

PREVALENCE AND ASSOCIATED FACTORS OF SUBSTANCE ABUSE AMONG ADOLESCENTS AND YOUNG PEOPLE IN KISANGANI

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Abstract

This study aimed to determine the prevalence and associated factors of substance abuse among adolescents and young people in Kisangani.

We conducted a cross-sectional analytical study. The study population consisted of adolescents and young people. Using cluster sampling, the sample size was calculated using SCHWARTZ's formula. Categorical variables were presented as percentages, and quantitatively asymmetrical variables were presented as medians with interquartile ranges. Estimates were made using a 95% confidence interval. Factors that showed significance in bivariate analysis at a threshold of 0.05 were included in the logistic regression model.

The prevalence of substance abuse is 63.15% [59.75 – 66.42]. Important factors associated with abusive use of psychoactive substances (PAS) include the negative influence of peers (ORa= 9.0 [4.5 – 26.8], $p < 0.001$); the poor perception of benefits (ORa=5.6 [3.1 – 30.3], $p = 0.044$); and easy access to psychoactive substances (ORa=4.2 [2.3 – 7.8], $p=0.013$).

The prevalence of abusive use among adolescents and young people in Kisangani is high. The identified factors are related to individual characteristics and their social environment; they are modifiable and highlight the need for interventions aimed at raising awareness among young people about the harms of these substances.

Key Words: *prevalence, factors, psychoactive substances, cross-sectional study, Kisangani.*

I. INTRODUCTION

According to various studies, the prevalence of psychoactive substance (PAS) use among African youth ranges from 47% to 70%. Alcohol is used by 35.8% to 49%, tobacco by 19% to 23.5%, cannabis by 2% to 9%, and sedatives by 0.3% to 9.3%. However, measuring abusive use poses a challenge in clearly distinguishing it from general or recreational use. (1) The situation regarding PAS consumption among youth in the Democratic Republic of Congo remains equally concerning. At least 70% of young people in low-income neighborhoods are exposed, and about 40% consume a combination of hard PAS and adulterated alcohol. (2)

Alcohol and tobacco are often at the forefront of consumption. Indeed, both are legal and widely available almost everywhere in the world, and their sale is supported by strong and aggressive advertising and promotion campaigns targeting young people. In its efforts to combat this issue, the Democratic Republic of Congo has implemented laws regulating the cultivation, sale, transport, and consumption of psychoactive substances (PAS), but some weaknesses are observed in their enforcement by the police. (3)

The reported harmful effects on health include HIV infection and accidents due to the substance's effects on physical coordination, concentration, and judgment, including injuries. Psychoactive substances (PAS) significantly contribute to the burden of non-communicable diseases such as hypertension and cancers, characterizing the epidemiological transition in the DRC. (4) (5)

From a socio-economic perspective, the abusive use of these PAS destabilizes civil society due to the rise in crime (gang wars, kidnappings, extortion). According to some views, many social phenomena experienced in Kinshasa, particularly the "kuluna", are a result of a youth captivated and dependent on PAS. (6) PAS also affect schooling, encourage young people to drop out of school, and reduce work performance and productivity. (7)

As for the motivations for consuming psychoactive substances (PAS) among youth, they are either extrinsic in nature, such as curiosity, pleasure, the desire to have a new experience, or to belong to a group; or intrinsic, such as the need to forget conflicts, family problems, or low self-esteem. (8) Other motivations include transgressing prohibitions or challenging authority, as well as seeking courage to commit a crime. Finally, there are functional motives, such as enhancing physical or mental abilities to improve sexual, athletic, or academic performance. (9) The factors related to the abusive use of PAS are linked to individual characteristics or their social or psycho-emotional environment. (10)

The unanswered questions we have concern the prevalence of abusive use of psychoactive substances (PAS) among adolescents and young people in the city of Kisangani, the profile of abusive users, the factors associated with this abusive use, the motivations and social consequences of this abuse, as well as effective interventions to prevent the escalation of this problem.

Our main concern was to understand "what is the frequency of abusive use of psychoactive substances and why is this abusive use observed among adolescents and young people in Kisangani?" Secondly, what is the profile of abusive users and what are the motivations and consequences of this abusive use on the quality of social life?

The objectives of this work were to determine the prevalence of abusive use of PAS among adolescents and young people in Kisangani, to identify the sociodemographic and economic profile of abusive users, the motivations and social consequences of this abusive use, and finally to identify the factors associated with the abusive use of PAS by adolescents and young people in Kisangani.

II.1. MATERIAL AND METHODS

II.1. MATERIAL

II.1.1. Description of the Study Area

This study was conducted in Kisangani, the capital of the Tshopo province, a city located in the northeastern part of the Democratic Republic of Congo. It comprises 6 non-stratified urban communes and 67 neighborhoods formed by 1,132 administrative blocks and streets. The total population of the city was 1,366,000 inhabitants in 2022 (12), with the proportion of adolescents and young people estimated at 32.3%, or 441,218 adolescents and young people. (13)

1. Study Population

The study population consisted of adolescents and young people aged 10 to 24 years residing in Kisangani.

2. Study Period

This study was conducted during the period from July 1 to October 1, 2023.

II.2. METHODS

1. Study Type and Period

We conducted a cross-sectional analytical study.

2. Sampling

a) Sample Size

The sample size was calculated using the SCHWARTZ formula ($n \geq Z^2 pq/d^2$) for an unknown prevalence of 50% and a precision level of 0.05. Taking into account a cluster effect of 2, this gives a total of 768 subjects. Increased by 5% (38 subjects) in anticipation of the non-response rate, we obtained a total sample size of 806 subjects.

b) Sampling Technique

We employed a multi-stage cluster sampling method where the communes served as primary units:

- At the first stage, 2 communes were randomly selected.

- At the second stage, within each selected commune, a list of neighborhoods was compiled. From this list, 4 neighborhoods were randomly selected per commune.
- At the third stage, within each neighborhood, a list of streets was created. From this list, 7 streets were randomly selected.
- At the fourth stage, in each street, a household survey of households housing adolescents and young people aged 10-24 years was conducted. From this survey, 15 households were systematically selected until a total of 806 respondents was reached. If more than one young person aged 10-24 years was found in a selected household, a random choice was made to retain only one.

c) Inclusion Criteria

The following were included in the study:

- Adolescents and young people aged 10-24 years in the selected households;
- Having lived for at least 12 months in the area;
- Without any mental disability preventing participation in the survey
- Having given their consent to participate in the study

For minors, assent from the young person and/or consent from the parents was required.

3. Data Collection Technique

Data collection in households was conducted through interviews with young people aged 10-24 years, based on a pre-tested questionnaire administered to adolescents and young people in the Kabondo commune, and deployed on Kobocollect after amendments. The data collection team consisted of 8 trained interviewers, with one interviewer assigned to each neighborhood, and 2 trained supervisors, with one supervisor for every four interviewers.

The interviewers administered the questionnaire on Kobocollect in the local language according to the respondent's preferences and then submitted it to the server. The supervisors were responsible for ensuring the effectiveness of the interviewers in the selected streets or blocks, supervising the completion of the questionnaire, and validating it before submission to the server.

Two experts from the University of Kisangani, a psychologist and a sociologist, were consulted in identifying the variables to be measured regarding the social and psychoaffective environment of adolescents and young people.

4. Variables and Scores of Abusive Use of Psychoactive Substances

In order to have a common understanding of concepts, all these variables were defined operationally. Based on the literature review, the following variables were selected:

- **Sociodemographic Characteristics:** gender, marital status, religion, age, educational level, economic level, family structure of origin, and occupation.
- **Psychosocial Environment:** perception of the benefits of psychoactive substances (PAS), influence of peers, and access to PAS.
- **Motivations and Consequences of Psychoactive Substance Use**
- **Abusive Use of Psychoactive Substances:** Use evaluated as abusive for at least one of the substances used, measured through specific scores for the substances utilized.
 - **Abusive Use of Alcohol:** Consumption of 6 or more drinks on a daily occasion or 3 instances of intoxication within the last 12 months. (14)
 - **Abusive Use of Tobacco:** Score ≥ 2 on the Mini Fagerström test, using 2 scores to evaluate the quantity of cigarettes smoked and the time to first cigarette upon waking. (14)
 - **Abusive Use of Cannabis:** Score ≥ 2 on the CAST (Cannabis Abuse Screening Test), using 6 questions about consumption in the last 12 months, where each "Yes" answer gives a score of 1, with a total score of 6. (11)
 - **Abusive Use of Prescription Drugs:** Use of Diazepam or Tramadol without a medical prescription and/or a daily intake of an excessive dose above the recommended daily dose according to the anatomical therapeutic method. (15)
- **Prevalence of Abusive Use of Psychoactive Substances (PAS):** Frequency of abusive use of at least one of these four substances (alcohol, tobacco, cannabis, and prescription drugs).

5. Data Treatment and Analysis Techniques

Data were entered into Kobocollect and extracted to Excel, then analyzed using Stata 13. Quantitative variables with asymmetric distribution were presented as medians with interquartile ranges, and categorical variables as proportions (%). Estimates were made using a 95% confidence interval. Factors that showed significance in bivariate analysis were introduced into the logistic regression model, and results were interpreted at a significance level of 0.05.

6. Ethical Considerations

After obtaining approval from the Ethics Committee and the necessary administrative authorizations, the assent of the minor and consent from the guardian were required. Confidentiality and anonymity of the information were ensured. The study did not have any adverse effects on the health of the participants, and no conflicts of interest were noted.

III. RESULTS

III.1. USE OF PSYCHOACTIVE SUBSTANCES

Table I: Prevalence of Psychoactive Substance use among adolescents and young individuals surveyed in the 12 months prior to the study.

Variable	Number (%)	[C.I. 95%] n = 806
General use of Psychoactive Substances (PAS)		
Yes	625 (77,54)	[74,52 – 80,30]
No	181 (22,46)	
Abusive use of PAS		
Yes	509 (63,15)	[59,75 – 66,42]
No	297 (36,85)	
Abusively used substances n = 509		
Alcohol	468 (91,94)	
Sedatives (tramadol, diazepam)	314 (61,69)	
Tobacco	278 (54,62)	
Cannabis	219 (43,02)	

The general use of PAS is 77.54% [74.52 – 80.30]. The rate of abusive use of Psychoactive Substances (PAS) is 63.15% [59.75 – 66.42] in Kisangani. Alcohol is the most abusively used substance, with a prevalence of 91.94%.

III.2. PROFILE OF ABUSIVE USERS OF PSYCHOACTIVE SUBSTANCES

Table I: Distribution of Abusive Users According to Their Characteristics

Variable	Label	Non Abusive Use n =297 (%)	Abusive Use n=509 (%)	P-Value
Gender	Female	122 (45,35)	147 (54,65)	<0.001
	Male	175 (32,59)	362 (67,41)	
Age	18 - 24	128 (24,20)	401 (75,80)	<0.001
	10 - 17	63 (67,02)	31 (32,98)	
Marital Status	Single	242 (40,88)	350 (59,12)	0.001 Fisher
	Married	29 (25,00)	87 (75,00)	
	Divorced	23 (26,14)	65 (73,86)	
Town	Widowed	3 (30,00)	7 (70,00)	<0.001
	Mangobo	113 (26,34)	316 (73,66)	
Religion	Kisangani	184 (48,81)	193 (51,19)	0.484
	Catholic	91 (33,46)	181 (66,54)	
Level of education	Protestant	55 (35,26)	101 (64,74)	0.499
	Kimbanguist	20 (47,62)	22 (52,38)	
	Musulmane	50 (40,32)	74 (59,68)	
	Other Church	62 (37,80)	102 (62,20)	
	Any	19 (39,58)	29 (60,42)	
	High	138 (38,12)	224 (61,88)	
Occupation	Low	159 (61,00)	285 (39,0)	<0.001
	Student	185 (47,56)	204 (52,44)	
Family structure	Any occupation	53 (27,46)	140 (72,54)	0.002
	Employed	23 (15,65)	124 (84,35)	
	Merchant	36 (46,75)	41 (53,25)	
	Two-parent	36 (16,98)	176 (83,02)	
socio-économique level	Single or non-parental	129 (27,92)	333 (72,08)	0.499
	High	8 (44,44)	10 (55,56)	
	Low	289 (36,68)	499 (63,32)	

Abusive users of PAS are largely male, aged 18 to 24, students, and single, residing in the Mangobo commune without both parents. They are indistinguishable by religion, educational level, and economic status.

III.3. PERCEPTIONS OF PSYCHOACTIVE SUBSTANCES

Table II : Distribution of abusive users according to their perception of accessibility and the influence of the environment, as well as the benefits of psychoactive substances

Variable	Non-abusive use n =297 (%)	Abusive use n=509 (%)	P-Value
Accessibility of Psychoactive Substances			
Inaccessible	81 (45,76)	96 (54,24)	0.005
accessible	216 (34,34)	413 (65,66)	
Influence of peers on the abusive use of PAS			
Positive Influence	150 (50,51)	147 (49,49)	<0.001
Negative Influence	91 (17,88)	418 (82,12)	
Perception of the benefits of PAS			
Good perception	158 (67,81)	75 (32,19)	<0.001
Poor perception	139 (24,26)	434 (75,74)	

Abusive users have easy access to Psychoactive Substances (PAS), are negatively influenced by peers regarding PAS use, and hold poor perceptions of the benefits of PAS.

III.4. MOTIVATIONS OF ABUSIVE USE OF PSYCHOACTIVE SUBSTANCES

Table III : Distribution of abusive users according to the reasons that may motivate the use of psychoactive substances

Motivation	Non-abusive use n =297 (%)	Abusive use n=509 (%)	P-Value
Seeking performance	161 (28,75)	399 (71,25)	< 0.001
Forgetting one's problems	132 (30,84)	296 (69,16)	< 0.001
Imitating peers	196 (30,63)	444 (69,38)	< 0.001
Curiosity	246 (33,98)	478 (66,02)	< 0.001
Enhancing the mind	86 (34,70)	162 (65,30)	< 0.001

The pursuit of performance is the main motivation found among the surveyed individuals. Forgetting problems, imitating peers, and curiosity were secondary motivations.

III.5. CONSEQUENCES OF ABUSIVE USE OF PSYCHOACTIVE SUBSTANCES

Table IV : Distribution of abusive users according to the consequences of abusive use of psychoactive substances

Conséquence	Non-abusive use n =297 (%)	Abusive use n=509 (%)	P-Value
Traffic accident	19 (6,40)	79 (15,52)	<0.0001
Conflicts/fights	64 (21,55)	274 (53,83)	<0.0001
Arrests	16 (5,39)	142 (27,90)	<0.0001
Work accident	24 (8,08)	122 (23,97)	<0.0001
Decrease in work capacity	75 (25,25)	337 (66,21)	<0.0001
Job loss	20 (6,73)	128 (25,15)	<0.0001
Theft/extortion	23 (7,74)	185 (36,35)	<0.0001
Perpetrator of injuries/murder	16 (5,39)	132 (25,93)	<0.0001
Returned to studies	108 (36,36)	314 (61,69)	<0.0001
Perpetrator or victim of rape	79 (26,60)	357 (70,14)	<0.0001
Unprotected sex	160 (53,87)	446 (87,62)	<0.0001
Multiple sexual partners	131 (15,50)	429 (84,50)	<0.0001
Under the age of 18	53 (30,81)	99 (27,50)	0.429
While pregnant	4 (2,30)	2 (0,55)	0.072
Attempt to reduce or stop without success	7 (38,89)	11 (61,11)	0.856

The consequences of abusive use of PAS include traffic accidents, decreased work capacity, job loss, theft/extortion, perpetration of injuries/murder, unprotected sexual intercourse, and multiple sexual partners.

III.6. FACTORS OF ABUSIVE USE OF PSYCHOACTIVE SUBSTANCES
Table V : Factors associated with abusive use of PsychoActive Substances.

Factors	Chi-Square	OR [C.I. 95%]	P-value	ORa [C.I. 95%]	p-value
Municipality of Residence					
Mangobo	43,47	2,67 [1,97 – 3,61]	<0.0001	3,2 [1,2 – 7,7]	0,019
Kisangani		1			
Gender					
Male	12,53	2,00 [1,27 – 2,32]	0.0004	2,2 [1,2 – 3,8]	< 0,001
Female		1			
Age					
18 – 24	68,75	6,4 [3,85 – 10,53]	<0.0001	2,8 [1,6 – 4,9]	< 0,001
10 – 17		1			
Peer Influence					
Negative	95,14	4,7 [3,33 – 6,60]	<0.0001	9,0 [4,5 – 26,8]	< 0,001
Positive		1			
Perception of benefits of PAS					
Poor perception	134,85	6,5 [4,56 9,50]	<0.0001	5,6 [3,1 – 30,3]	0,044
Good perception		1			
Accessibility of PAS					
Inaccessibility	7,74	2,0 [1,15 – 2,27]	0.0054	4,2 [2,3 – 7,8]	0,013
accessibility		1			
Occupation					
Any occupation	7,92	2,0 [1,16 – 2,35]	0.0049		
With occupation		1			

The negative influence of peers, poor perception of the benefits of PAS, and easy access to PAS are the most important factors contributing to the abusive use of PAS among adolescents and young people in Kisangani.

IV. DISCUSSION
General Use of PAS

The general use of PAS is 77.54% [74.52 – 80.30]. These results are close to the 70% found in Kinshasa by Obot and Lévi in 2016, but relatively higher than those found in both South Africa and Nigeria (66%), as the DRC has weak regulation of psychoactive substance use. (2)

Abusive Use of PAS

The abusive use of psychoactive substances remains high at 63.15% [59.75 – 66.42], relatively higher than the 42% observed in France. This may be explained by the prevalence of misconceptions about the benefits of psychoactive substances in Kisangani. Alcohol is the most abusively used substance at 91.94%. Indeed, this drug is legal in the DRC, and its sale is supported by very aggressive advertising campaigns targeting young people. (2) (3).

Profile of Abusive Users

Abusive users of PAS are predominantly male, aged 18 to 24, students, and single, residing in the Mangobo commune without both parents. They are diverse in terms of religion, education level, and economic status. These characteristics largely align with the social environment and the general characteristics of the Congolese population. (16) (17).

Perceptions of Adolescents and Young People on the Benefits of PAS, Accessibility to PAS, and Influence from Peers

Abusive users mainly have easy access to PAS (65.66% vs. 34.34%), experience negative influence from peers regarding PAS use (82.12% vs. 17.88%), and hold poor perceptions of the benefits of PAS (75.74% vs. 24.26%). The International Narcotics Control Board, in its 2014 report, presumed that family or peer tolerance, as well as poor perceptions of benefits, largely explained the abuse of PAS in the DRC. These results align with these hypotheses. (18)

Motivations for Abusive Use of PAS

The search for performance is a significant motivation found among the respondents. Most of them are of an age for physical and sexual activity and have poor perceptions of the benefits of PAS, believing that these substances can enhance physical and sexual performance. These results align with those of Kayrouz and Parks. (8) (20)

Consequences of Abusive Use of PAS

Our study shows that the consequences of the abusive use of psychoactive substances are traffic accidents, decreased work capacity, job loss, theft or extortion, being the perpetrator of injuries/murder, unprotected sex, and multiple sexual partners. These results align with the assumptions of the International Narcotics Control Board in 2014 regarding the consequences of drug addiction in the DRC, including increased crime, accidents, and HIV infection. (18) (21)

Factors of Abusive Use of PAS

In our study, the negative influence of peers and poor perceptions of the benefits of PAS are significant factors contributing to the abusive use of these substances. These results align with those of Green, where they were identified as behavioral determinants. Similarly, in Canada, the negative influence of peers and poor perceptions of the benefits of PAS have been presumed as factors contributing to abuse in the DRC. (18) (19).

Babor and Grube, in Oxford in 2003 and 2005, found that easy geographic and financial access facilitated the abuse of PAS. This has also been considered a facilitating factor for such behavior. In our study, the proportion of young people abusing PAS is higher when access to these substances is good. PAS are widely available and inexpensive in various cities of the DRC. (2) (22).

Male gender and the age group of 18-24 significantly influence the abuse of PAS. Young men are at an age of intense physical activity. Moreover, gender role distribution in Africa assigns them hard physical labor. Abusive use could be explained by the pursuit of physical performance due to erroneous perceptions regarding the benefits of PAS. Young individuals aged 18-24 are mostly no longer under family control and have more opportunities for money, leading to easier access to PAS.

CONCLUSION

The prevalence of abusive use of PAS remains high, and the associated factors identified are not only related to individual and environmental characteristics but are also modifiable. This abuse is primarily motivated by the pursuit of performance, and the resulting consequences are alarming. There is an urgent need to recommend measures to rectify the situation.

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