International Journal of Drug Policy 125 (2024) 104352

Contents lists available at ScienceDirect

International Journal of Drug Policy

journal homepage: www.elsevier.com/locate/drugpo

Research Paper

Trends and factors associated with illicit drug use in South Africa: Findings from multiple national population-based household surveys, 2002–2017

Kennedy Kipkoech Mutai [a,d,*], Jack Stone [a], Andrew Scheibe [b,c], Hannah Fraser [a,e], Leigh F. Johnson [d], Peter Vickerman [a,e]

[a] Population Health Sciences, Bristol Medical School, University of Bristol, Bristol, United Kingdom
[b] TB HIV Care, Cape Town, South Africa
[c] Community Oriented Primary Care Research Unit, Department of Family Medicine, University of Pretoria, Pretoria, South Africa
[d] Centre for Infectious Disease Epidemiology and Research, University of Cape Town, Cape Town, South Africa
[e] NIHR Health Protection Research Unit in Behavioural Science and Evaluation at the University of Bristol, Bristol, United Kingdom

ARTICLE INFO

Keywords:
Illicit drug use
HIV
Household surveys
South Africa

ABSTRACT

Background: Illicit drug use results in considerable global morbidity, but there is little data on its trends and factors associated with it in sub-Saharan Africa. We consider these questions using national data from South Africa for 2002–2017.

Methods: We analysed data among individuals aged 15 years or older from five national population-based household surveys in South Africa (2002–2017; n = 89,113). Recent drug use was defined as the last three-months use of illicit drugs, i.e., any use of cannabis, cocaine, amphetamine, inhalants, sedatives, hallucinogens, opioids, and/or other illicit drugs. Time trends in recent drug use were assessed using logistic regression. Multivariable logistic regression assessed the association between recent drug use and socio-demographic factors and between drug use and sexual risk behaviours, HIV-related and other well-being variables.

Results: The prevalence of recent drug use increased from 1·5% to 10·0% from 2002 to 2017, driven by increases in cannabis use (1·5% to 7·8%) and use of opioids (0·01% to 1·6%), cocaine (0·02% to 1·8%), or amphetamines (0·1% to 1·5%). In adjusted analyses, male gender, younger age, living in urban areas, mixed-ancestry or white ethnicity (compared to black-African), and unemployment were positively associated with recent drug use. Recent drug use was associated with: multiple sexual partners (adjusted odds ratio [aOR] 2·13, 95% confidence interval [CI]: 1·80–2·51); sexual debut before 15 years old (aOR 1·70, 95%CI: 1·29–2·23); hazardous/harmful alcohol use (aOR 2·50, 95%CI: 2·14–2·93) or alcohol dependence (aOR 3·33, 95%CI 2·92–3·80); ever experiencing intimate partner violence (aOR 1·56, 95%CI 1·12–2·17); psychological distress (aOR 1·53, 95%CI: 1·28–1·82); and lower chance of ever testing for HIV (aOR 0·89, 95%CI 0·80–1·00). Recent drug use was not associated with HIV positivity, condom use or being on antiretroviral therapy.

Conclusion: Illicit drug use has increased substantially in South Africa and is associated with numerous socio-demographic characteristics, higher sexual risk behaviours and other well-being variables.

Introduction

Drug use disorders are associated with significant morbidity globally and in sub-Saharan Africa (Degenhardt et al., 2018; UNODC, 2022). Globally, an estimated 5.6% of individuals aged 15–64 years had used drugs in the past 12 months in 2020, 26% higher than in 2010 (UNODC, 2022), with cannabis and opioids being the most commonly used drugs (UNODC, 2022). Over all regions in sub-Saharan Africa, the age-standardized prevalence of opioid use disorder and cannabis use disorder was estimated at 377 and 204 per 100,000 people, respectively, in 2016 (Degenhardt et al., 2018), whilst in Southern Africa, illicit drug use was estimated to account for 1·1% of all disability-adjusted life-years (Degenhardt et al., 2018).

Whilst data show a high prevalence of illicit drug use in high-income countries (Steiner, 2019), data suggests prevalence in Africa has been lower but may be increasing. Greater movement of heroin, cocaine, and amphetamine-type stimulants (ATS) through east and southern Africa since the early 2000s has increased access to drugs and established local

* Corresponding author at: Bristol Medical School, University of Bristol, Bristol, United Kingdom.
E-mail address: kennedy.kipkoech@bristol.ac.uk (K.K. Mutai).

https://doi.org/10.1016/j.drugpo.2024.104352

Available online 16 February 2024

markets (Eligh, 2020). In South Africa, annual heroin and amphetamine seizures have increased 4- and 150-fold, respectively, from the early 2000s to 2017 (Eligh, 2020; UNODC, 2010, 2021).

In South Africa, the prevalence of recent (past three months) illicit drug use was estimated as 4·4% in 2012 (Peltzer & Phaswana-Mafuya, 2018), increasing from 3·7% in 2008 (Peltzer & Ramlagan, 2010) based on population-based household surveys. Previous studies in South Africa have shown recent drug use to be associated with younger age, mixed-ancestry population/ethnic group, unemployment, and harmful alcohol use (Peltzer & Phaswana-Mafuya, 2018; Peltzer & Ramlagan, 2010; Pengpid et al., 2021). Data from drug treatment centres also suggests increases in illicit drug use over time, with drug-related admissions increasing by 18% over 2012–2017 (Harker et al., 2020), including a 43% increase in opioid-related admissions.

High-risk illicit drug use has been shown to negatively impact health and well-being. For instance, methamphetamine use is associated with increased hospital encounters with heart failure (Onyeka et al., 2015), opioid use is responsible for most fatal overdoses and contributes to coma and brain damage (Herlinger & Lingford-Hughes, 2022), whilst there is a bidirectional association between substance use conditions and mental health problems (Deady et al., 2013; Santucci, 2012). South Africa has the world's largest HIV epidemic (Joint United Nations Programme on HIV/AIDS, 2022) and illicit drug use has been shown to negatively affect HIV outcomes; people who inject drugs (PWID) have high prevalence of HIV (11·4–58·4% in 2017) (University of California San Francisco, 2018), whilst problematic drug use (Berman et al., 2003) is associated with missing doses of antiretroviral therapy (ART) for HIV, interruption of ART, and lower CD4 counts (a measure of immune function, used 'for classifying HIV disease') (Kader et al., 2015).

Despite the potential for illicit drug use to negatively impact health, treating substance use conditions in South Africa is suboptimal and not viewed as a health priority (Scheibe et al., 2017). However, the South African government recently produced their 4th National Drug Master Plan (NDMP, 2019–2024), which aims to reduce the potential consequences of harmful substance use through comprehensive, rights-affirming and evidence-based approaches (Department of Social Development, Republic of South Africa, 2019).

Understanding the trends and factors associated with illicit drug use and associated health variables is important for understanding their potential health impact and developing strategies to mitigate this. However, this has not been well explored in South Africa or sub-Saharan Africa. We used data from five national population-based household surveys in South Africa over 2002–2017 to (1) describe population-level trends in recent drug use, (2) assess how recent drug use is related to various socio-demographic factors, and (3) evaluate whether recent drug use is associated with selected health and behavioural factors.

Methods

Population and setting

We analysed data from five national HIV population-based household surveys (*South African national HIV Prevalence, Incidence, and Behaviour Surveys [SABSSM]*), conducted by the Human Sciences Research Council (HSRC) of individuals 15 years or older in South Africa using similar methods in 2002 ($n = 7084$), 2005 ($n = 16{,}398$), 2008 ($n = 13{,}828$), 2012 ($n = 26{,}807$) and 2017 ($n = 24{,}996$) (Human Science Research Council, 2019). The surveys employed a multi-stage, stratified cluster sampling design stratified by province, locality/geographic type, and ethnic group, covering the whole of South Africa. The surveys are representative of the entire country, based on a representative national population sampling developed by Statistics South Africa. After obtaining informed consent/assent, data was collected through face-to-face interviews by trained fieldwork staff using structured questionnaires. Additional details are provided in **Supplementary Materials Section 1**, with further details provided elsewhere (Human Science Research Council, 2019).

Data measurements

This analysis used the following socio-demographic variables: sex, age, ethnic group, locality/geographic type (rural/urban), province, education level, and employment status. Health and behavioural factors included: hazardous alcohol use and alcohol dependence [measured using the "Alcohol Disorder Identification Test (AUDIT)" 10 question screening tool (World Health Organization, 2001), with hazardous use and alcohol dependence defined as scores of >=8 or >=15 out of a possible 40]; multiple sexual partners (two or more partners) in the past year; experiencing psychological distress in the past month (defined as a score of 20 or more out of a possible 50 on the 10-item Kessler Psychological Distress Scale [K-10] (Kessler et al., 2003); only available in 2012 and 2017 surveys); early sexual debut (before age 15; only among those aged 15–24 years old); age-disparate relationships among women aged 15–24 years old (having a male sexual partner more than five years older); ever experiencing intimate partner violence (IPV; only measured in 2017 survey, based on eleven questions related to physical, sexual, and emotional abuse); condom use at last sex; HIV status; ever tested for HIV; and ART use (only 2012 and 2017 surveys). For policy relevance, variables on sexual debut were analysed only among those aged 15–24 years old, while age-disparate relationships were only analysed among women aged 15–24 years old, as done elsewhere (Human Science Research Council, 2019).

The survey included questions on the recent use of illicit drugs (measured using questions from the Alcohol, Smoking and Substance Involvement Screening Test [ASSIST]) and frequency of use of these drugs (*"In the past three months, how often have you used any of the following substances?"*). An illicit drug use variable was created based on whether a respondent reported using any illicit drug (cannabis, cocaine [coke, rocks, etc.], amphetamine-type stimulants [speed, ecstasy, etc.], inhalants [nitrates, glue, etc.], sedatives [Valium, Mandrax, etc.], hallucinogens [LSD, acid, etc.], opiates [heroin, whoonga (heroin and other bulking agents), etc.], or any other illicit drug) in the past three-months; hereafter referred to as "recent drug use". The frequency of use variable was used to construct score values for each illicit drug used: "Never" =0; "Once or Twice" =2; "Monthly" =3; "Weekly" =4; "Almost daily" =6. We then assessed how the median drug use score for each drug varied across the different survey rounds. Further details on survey questions are provided in **Supplementary Materials Section 2.**

Statistical analyses

We pooled data for the five rounds of SABSSM surveys. We used descriptive statistics to analyse the participants' socio-demographic, health, and behavioural characteristics for each survey year. Frequencies and weighted percentages were reported based on survey weights previously generated by the HSRC for each survey to adjust for survey non-response and to ensure representativeness to the South African population by age, sex, ethnic group, and province (Human Science Research Council, 2019).

Over the five surveys, we analysed the prevalence (overall, stratified by different sociodemographic and behavioural characteristics, and for specific drugs) and time trends in any recent drug use. A logistic regression model was fitted to these sub-sets of the individual level data with recent drug use as a dependent variable and survey year as an independent variable (treated as a continuous variable). These regression models were used to generate trend test coefficients using the Wald statistic.

Across the pooled dataset, we then used bivariate and multivariable logistic regression to assess whether the following socio-demographic factors were associated with recent drug use (*dependent variable*): sex, age (categorical variable with "15–24 years" as reference), ethnic group, locality/geographic type, educational attainment (missing education

Table 1
Socio-demographic characteristics and HIV status of the survey participants (individuals aged 15 years and older) for different rounds of the SABSSM surveys, 2002–2017.

Characteristics	2002		2005		2008		2012		2017		2002–2017	
	n	Weighted percent (%)	n	Weighted percent (%)	n	Weighted percent (%)	n	Weighted percent (%)	n	Weighted percent (%)	n	Weighted percent (%)
All (N)	7,084	100.0	16,398	100.0	13,828	100.0	26,807	100.0	24,996	100.0	89,113	100.0
Sex												
Male	3,025	42.0	6,338	46.1	5,501	43.7	11,603	48.1	10,576	48.3	37,043	45.9
Female	4,059	58.0	10,057	53.9	8,327	56.3	15,203	51.9	14,420	51.7	52,066	54.1
Age, median (interquartile range)	34 (23–49)		33 (22–46)		33 (23–47)		34(23–47)		34(25–48)		34 (23–47)	
Age group												
15–24	2,428	30.1	5,708	30.7	4,580	30.1	7,220	27.5	6,377	24.2	26,313	28.3
25–34	1,311	20.4	2,688	22.9	2,314	23.6	5,322	24.5	5,381	27.1	17,016	23.9
35–49	1,828	25.6	4,204	25.3	3,504	25.0	6,424	26.1	6,126	26.2	22,086	25.7
50+	1,517	24.0	3,795	21.1	3,430	21.3	7,841	21.9	7,112	22.6	23,695	22.1
Population group												
Black-African people	4,201	77.1	9,664	77.7	8,297	77.5	15,388	77.6	16,370	78.7	53,920	77.8
White people	676	11.4	1,913	11.1	1,645	10.5	2,900	10.3	1,821	9.4	8,955	10.5
Mixed-ancestry people	1,358	8.8	3,013	8.6	2,506	9.1	4,979	9.3	4,606	9.0	16,462	9.0
Indian/Asian	837	2.7	1,772	2.6	1,352	2.8	3,467	2.8	2,199	2.8	9,627	2.7
Other	12	0.1	0	0.0	28	0.1	47	0.1	0	0.0	87	0.1
Geographical type												
Urban	5,037	57.5	11,257	57.2	9,951	62.5	18,553	59.8	16,214	68.9	61,012	61.6
Rural informal (tribal areas)	1,548	34.1	3,710	35.3	2,971	30.7	5,662	34.7	5,789	26.0	19,680	31.9
Rural formal (farms)	499	8.4	1,431	7.5	906	6.7	2,591	5.5	2,993	5.1	8,420	6.5
Province												
Western Cape	932	10.7	2,032	10.1	1,806	11.4	3,286	12.2	3,058	12.5	11,114	11.5
Eastern Cape	1,053	13.9	2,611	14.5	1,806	13.0	3,355	11.9	2,679	10.9	11,504	12.7
Northern Cape	520	2.1	1,015	2.0	1,038	2.0	2,061	2.2	2,293	2.2	6,927	2.1
Free State	451	6.9	1,028	6.3	929	6.1	1,998	5.4	1,842	5.0	6,248	5.9
KwaZulu Natal	1,437	19.8	3,279	20.3	2,666	20.2	6,261	18.5	5,522	18.6	19,165	19.4
North West	531	7.1	1,137	8.4	1,107	8.3	1,850	6.9	2,072	6.7	6,697	7.5
Gauteng	1,124	20.3	2,620	20.3	2,159	21.1	3,696	25.5	3,434	26.9	13,033	23.1
Mpumalanga	431	7.3	1,185	6.9	1,080	7.1	1,941	7.6	2,309	7.8	6,946	7.4
Limpopo	605	11.9	1,491	11.2	1,237	10.7	2,359	9.9	1,787	9.4	7,479	10.5
Education status[a]												
Grade 0–7	2,324	38.0	4,592	31.0	3,335	25.7	6,642	24.0	6,177	20.5	23,070	27.2
Grade 8–11	2,823	36.5	6,356	37.9	5,325	39.9	10,316	38.4	8,748	34.9	33,568	37.4
Grade 12 or more	1,903	25.5	5,256	31.0	4,460	34.4	9,849	37.6	10,071	44.6	31,539	35.4
Employment status												
Employed	2,922	40.5	6,594	40	6,109	44.6	9,943	37.1	8,291	35.6	33,859	39.3
Unemployed	2,494	38.2	5,828	38.2	4,070	34.0	9,650	38.7	11,690	49.6	33,732	40.1
Unable to work	149	2.2	490	2.6	421	3.2	851	2.6	495	1.4	2,406	2.4
Student	1,154	15.5	2,976	17.5	2,268	16.7	3,761	15.8	2,933	12.2	13,092	15.4
Other	218	3.6	256	1.7	246	1.6	1,841	5.8	307	1.2	2,868	2.8
HIV status												
HIV positive	719	13.6	1,351	14.0	1,302	14.3	2,632	16.4	2,819	18.8	8,823	15.7
HIV negative	5,361	86.4	10,681	86.0	9,506	85.7	18,075	83.6	14,420	81.2	58,043	84.3

[a] Highest educational level obtained.

level data in 2012 and 2017 survey waves were imputed, see Supplementary Materials Section 4), employment status, and survey year (treated as a categorical variable to enable odds ratio computation and interpretation, with the year 2002 as the reference category). These socio-demographic variables were chosen for inclusion in the model, as previous studies have shown them to be associated with illicit drug use (Lalwani et al., 2022; Peltzer & Phaswana-Mafuya, 2018; Pengpid et al., 2021). All independent variables significantly associated with recent drug use in the bivariate models were included in the multivariable model while adjusting for province. Multicollinearity was assessed using variance inflation factors.

We also evaluated whether recent drug use (*binary independent variable*) was associated with various selected health and behavioural factors (*binary dependent variables*). The dependent variables considered included hazardous alcohol use and alcohol dependence; multiple sexual partners in the past year; psychological distress; early sexual debut; age-disparate relationships; IPV; condom use at last sex; HIV status; ever HIV testing; and being on ART. The analysis was performed by separately fitting logistic regression models for each dependent variable and '*recent drug use*' as an independent variable. The pooled dataset was used where possible, but for some dependent variables, only a subset of survey rounds could be used (see Data Measurements section). Also, where a variable was only relevant to a particular age group (15–24 years olds for early sexual debut and 15–24 years old women for age-disparate relationships), the logistic regression model was restricted to that age group. Unadjusted odds ratios (OR) from bivariate models were first estimated. Then, adjusted ORs (aOR) were estimated using multivariable models that adjusted for age, sex, ethnic group, geographic area, province, education level, employment status, and survey year. These covariates (all treated as categorical variables) were chosen as they were considered potential confounders.

The 2017 questionnaire did not specify participants to exclude prescription drug use when asked about recent drug use. A sensitivity analysis was undertaken to compare the estimated prevalence of any recent drug use and analyses of associations described above while excluding (vs. not excluding) individuals who were only using potentially prescribed drugs (opioids, amphetamines, and sedatives).

All the analyses were performed using R statistical software version

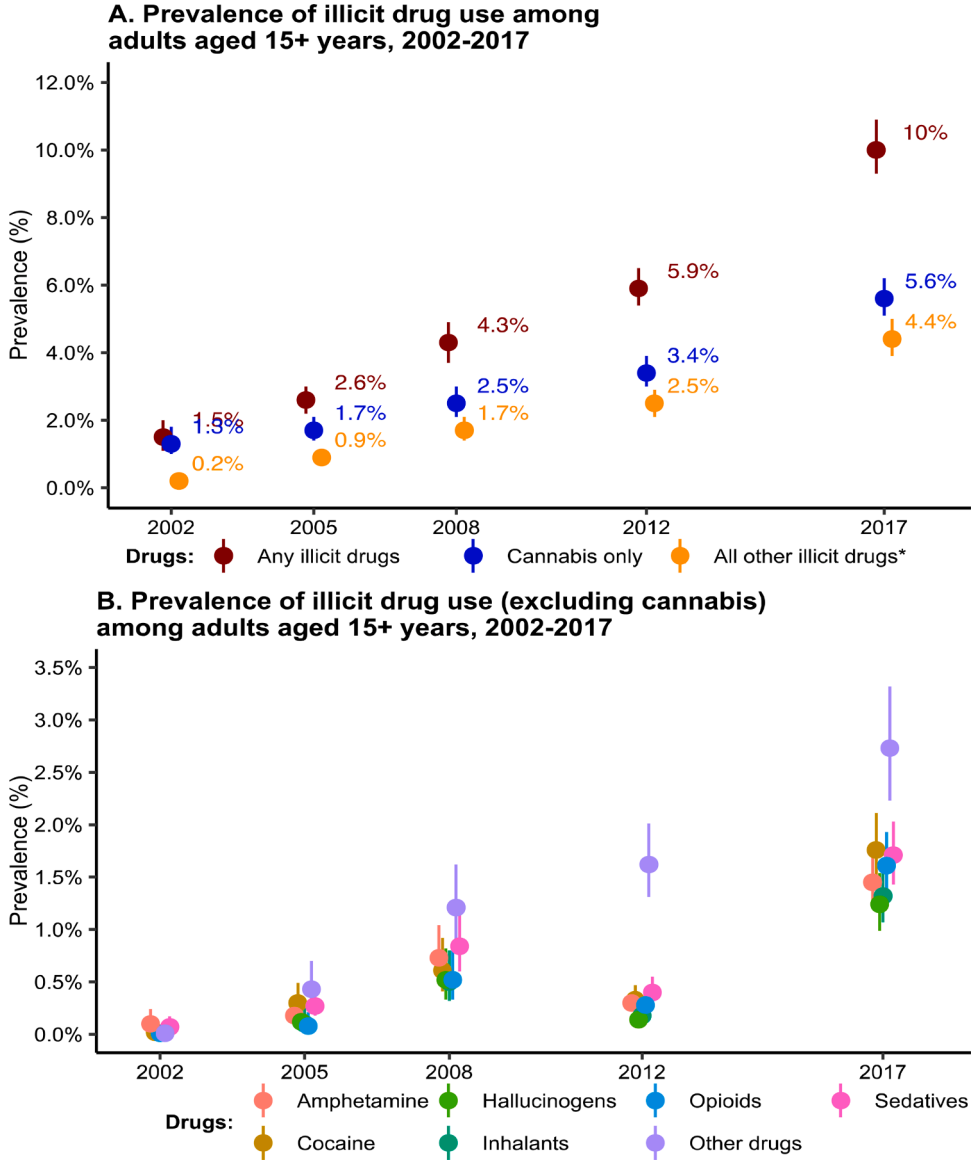

Fig. 1. Prevalence of recent (in last 3 months) drug use among adults aged 15 years and older, 2002–2017.
*"*All other illicit drugs*" include those who were using the following drugs singly or in combination: cocaine, amphetamine, inhalants, sedatives, hallucinogens, and opioids (including whoonga); and includes those using cannabis in combination with other drugs.

3·6·3 (R Core Team, 2020), accounting for the multi-stage, stratified cluster sampling design of the survey using the 'survey' package in R (Lumley, 2020).

Results

Sample description

Overall, the pooled survey data included 89,113 individuals aged 15 years or older, with a median age of 34 years (interquartile range [IQR] 23–47 years). More respondents were female (51·7–58·0% across rounds), of black-African ethnicity (77·1–78·7%), and from urban locations (57·2–68·9%) (Table 1 and Supplementary Table S7).

Prevalence of recent drug use and trends over time

The prevalence of recent drug use increased from 1·5% in 2002 to 10·0% in 2017 (Supplementary Table S8 and Fig. 1). The use of cannabis increased 5-fold from 1·5% to 7·8%, cocaine 88-fold from 0·02% to 1·8%, sedatives 24-fold from 0·07% to 1·7%, and opioids 161-fold from 0·01% to 1·6%. Although any recent drug use and recent use of cannabis increased between all rounds, there was a decline in the prevalence of using amphetamine, cocaine, hallucinogens, opioids, sedatives, and inhalants in 2012 compared to 2008 (Fig. 1B), which then increased again in 2017. Over four-fifths (81·6%) of individuals only used one drug, mainly cannabis (69·1%) (Supplementary Table S9), while the remainder (one-fifth) reported using a median of 3 (IQR 2–8) drugs. The overall frequency of use for each illicit drug remained stable over 2008–2017 survey rounds, at a median of 1–2 times in the last three months among those individuals who used each drug. However, the proportion of the population using drugs with higher frequency (i.e., weekly, or almost daily) increased overall (any drug use), and for specific drugs (cannabis, cocaine, amphetamines, inhalants, and opioids), but not for sedatives and hallucinogens (Supplementary Table S10).

The increasing trends in recent drug use occurred across most sociodemographic characteristics (Table 2), including age, sex, ethnic group, location type, province, education level, and employment status (trend test p-values$<$0·001).

Across all survey years (Table 2), the prevalence of recent drug use was highest among: males (3·3% in 2002 to 15·5% in 2017), ages 25–34 years (1·8% in 2002 to 12·9% in 2017), those in urban areas (2·0% in 2002 to 10·8% in 2017), and people of mixed-ancestry ethnicity (2·4% in 2002 to 12·2% in 2017). Combined, a third (33·6%) of young urban males (aged 25–34 years) of mixed-ancestry, 22·1% of Black-African young urban males and 20·8% of young white urban males had recently used drugs in 2017.

As noted in the methods, the 2017 questionnaire did not exclude prescription drug use when asking about recent drug use. However, only 5.6% of those who reported using *any recent drugs* in the 2017 survey reported only using drugs that could potentially be prescribed (opioids, amphetamines, and sedatives), with 80% of respondents who reported using potentially prescribed drugs also reporting using other non-prescription drugs. A sensitivity analysis that excluded these individuals from the 2017 dataset showed little difference in the prevalence of *any recent drug* in 2017 (9.6% [95%CI: 8.9–10.4%] when excluded compared to 10.0% [95 %CI: 9.3–10.9%] when included) or any differences in our analyses of associations (data not shown).

Association of socio-demographic characteristics with recent drug use

Table 3 shows the characteristics associated with recent drug use. In adjusted analyses, we found that females, older participants, those with higher levels of education, and those living in rural locations were less likely to have recently used drugs. Conversely, individuals of mixed ancestry ethnicity, white ethnicity and the unemployed were more likely to have recently used drugs. After adjusting for these characteristics, recent drug use still increased across the survey rounds. Independent variables associated with recent drug use were not highly correlated (Supplementary Figure S2).

Association of recent drug use with selected health and behavioural factors related to recent drug use

In adjusted analyses, recent drug use was associated with having multiple sexual partners in the last year, having an earlier sexual debut, reporting hazardous or harmful alcohol use and alcohol dependence, ever experiencing IPV and experiencing psychological distress, and being less likely to have ever been tested for HIV. Recent drug use was not associated with other variables, including HIV status, being on ART, young women having age-disparate relationships, and condom use (Table 4).

Discussion

The prevalence of recent drug use in South Africa has increased 7-fold over 2002–2017. Although this increase is mainly driven by an upsurge in cannabis use, as previously documented (Harker et al., 2020; Peltzer & Phaswana-Mafuya, 2018; Peltzer & Ramlagan, 2010; Pengpid et al., 2021), there have also been large increases (more than 10-fold) in the use of opioids, cocaine and stimulants. The prevalence of recent drug use among individuals aged 15 years or older in South Africa (10·0% in the past three months in 2017) is now double the global average [5·4% in the past year in 2018 (UNODC, 2020)], and is higher than in Kenya [6% current use; 2016 (Kamenderi et al., 2017)] but comparable to Nigeria [14% drug use in the past year; 2018 (National Bureau of Statistics, 2018)]. The prevalence of cannabis use (7·8%) in South Africa is also double the global average (3·9%, 95% UI 2·7–5·0%) (UNODC, 2020), while the use of opioids (1·6% versus 1·2%), cocaine (1·8% versus 0·4%) and stimulants (1·5% versus 0·6%) are also higher. Although the average frequency of drug use remained stable at monthly use for each drug, there was an increase in the prevalence of higher frequency drug use (weekly or almost daily), particularly for those using cannabis, cocaine, amphetamines, inhalants, and opioids.

The substantial increase in illicit drug use in South Africa could be attributed to various factors. First, there have been increases in the availability and affordability of illicit drugs. The increased volume of heroin trafficked through South Africa and the emergence of affordable heroin (known locally as *nyaope/whoonga*) (Khine et al., 2015) created new drug markets (Harker et al., 2020), contributing to a surge in opioid use and opioid-related problems in the country (Khine & Mokwena, 2016). In addition, there has been increases in cocaine (Global Initiative Against Transnational Organized Crime, 2022) and methamphetamine (Global Initiative Against Transnational Organized Crime, 2021) trafficking in South Africa. This may have been influenced by the opening of borders and dismantling of drug units following the transition from Apartheid to democracy (Standing, 2006). Increases in gangsterism in South Africa have also increased the availability of illicit drugs because gang groups compete for drug distribution markets (Mveng et al., 2021). Increases in availability have also reduced the price of heroin, cocaine, and methamphetamine in South Africa by 37–68% over 2004–2014 (Howell et al., 2015), increasing its affordability.

Second, the implementation and impact of the South African national drug master plans have been suboptimal due to inadequate funding and limited implementation of evidence-based primary or secondary prevention interventions to reduce harm, demand and supply (Department of Social Development, Republic of South Africa, 2019). Lastly, persistent historically rooted socio-political and economic drivers, such as poverty and inequality, may also have fuelled the increase in illicit drug use (Department of Social Development, Republic of South Africa, 2019), with both poverty and inequality increasing over the past two decades in South Africa. About half (55.5%) of all South Africans were reported to be living in poverty in 2015 (Francis &

Table 2
Prevalence of any recent drug use for different socio-demographic characteristics across each SABSSM survey, with test for trends across years.

Characteristics	2002		2005		2008		2012		2017		Trend test [a]	
	n/N	Weighted percent (95% CI)	n/N	Weighted percent (95% CI)	n/N	Weighted percent (95% CI)	n/N	Weighted percent (95% CI)	n/N	Weighted percent (95% CI)	Coefficient[b] (95% CI)	P-value
Overall	127 / 7,055	1.5 (1.1–2.0)	363 / 16,164	2.6 (2.2–3.0)	560 / 13,128	4.3 (3.7–4.9)	1,508 / 26,425	5.9 (5.4–6.5)	2,184 / 23,590	10.0 (9.3–10.9)	1.53 (1.32–1.74)	<0.001 *
Sex												
Male	113 / 3,020	3.3 (2.4–4.5)	279 / 6,218	4.8 (4.0–5.8)	406 / 5,218	7.4 (6.4–8.6)	1,130 / 11,426	10.1 (9.1–11.2)	1,460 / 9,974	15.5 (14.2–16.9)	1.32 (1.09–1.54)	<0.001 *
Female	14 / 4,035	0.2 (0.1–0.4)	84 / 9,946	0.6 (0.5–0.9)	154 / 7,910	1.8 (1.4–2.4)	378 / 14,999	2.0 (1.7–2.4)	724 / 13,616	4.9 (4.3–5.6)	2.39 (1.89–2.90)	<0.001 *
Age												
15–24	48 / 2,417	2.2 (1.4–3.4)	155 / 5,624	2.7 (2.1–3.5)	215 / 4,220	4.3 (3.6–5.3)	512 / 7,131	6.7 (5.7–7.8)	691 / 5,997	11.4 (10.3–12.7)	1.41 (1.08–1.74)	<0.001 *
25–34	38 / 1,310	1.8 (1.2–2.8)	92 / 2,653	4.2 (3.1–5.8)	128 / 2,230	5.8 (4.6–7.3)	406 / 5,246	8.3 (7.2–9.5)	591 / 5,102	12.9 (11.4–14.6)	1.54 (1.22–1.85)	<0.001 *
35–49	28 / 1,823	1.5 (0.9–2.6)	73 / 4,130	1.9 (1.3–2.6)	135 / 3,379	3.9 (3.0–5.0)	328 / 6,324	5.0 (4.1–6.0)	497 / 5,774	9.1 (8.1–10.4)	1.51 (1.12–1.91)	<0.001 *
50+	13 / 1,505	0.4 (0.1–1.3)	43 / 3,757	1.3 (0.8–2.2)	82 / 3,299	2.9 (2.1–4.2)	262 / 7,724	3.4 (2.8–4.1)	405 / 6,717	6.1 (5.2–7.1)	2.01 (1.27–2.76)	<0.001 *
Population group[b]												
Black-African people	65 / 4,181	1.4 (0.9–1.9)	155 / 9,550	2.2 (1.7–2.7)	259 / 7,871	3.4 (2.9–4.1)	712 / 15,185	5.2 (4.7–5.9)	1,335 / 15,545	10.0 (9.1–11)	1.62 (1.35–1.88)	<0.001 *
White people	13 / 675	2.1 (1.0–4.3)	49 / 1,889	3.9 (2.7–5.6)	85 / 1,574	5.7 (4.2–7.9)	123 / 2,821	5.4 (4.0–7.3)	147 / 1,664	8.8 (6.9–11.1)	1.05 (0.53–1.58)	<0.001 *
Mixed-ancestry people	41 / 1,354	2.4 (1.5–3.9)	129 / 2,956	4.7 (3.5–6.3)	174 / 2,355	9.8 (7.8–12.2)	562 / 4,922	12.7 (10.6–15.1)	526 / 4,246	12.2 (10.4–14.3)	1.44 (1.08–1.81)	<0.001 *
Indian/Asian	8 / 833	0.8 (0.3–2.0)	29 / 1,737	1.4 (0.8–2.5)	41 / 1,300	3.6 (1.9–6.9)	108 / 3,435	3.8 (2.5–5.6)	176 / 2,135	7.6 (5.8–10.0)	1.80 (1.15–2.46)	<0.001 *
Geographical type												
Urban	99 / 5,020	2.0 (1.4–2.8)	303 / 11,047	3.3 (2.7–3.9)	442 / 9,404	4.9 (4.1–5.7)	1155 / 18,310	6.8 (6.1–7.6)	1,546 / 15,322	10.8 (9.8–11.9)	1.37 (1.14–1.61)	<0.001 *
Rural informal (tribal areas)	7 / 1,538	0.5 (0.2–1.5)	31 / 3,693	1.4 (0.8–2.3)	72 / 2,845	2.7 (1.9–3.6)	206 / 5,602	4.3 (3.5–5.1)	399 / 5,505	8.1 (6.8–9.6)	2.12 (1.40–2.84)	<0.001 *
Rural formal (farms)	21 / 497	2.1 (1.2–3.9)	29 / 1,424	2.7 (1.6–4.4)	46 / 879	5.9 (3.8–9.1)	147 / 2,513	6.4 (4.5–9.0)	239 / 2,763	9.9 (8.1–12.0)	1.31 (0.84–1.78)	<0.001 *
Province												
Western Cape	33 / 929	2.7 (1.5–4.5)	87 / 1,987	4.7 (3.4–6.5)	138 / 1,717	8.2 (6.3–10.7)	370 / 3,251	10.1 (8.2–12.4)	282 / 2,851	10.7 (9.2–12.5)	1.20 (0.79–1.60)	<0.001 *
Eastern Cape	11 / 1,050	1.2 (0.4–3.1)	34 / 2,589	1.4 (0.6–2.9)	68 / 1,747	2.7 (1.8–4.1)	229 / 3,323	6.3 (5.1–7.7)	113 / 2,511	5.8 (4.7–7.1)	1.55 (0.69–2.40)	<0.001 *
Northern Cape	4 / 515	1.0 (0.3–3.6)	18 / 1,000	2.8 (1.5–5.2)	46 / 1,002	6.2 (4.1–9.1)	108 / 2,041	5.8 (4.6–7.5)	234 / 2,018	12.6 (10.0–15.8)	1.94 (1.06–2.83)	<0.001 *
Free State	17 / 450	2.3 (1.1–4.8)	23 / 1,010	2.1 (1.2–3.7)	29 / 874	5.1 (3.2–8.0)	112 / 1,947	7.3 (5.0–10.5)	183 / 1,753	11.0 (8.7–13.9)	1.45 (0.88–2.02)	<0.001 *
KwaZulu Natal	16 / 1,427	0.9 (0.4–2.0)	55 / 3,237	1.6 (1.0–2.5)	80 / 2,531	3.1 (2.2–4.5)	234 / 6,193	4.5 (3.4–5.9)	455 / 5,274	9.1 (7.5–10.8)	1.85 (1.29–2.41)	<0.001 *
North West	8 / 531	0.7 (0.3–1.8)	31 / 1,128	3.7 (2.1–6.2)	43 / 1,063	4.7 (3.1–7.0)	91 / 1,809	5.0 (3.5–7.1)	210 / 1,978	11.3 (8.7–14.4)	1.91 (1.26–2.56)	<0.001 *
Gauteng	28 / 1,123	2.3 (1.3–4.3)	81 / 2,557	3.8 (2.8–5.2)	81 / 2,018	4.0 (2.8–5.8)	202 / 3,631	5.6 (4.6–6.9)	346 / 3,301	11.5 (9.4–13.9)	1.19 (0.77–1.62)	<0.001 *

(*continued on next page*)

Table 2 (*continued*)

Characteristics	2002		2005		2008		2012		2017		Trend test [a]	
	n/N	Weighted percent (95% CI)	n/N	Weighted percent (95% CI)	n/N	Weighted percent (95% CI)	n/N	Weighted percent (95% CI)	n/N	Weighted percent (95% CI)	Coefficient[b] (95% CI)	P-value
Mpumalanga	4 / 428	1.3 (0.3–5.2)	13 / 1,176	1.6 (0.7–3.7)	49 / 1,031	4.7 (3.2–7.0)	89 / 1,909	5.3 (3.5–8.2)	196 / 2,198	9.7 (7.8–12.0)	1.71 (0.68–2.74)	0.001*
Limpopo	6 / 602	0.7 (0.3–1.8)	21 / 1,480	1.6 (0.9–2.8)	26 / 1,145	3.1 (1.7–5.4)	73 / 2,321	4.0 (2.8–5.6)	165 / 1,706	10.2 (8.2–12.6)	2.04 (1.40–2.67)	<0.001*
Education status[c]												
Grade 0–7	50 / 2,311	1.4 (0.9–2.2)	89 / 4,564	2.5 (1.8–3.4)	155 / 3,303	5.1 (4.0–6.5)	370 / 6,543	5.6 (4.6–6.8)	482 / 5,847	8.4 (7.4–9.6)	1.45 (1.12–1.79)	<0.001*
Grade 8–11	48 / 2,816	1.4 (0.8–2.4)	160 / 6,326	2.6 (2.0–3.4)	220 / 5,303	3.7 (3.0–4.6)	695 / 10,173	6.7 (5.9–7.6)	882 / 8,267	11.9 (10.8–13)	1.72 (1.36–2.09)	<0.001*
Grade 12 or more	28 / 1,896	1.8 (1.1–3.1)	112 / 5,225	2.5 (1.9–3.4)	180 / 4,444	4.2 (3.3–5.4)	443 / 9,709	5.3 (4.5–6.2)	820 / 9,476	9.3 (8.3–10.6)	1.32 (0.96–1.69)	<0.001*
Employment status												
Employed	53 / 2,911	1.3 (0.9–2.0)	160 / 6,576	2.6 (2.1–3.4)	285 / 6,083	4.8 (4.0–5.7)	626 / 9,835	6.7 (5.8–7.6)	800 / 8,240	10.5 (9.3–11.9)	1.68 (1.39–1.96)	<0.001*
Unemployed	48 / 2,485	1.4 (0.8–2.2)	136 / 5,810	2.9 (2.2–3.8)	173 / 4,048	4.3 (3.4–5.4)	569 / 9,584	6.2 (5.4–7.0)	1,085 / 11,608	10.3 (9.4–11.3)	1.59 (1.24–1.94)	<0.001*
Unable to work	5 / 149	1.2 (0.4–3.6)	18 / 488	2.3 (1.2–4.3)	19 / 419	4.5 (2.5–8.1)	40 / 842	8.4 (4.5–14.9)	38 / 492	8.7 (5.9–12.8)	1.72 (0.93–2.51)	<0.001*
Student	9 / 1,149	1.5 (0.6–3.7)	43 / 2,968	1.8 (1.1–2.8)	71 / 2,265	2.7 (1.9–3.8)	161 / 3,735	4.1 (3.1–5.3)	239 / 2,915	7.8 (6.5–9.3)	1.33 (0.71–1.96)	<0.001*
Other	9 / 218	4.4 (1.7–11.0)	6 / 254	2.0 (0.8–5.0)	8 / 246	4.5 (2.1–9.3)	78 / 1,816	3.6 (2.6–5.0)	19 / 302	9.2 (5.0–16.5)	0.70 (−0.12–1.51)	0.093

Numbers for "other" population group were omitted as they were negligible.

[a] Trend test from fitted logistic regression.

[b] The coefficient represent the linear trend in the prevalence of any recent drug use over the survey years, based on the Wald statistic from the fitted logistic regression.

[c] Highest educational level obtained.

CI – confidence interval.

* Statistically significant at 5% alpha level.

Table 3
Socio-demographic predictors of recent drug use (pooled data for 2002, 2005, 2008, 2012 and 2017 SABSSM surveys; $N = 86{,}362$)[γ].

Socio-demographic variables	Recent drug use n/N	Recent drug use Weighted Percent (95% CI)	Unadjusted odds ratio (95 %CI)	P-value	Adjusted odds ratio [a] (95% CI)	P-value
Sex						
Male	3,388 / 35,856	8.9 (8.3–9.4)	ref	ref	ref	ref
Female	1,354 / 50,506	2.0 (1.8–2.3)	0.21 (0.19–0.24)	<0.001*	0.21 (0.19–0.24)	<0.001*
Age						
15–24	1,621 / 25,389	5.5 (5.1–6.0)	ref	ref	ref	ref
25–34	1,255 / 16,541	7.3 (6.7–8.0)	1.36 (1.21–1.51)	<0.001*	0.96 (0.84–1.10)	1.000
35–49	1,061 / 21,430	4.6 (4.2–5.1)	0.82 (0.73–0.93)	0.002*	0.56 (0.49–0.65)	<0.001*
50+	805 / 23,002	3 (2.7–3.4)	0.53 (0.46–0.62)	<0.001*	0.34 (0.29–0.41)	<0.001*
Population group [b]						
Black-African people	2,526 / 52,332	4.8 (4.4–5.2)	ref	ref	ref	ref
White people	417 / 8,623	5.2 (4.5–6.1)	1.10 (0.92–1.31)	0.313	1.52 (1.25–1.85)	<0.001*
Mixed-ancestry people	1,432 / 15,833	8.8 (7.9–9.8)	1.93 (1.67–2.23)	<0.001*	1.87 (1.58–2.21)	<0.001*
Indian/Asian people	362 / 9,440	3.8 (3.0–4.7)	0.78 (0.62–0.99)	0.039*	0.83 (0.64–1.08)	0.16
Geographical type						
Urban	3,545 / 59,103	6.1 (5.7–6.5)	ref	ref	ref	ref
Rural informal (tribal areas)	715 / 19,183	3.4 (3.0–3.9)	0.55 (0.46–0.64)	<0.001*	0.70 (0.58–0.83)	<0.001*
Rural formal (farms)	482 / 8,076	5.2 (4.3–6.2)	0.84 (0.68–1.04)	0.103	0.78 (0.63–0.96)	0.018*
Education status[c]						
Grade 0–7	1,146 / 22,568	4.3 (3.9–4.8)	ref	ref	ref	ref
Grade 8–11	2,005 / 32,885	5.6 (5.1–6.0)	1.30 (1.15–1.47)	<0.001*	0.84 (0.73–0.96)	0.011*
Grade 12 or more	1,583 / 30,750	5.4 (4.9–5.9)	1.26 (1.09–1.44)	0.001*	0.65 (0.56–0.76)	<0.001*
Employment status						
Employed	1,924 / 33,645	5.4 (4.9–5.8)	ref	ref	ref	ref
Unemployed	2,011 / 33,535	5.7 (5.2–6.2)	1.06 (0.96–1.18)	0.249	1.34 (1.19–1.51)	<0.001*
Unable to work	120 / 2,390	5.0 (3.7–6.8)	0.94 (0.67–1.30)	0.691	1.23 (0.88–1.73)	0.220
Student	523 / 13,032	3.5 (3.1–4.1)	0.65 (0.55–0.76)	<0.001*	0.52 (0.42–0.64)	<0.001*
Other	120 / 2,836	4.3 (3.2–5.8)	0.79 (0.57–1.09)	0.146	1.19 (0.83–1.69)	0.340
Survey year						
2002	127 / 7,055	1.5 (1.1–2.0)	ref	ref	ref	ref
2005	363 / 16,164	2.6 (2.2–3.0)	1.7 (1.24–2.34)	<0.001*	1.69 (1.24–2.31)	<0.001*
2008	560 / 13,128	4.3 (3.7–4.9)	2.89 (2.09–4.01)	<0.001*	3.04 (2.20–4.19)	<0.001*
2012	1,508 / 26,425	5.9 (5.4–6.5)	4.08 (2.99–5.56)	<0.001*	4.10 (3.01–5.58)	<0.001*
2017	2,184 / 23,590	10.0 (9.3–10.9)	7.26 (5.34–9.86)	<0.001*	7.18 (5.30–9.73)	<0.001*

[a] Included all the variables in the Table in the multivariable model and in addition adjusted for the province as a covariate in the model.
[b] Numbers for "other" population group were omitted as they were negligible.
[c] Highest educational level obtained.
CI – confidence interval.
* Statistically significant at 5% alpha level.
γ – The denominator represents the number of participants with non-missing information on recent drug use.

Table 4
Associations of different health outcomes and risk factors for HIV infection with recent drug use versus never or non-recent drug users (pooled data for 2002, 2005, 2008, 2012 and 2017 surveys).

Outcome variables[ξ]	Predictor variable					
	Recent drug use ($N = 4742$)	Never or non-recent drug use ($N = 81,620$)	Unadjusted estimates		Adjusted estimates [a]	
	Weighted Percent (95% CI)	Weighted Percent (95% CI)	Odds ratio (95% CI)	P-value	Odds ratio (95% CI)	P-value
Multiple sexual partners (2 or more sexual partners in the past 12 months)	18.4 (16.4–20.6)	5.9 (5.6–6.3)	3.57 (3.07–4.15)	<0.001	2.13 (1.80–2.51)	<0.001*
Sexual debut before age 15 years (among youth aged 15–24 years old)	19.2 (15.9–23.0)	9.1 (8.3–9.9)	2.38 (1.87–3.03)	<0.001	1.70 (1.29–2.23)	<0.001*
Age-disparate relationships (among women aged 15–24 years old) [b]	35.3 (27.3–44.2)	37.0 (34.9–39.1)	0.93(0.64–1.36)	0.710	1.04 (0.70–1.53)	0.853
Condom use at last sex with most recent sexual partner	42.8 (40.2–45.6)	35.1 (34.1–36.0)	1.39 (1.24–1.56)	<0.001	1.06 (0.93–1.21)	0.370
Hazardous or harmful alcohol use (AUDIT score ≥8) [c]	35.3 (32.8–37.8)	8.6 (8.1–9.0)	3.10 (2.70–3.58)	<0.001	2.50 (2.14–2.93)	<0.001*
Alcohol dependence (AUDIT score ≥15) [c]	12.9 (11.4–14.5)	2.3 (2.1–2.5)	5.81 (5.18–6.53)	<0.001	3.33 (2.92–3.80)	<0.001*
Experienced intimate partner violence [d] (only available in 2017 survey)	22.2 (17.7–27.3)	16.1 (14.6–17.8)	1.48 (1.09–2.01)	0.011	1.56 (1.12–2.17)	0.008*
Experienced psychological distress (≥22 scores) [e] (only available in 2012 and 2017 surveys)	18.7 (16.3–21.3)	15.6 (14.7–16.6)	1.24 (1.05–1.46)	0.013	1.53 (1.28–1.82)	<0.001*
Ever been tested for HIV	59.6 (57.1–62.1)	50.0 (48.7–51.3)	1.48 (1.33–1.64)	<0.001	0.89 (0.80–1.00)	0.049*
HIV positive	16.0 (14.0–18.2)	15.6 (15–16.3)	1.03 (0.87–1.21)	0.750	1.07 (0.91–1.27)	0.400
On ART (lab-based ARVs detection among HIV positive participants) (only available in 2012 and 2017 surveys)	42.9 (34.5–51.7)	46.9 (44.2–49.6)	0.85 (0.60–1.21)	0.370	0.72 (0.47–1.11)	0.140

CI – confidence interval.

[ξ] The variables in the column represent the outcome variables. Logistic regression models were fitted separately to each of these outcome variables while having 'recent drug use' as a predictor variable.

[a] Adjusted for the following covariates: age, sex, race, geographic area, province, education level, employment status, and survey year.

[b] Age-disparate relationships involving a sexual partner more than five years older among women aged 15–24 years old.

[c] Based on 10-item 'Alcohol Disorder Identification Test (AUDIT)' score. A score of 8 or more indicated hazardous or harmful drinking. A score of 15 or more indicates dependent alcohol drinking (moderate-severe alcohol use disorder).

[d] Experience of intimate partner violence among male and female respondents.

[e] Psychological distress is measured based on 10 variables where each question has a scale of 1–5 (individuals with a score ≥22 are considered psychologically distressed).

[*] Statistically significant at 5% alpha level.

Webster, 2019; Statistics South Africa, 2017), with poverty likely to be associated with drug use (Mokwena & Morojele, 2014). Indeed, we found recent drug use is higher among those with lower educational attainment and the unemployed.

The high rates of cannabis use in South Africa could be attributed to it being cheap, readily available, and easy to grow, coupled with laxity in implementing enforcement laws (Peltzer & Ramlagan, 2007; Stein, 2016). All the surveys in our analyses were conducted before 2018 when cannabis was decriminalised for personal use and medicinal consumption (Parry et al., 2019). It will be important to assess how this legal change affects cannabis use in future surveys. This emphasises the utility of extensive household surveys to evaluate trends in illicit drug use, which could be used alongside other methods to assess the impact of recent or future changes in drug legislation.

Despite the high prevalence of illicit drug use in South Africa, barriers to treatment access exist. Efforts to solve the country's illicit drug issues have tended to criminalise and stigmatise people who use drugs, thus preventing people from seeking assistance and treatment (Department of Social Development, Republic of South Africa, 2019). For instance, the media have consistently framed the use of methamphetamine or 'tik' as a 'scourge', 'epidemic' or 'disease' and people who use heroin as 'amaphara' (parasites), which in turn serves to pathologise, victimise, and morally condemn people using these drugs (Marks et al., 2020). These impediments notwithstanding, treatment uptake for drug use disorders has increased in recent years in South Africa (Harker et al., 2020). However, the increase in treatment-seeking seems not proportionate to the increase in illicit drug use; therefore, it seems likely that a gap in treatment-seeking still exists and may be potentially expanding. Addressing the criminalisation, reducing stigma, and improving funding for drug treatment will likely reduce the harms related to drug use.

Further, prevention strategies to discourage and mitigate further increases in drug use should be improved. These include school-wide programmes involving skill-based education, school policies on substance use, and supporting parenting skills to enhance student participation and commitment (Fletcher et al., 2008; Hodder et al., 2017). In addition, community-based multi-component initiatives can be leveraged to address illicit drug use (UNODC & the WHO, 2018).

Psychosocial support also needs to be available to address the trauma and lived experiences of people using drugs. We found high prevalences of intimate partner violence (22·2%) and psychological distress (18·7%) among individuals who recently used drugs in 2017, with previous research in South Africa highlighting that many women who use drugs face violence, control, and extortion (UNODC, 2019).

HIV is a significant health issue in South Africa. Although we did not find any association between illicit drug use and HIV positivity or condom use, our analysis indicated that illicit drug use was associated with heightened sexual risk behaviours that can increase HIV transmission (having multiple sexual partners in the last year, having an earlier sexual debut) and reduced likelihood of being HIV tested. Further, while we were unable to examine recent injecting drug use due to inconsistencies in the data, we did find an increase in illicit drugs that could be injected, i.e., opioids, amphetamines, and cocaine. These findings, combined with previous research showing a very high prevalence of HIV among people who inject drugs in South Africa (Scheibe et al., 2019; University of California San Francisco et al., 2018), suggest that it is important to continue to monitor the association between illicit drug use and HIV to ensure any changes in HIV transmission can be acted upon.

Strengths and limitations

A strength of this analysis is the use of five extensive nationally representative household surveys. This provided a wealth of data to examine trends in drug use among individuals aged 15 years or older in South Africa from 2002 to 2017. It also enabled us to identify characteristics associated with drug use and differences in sexual risk behaviours, HIV-related and other well-being variables. Our analysis substantially adds to the evidence on drug use in sub-Saharan Africa. Indeed, to the best of our knowledge, this is the first analysis of illicit drug use using several nationally representative surveys in the Southern African region. The African Union called for strengthening data on drug use in Africa to facilitate the implementation of regional and national drug control strategies (African Union, 2019). South Africa's National Drug Master Plan 2019–2024 (Department of Social Development, Republic of South Africa, 2019) also highlighted the need to strengthen the evidence base around drug use trends in South Africa, especially for opioids. Our study meets this data need, addressing a significant gap in South Africa and other African settings.

One limitation is that face-to-face household surveys are not thought to give a true reflection of illicit drug use due to social desirability biases (Vergés, 2022), and people who use drugs have a higher likelihood of being homeless or incarcerated (Scheibe et al., 2019). This could mean our prevalence estimates of recent drug use are conservative, emphasising that drug use is a significant problem in South Africa. In addition, the surveys only measured recent drug use, not drug dependence, although our analyses do suggest that the frequency of use also increased. The analyses were limited to looking at associations and could not establish causation. Additionally, other potential unmeasured factors could have been associated with increased recent drug use, including peer substance use, parental factors, environmental stresses, crime, and poverty (Isaac, 2019).

Another limitation is that the SABSSM survey questionnaire has evolved, with some questions on illicit drugs only being added to later surveys and other questions being worded differently. Despite this, the types of drugs not included in earlier surveys only account for a small fraction of all drugs used and should still have been captured as 'other drugs', so these issues are unlikely to bias our overall assessment of drug use. Unfortunately, there was no information on what 'other drugs' were when people answered this option. Another limitation is that the 2017 survey did not instruct participants to exclude prescription drug use when asked about recent drug use. Although our sensitivity analyses suggest that this is unlikely to have impacted our findings, future surveys need to ensure that clear instructions are made regarding illicit drug use, with appropriate staff training, to ensure that data on drug use are better collected, more reliable and accurate.

In contrast to the upward trends in any recent drug use observed over 2002–2017, we observed a decline in the prevalence of use of drugs other than cannabis in 2012 compared to 2008. It is unclear whether this decline is real and why it occurred. The sampling procedures and wording of the questions were consistent. Perhaps the decline in 2012 is an artefact because, when questions on individual drugs were combined to produce our variable on any '*recent drug use*', we observed an increase in overall drug use in 2012 compared to 2008 (Fig. 1a) contrary to the decline observed for individual drugs (Fig. 1b).

Conclusion

South Africa has experienced a dramatic increase in drug use, which almost doubled from 2012 to 2017. In 2020, this translates to over four million South African individuals aged 15 years or older recently using drugs. Evidence-based interventions should focus on specific sociodemographic groups (e.g., young urban men) to reduce the potential harm resulting from illicit drug use. These interventions should address these individuals' multiple problems, such as unemployment, hazardous alcohol use, high-risk sex, IPV, psychological distress, and poor educational attainment. Further, investment in evidence-based interventions aimed at delaying drug use initiation could also alleviate the impact of drug use in South Africa.

Data sharing

The HSRC data are freely available upon request through the HSRC's

digital repository via http://datacuration.hsrc.ac.za/.

Declaration and ethics

The surveys were approved by the Human Sciences Research Council (HSRC) Research Ethics Committee as well as ethics committees from other collaborating institutions, as documented elsewhere (Human Science Research Council, 2019). Secondary analyses of the HSRC data were approved by The Human Research Ethics Committee (HREC) at the University of Cape Town (HREC REF: 508/2021).

CRediT authorship contribution statement

Kennedy Kipkoech Mutai: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Jack Stone:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Andrew Scheibe:** Writing – review & editing, Methodology. **Hannah Fraser:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Leigh F. Johnson:** Writing – review & editing, Methodology. **Peter Vickerman:** Writing – review & editing, Supervision, Methodology, Conceptualization.

Declaration of competing interest

Peter Vickerman, Jack Stone and Hannah Fraser acknowledge funding from the NIHR Health Protection Research Unit in Behavioural Science and Evaluation at the University of Bristol and the US National Institute of Allergy and Infectious Diseases and National Institute for Drug Abuse (NIAID/NIDA R01AI147490). Jack Stone and Peter Vickerman acknowledge funding from NIDA (R01DA033679, R21 DA047902). Peter Vickerman acknowledges funding from NIDA (R21DA046809, R01DA047952). Kennedy Kipkoech Mutai acknowledge funding from the University of Bristol's (i) PVC-Research and Enterprise Strategic Research Fund and (ii) QRGCRF Strategy funded by Research England.

Acknowledgements

The Human Sciences Research Council (HSRC) is hereby acknowledged for providing access to the five rounds of *South African national HIV Prevalence, Incidence, and Behaviour surveys* (SABSSM) datasets alongside all their respective data documentation. We thank the participants, personnel, and funders of all the five SABSSM surveys, without whom these analyses would not have been possible.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.drugpo.2024.104352.

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