mock interviews among themselves. Training also involved extensive discussions of the street names of all drugs and substances of abuse in the country and compilation of a list of such names for easy referencing during data collection. After training, a pre-test of the questionnaires was carried out in three sampled sub-locations that were not part of the main study. The questionnaires were revised to

accommodate observations and variations that were made during the pre-test.

Data was collected for a period of eight weeks from November to December 2016. Data collection was divided into three clusters, namely: Nairobi/Eastern/Coast, Nairobi/Central/North Eastern/Lower Rift Valley and Nairobi/Nyanza/Western/Upper Rift Valley.

A structured questionnaire with open and closed questions was used to collect data on drugs, background characteristics and substance use patterns. Data on substance use disorders was captured using the fifth edition of the Diagnostic and Statistical Manual of Mental Disorder (DSM – 5) (American Psychiatric Association, 2013). It was applied to identify respondents with substance use disorders among those respondents who had used alcohol and other drugs in the last one year prior to the survey. The DSM-5 recognizes substance related disorders resulting from the use of ten separate classes of drugs: alcohol, caffeine, cannabis, hallucinogens, stimulants, tobacco and other substances. Substance use disorder was defined as meeting two (2) or more DSM – 5 criteria (American Psychiatric Association, 2013).

Data Analysis

An interviewer screen was developed for data entry to minimize errors. Quantitative data was coded, sorted, entered and analysed using SPSS software version 20. Descriptive statistics were used to describe, organize and summarize collected data. Multivariate logistic regression was used to identify the predictors of multiple substance use disorders.

Results

Background Characteristics

According to the findings, 48.8% of the respondents were male and 51.2% were female. In terms of age, 26.1% were 15-24 years, 33.8% were 25 - 35 years and 40.1% were 36 - 65 years. In terms of marital status, 60.8% were married, 29.1% were single and 10.1% were divorced / widowed. In terms of education level, 42.5% had primary level education, 37.9% secondary level education, 12.5% post-secondary level education and 7.1% had no formal education.

Patterns of Multiple Substance Use Disorders in Kenya

As summarized in Table 1, the prevalence of past year multiple substance use disorders among respondents aged 15 – 65 years in Kenya was 5.3%. The most commonly reported multiple substance use disorders pattern was alcohol and tobacco (2.5%) followed by tobacco and khat (0.8%), alcohol and khat (0.7%), alcohol, tobacco and khat (0.5%), alcohol, tobacco, khat and bhang (0.3%), alcohol, khat and bhang (0.2%), alcohol, tobacco and bhang (0.2%) and lastly alcohol and bhang (0.1%).

Table 1: Patterns of multiple substance use disorders in Kenya

Patterns	Prevalence (%)
Alcohol + tobacco	2.5
Tobacco + khat	0.8
Alcohol + khat	0.7
Alcohol + tobacco + khat	0.5
Alcohol + tobacco + khat + bhang	0.3
Alcohol + khat + bhang	0.2
Alcohol + tobacco + bhang	0.2
Alcohol + bhang	0.1
Multiple substance use disorders	5.3

Source: Survey data, 2017

Non- Multiple Substance Use Disorders in Kenya

As summarized in Table 2, the prevalence of past year non-multiple substance use disorders among respondents aged 15 – 65 years in Kenya was 10.0%. Alcohol use disorder was the most common non-multiple substance use disorder followed by tobacco use disorder at 2.5%, khat at 0.9% and bhang at 0.5%.

Table 2: Patterns of non-multiple substance use disorders in Kenya

Patterns	Prevalence (%)
Alcohol only	6.1
Tobacco only	2.5
Khat only	0.9
Bhang only	0.5
Non-multiple substance use disorders	10.0

Source: Survey data, 2017

Predictors of Multiple Substance Use Disorders

Table 3 shows findings from multivariate logistic regression analysis with multiple substance use disorders being the dependent variable. Results showed that setting p=0.004 and gender p=0001 were significant predictors of multiple substance use disorders.

In terms of setting, respondents from urban areas had a higher likelihood of having multiple substance use disorders compared to those in the rural areas. Further, males had a higher likelihood of having multiple substance use disorders compared to females.

Table 3: Correlates of multiple substance use disorders

Variable	P - value	Odds Ratio	95% Confidence Interval	
			Upper	Lower
Region	0.348	1.049	0.949	1.161
Setting (Urban or Rural)	0.004	1.892	1.223	2.926
Age	0.109	0.778	0.572	1.058
Gender	0.0001	8.760	5.071	15.132
Religion	0.724	0.917	0.565	1.486
Employment Status	0.539	0.941	0.775	1.142
Education Status	0.182	1.184	0.924	1.516
Marital Status	0.222	0.769	0.504	1.172
Economic Status	0.149	1.192	0.939	1.514

Source: Survey data, 2017

Discussion

Prevalence of Multiple Substance Use Disorders in Kenya

The study shows that alcohol was a major contributor to the different patterns of multiple substance use disorders. Other studies have also established that alcohol contributes to most multiple substance use disorder patterns (Novais, Pombo and Ismail, 2016; and Windle and Sheidt, 2004). This therefore points to the need for alcohol prevention, treatment and control programs in order to reduce the prevalence of multiple substance use disorders in Kenya.

Non-Multiple Substance Use Disorders in Kenya

The prevalence of past year non-multiple substance use disorders among respondents aged 15 - 65 years in Kenya was 10.0%. Alcohol use disorder was the most common non-multiple substance use disorder followed by tobacco at 2.5%, khat at 0.9% and bhang at 0.5%. Alcohol use disorder has been reported in other studies as the major substance use disorder in Kenya (NACADA, 2017).

Predictors of Multiple Substance Use Disorders

Findings from multivariate logistic regression analysis showed that setting and gender were significant predictors of multiple substance use disorders. Respondents from urban setting had a higher likelihood of having multiple substance use disorders compared to those from rural setting. According to Dixon and Chartier (2016), geographic location can be an important factor in determining a person's level of risk for alcohol-related problems. Certain factors associated with living in an urban or rural area may increase risk, while others may be protective. Availability of substances, norms for acceptable drinking behaviors, demographic characteristics, and economic factors all vary with respect to geographic area and may influence drinking behaviors. In a study by SAMHSA (2013), the prevalence of past 12-month alcohol use dependence was higher in metropolitan areas compared to non-metropolitan areas. Dawson,

Hingson and Grant (2011) reported that 12-month alcohol use dependence rates among urban and rural residents were similar. Grant (2007) reports that urban and rural residents had similar rates for lifetime alcohol dependence. Available evidence presents comparative challenges in the different contexts with a focus on alcohol and therefore there is need for more research in this area.

In terms of gender, males had a higher likelihood of having multiple substance use disorders compared to females. This finding collaborates the findings in other studies and reports: The 2012- 2013 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) (McCabe et al., 2017); Almarri and Oeii (2009); Sintov et al (2009); and John et al (2018).

The findings of this study did not show any significant differences in the prevalence of multiple substance use disorders across the different age groups. This contrasts with John et al (2018) who reported a higher likelihood of multiple substance use disorders among the younger primary care patients. Although the findings contradict, the target population was also different, with one study focusing on the general population and other one focusing on primary care patients. As such, more research is needed to understand the effect of age on likelihood of multiple substance use disorders.

Conclusion

The prevalence of Multiple Substance Use Disorders within the general population in Kenya is relatively high. This presents treatment challenges for persons seeking recovery services as a result of complicated interactions of the different substances involved. Further, since multiple substance use disorders are difficult to treat, the outcome is often likely to be severely affected leading to overall low rates of success. Early identification programs need to be emphasized so as to minimize the risks of multiple substance use disorders.

The study established that alcohol is a major contributor to the different patterns of multiple substance use disorders. In addition, alcohol use disorder was found to be the most common non-multiple substance use disorder in Kenya. It

therefore implies that alcohol prevention and control programs will be critical in the management of multiple substance use disorders.

The study showed that living in an urban setting and being male increases the risk of multiple substance use disorders. This implies that implementation of prevention programs with an approach more targeted at males in urban setting may be effective in addressing the risk factors associated with multiple substance use disorders.

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