UNIVERSITY OF RWANDA

College of Medicine and Health Sciences
School of Medicine

LISTING THE ILLICIT DRUGS USED AND FACTORS INFLUENCING ITS USE IN RWANDA

By

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DECLARATION AND AUTHORITY TO SUBMIT THE DISSERTATION

Dr. Audace NIYIGENA

Title of the dissertation:

''Assessing the illicit drugs used and factors influencing its use in Rwanda''

a. Declaration by the Student

"I do hereby declare that this dissertation submitted in partial fulfillment of the requirements for the degree of Master of Medicine in Psychiatry, school of Medicine and pharmacy at the College of medicine and Health science, University of Rwanda, is my original work and has not previously been submitted elsewhere. Also, I do declare that a complete list of references is provided indicating all the sources of information quoted or cited.

Date and Signature of the Student

……..

b. Authority to Submit the Project (dissertation/thesis)

Supervisor: Dr. Emmanuel RWILILIZA MUSONI, MMED (Psych)

In my capacity as a Supervisor, I do hereby authorize the student to submit his dissertation.

Supervisor

……..……..

DEDICATION

To my Brother Eng. Albin KWITONDA, for being my source of inspiration.

To my Mother Vestine MUKANDOLI, for her education, limits setting, love, support and prayers in my life.

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ABSTRACT

Even though if Illicit drugs are prohibited universally. In 2017, an estimated 271 million representing 5.5 per cent of people worldwide aged 15–64 have used drugs at least once in the previous month. In Rwanda a study done in 2015 showed a percentage of substance dependences of 7.46% for alcohol, 4.88% for nicotine and 2.54% for cannabis dependency, in teenagers and young adults. The product used by a Substance Use Disorder patient, is important to be identified so that appropriate counseling and pharmacotherapy can be offered. Unfortunately as for today the available illicit drugs on the Rwandan market are still unknown. The aim of this study was to feel the gap in addiction data by producing an exhaustive list of illicit drugs available and factors influencing their use in Rwanda. This research was conceived as qualitative study. And a survey was conducted on patients diagnosed with SUD admitted or consulting the Icyizere center. All participants used illicit drugs for at least two years and didn't know each other before they meet in Icyizere therapeutic center. Numerus illicit drugs was identified: Marijuana, Heroin, Cocaine, benzodiazepine, Cap, LSD, Gasoline, Glue, Khat, Alcohol, 36 oiseaux …. Some of them are at high risk of overdose and some treatment are not available in Rwanda. Factors identified leading to the use of illicit drugs was mainly due to lack of accurate information on drugs in the child and teenager hoods and miss-information spread by experienced drug users on the benefits of using drugs.

Key Words: illicit drugs, Rwanda

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List of abbreviations

ATS: Amphetamine-type stimulants

DSM 5: Diagnostic and Statistical Manual of Mental Disorders, 5th Edition

FDA: Food and Drugs Authority

IRB: Institutional Review Board

LSD: Lysergic acid diethylamide

PI: Principle Investigator

SUD: substances use disorder

UNODC: United Nations Office on Drugs and Crime

WHO: world health organization

Chapter I. INTRODUCTION

I.1. Background

Illicit drugs are products that either inhibit (like heroin or sedative and hypnotics) or stimulate (like cocaine or amphetamines) the central nervous system or can induce hallucinations (like Cannabis or Lysergic acid diethylamide (LSD)) to a high level that the use has been forbidden on the international scale (FDA, 2017).

Illicit drug use is a rising international problem. Its global prevalence was 5.3% in 2014 (UNODC, 2016). The most commonly used being the cannabis, cocaine, amphetamines and opioids. These contribute expressively to the worldwide burden of disease, which was 0.8% in 2010 (Degenhardt L, 2013).

In 2017, it was assumed that 271 million people globally aged between 15 and 64 had used drugs at least once in 2016 (range: 201 - 341 million). This represent 5.5 per cent of people aged 15–64, meaning one person in 18 people (UNODC, 2019). Cannabis users lie on the first position considering the number of illicit drug users with around 129 to 190 million users worldwide. Amphetamines rank second, followed by opiates and cocaine. However, opiates may be hierarchical graded first in terms of harm associated with use (UNODC, 2019).

In Rwanda a study was done on the prevalence of drugs use in 2015, focusing on youth. The percentage of substance dependences in teenagers and young adults were as follow: 7.46% of the target group had a dependence on alcohol, 4.88% were nicotine dependent, and 2.54% on cannabis (Kanyoni, 2015). Although most users are adolescents, it has been seen that this attenuate over time. Many youth who use alcohol and other drugs suffer from undesirable health and social consequences. Some progress to more severe levels of use and impairment, meeting the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) criteria for substance use disorders (SUDs) during adolescence or later as adults (Miranda R Jr, 2016). The assessment and treatment approach of teenagers with SUDs, is similar in some reverences to adults; but, developmental concerns require an approach personalized to the cognitive, social, and legal status of adolescents (Oscar Bukstein, 2019). Substance Use Disorders are vital to identify so that proper counseling and pharmacotherapy can be accessible (Richard Saitz & David Solomon, 2019). A systematic substance use evaluation contains a complete record of the nature, frequency, quantity and consequences of the substance use (Lenaerts E, 2014). As

for today the available illicit drugs on the Rwandan market are still unknown. In Rwanda a country of more than 12 million people, considering the prevalence of dependence being around 10% meaning more than a million people are considered to have an addiction problem. For the management of a disease with such overwhelming significances, it is astonishing how limited researches are accessible and available (Lenaerts E, 2014)**.**

From this picture in order to improve, impact and contribute to the service offered to the community, we did the research on the available illicit drugs in Rwanda and some of the factors influencing and leading to the use of drugs in our Country. A qualitative study has been done trying to fill the gap concerning the available data. The latest data being from a quantitative study done in 2015, 6 years ago (Kanyoni, 2015).

I.2. Research Questions:

The three primary research questions guiding this study were:

1: what are the illicit drugs available on the Rwandan black market?

2: what are the factors influencing the use of illicit drugs in Rwanda?

3: what can be done to prevent illicit drug use in the Rwandan population?

I.3. Objectives of the study

1.1 Aim and objectives

1.1.1 Aim

The aim of this study was to produce an exhaustive list of the illicit drugs available and to find factors influencing its use in Rwanda.

1.1.2 Specific Objectives

1. To determine the illicit drug available in Rwanda, their local names and identifying which of them has risk of overdose;
2. To identify the risk factors for the first use of drugs and the motivation of use.

Chapter 2. LITERATURE REVIEW

1 Concept of drug and illicit drug

1.1 Drug:

A drug is an element anticipated for usage in the medication, identification, management, or prevention of disease in humans or animals. Any product, not food, scheduled to impact the configuration or function of a human or animal body (FDA, 2017). The simplified definition is; any element sources changes in an organism's physiology or psychology when consumed (Stedman medical dictionary). The world health organization (WHO) describe a drug as a substance that can change how a living organism works. Even though some foods may have similar properties, food is not perceived as a drug. Mainly drugs are used to treat a medical condition or a disease.

1.2 Illicit drug:

As mentioned above, are called illicit drugs, drugs that can inhibit or stimulate the central nervous system or induce hallucinations to an extent that their use has been banned on the global scale (FDA, 2017).

2 Epidemiology

Illicit drugs use is a rising international problem. According to UNODC in (UNODC, 2016) The global prevalence of illicit drug use in 2014 was 5.3%. The most commonly used being cannabis, cocaine, opioids and amphetamines.

The amounts of Opium and cocaine seized are also greater than ever before. The amount of cocaine seized increased up to 74 per cent in the past decade, in contrast with a 50 per cent rise in production during the same period. (UNODC, 2019)

In Africa, Cannabis comes on the top list of illicit drug used on the continent. West and Central Africa are recorded with a highest prevalence and growth the rate ranging from 5.2% to 13.5%. (WHO, 2020) On the second place of most used drugs, come Amphetamine-type stimulants (ATS) such as "ecstasy" and methamphetamine. 3.7% are recorded to use injecting drugs and

Benzodiazepines such as diazepam, different inhalants and chlorpromazine were reported to be mainly in use by children and youth (WHO, 2020).

The opioid emergency that has highlighted few titles but that needs equally worldwide consideration is the use of non-prescribed painkiller such as tramadol, particularly in Africa (Phillip Coffin, et al., 2020). The limited data accessible designate that in Africa, the non-medical tramadol being used, is illegally produced (Phillip Coffin, et al., 2020). In 2008 a population-based national study was conducted in a South African. 3.7% was the prevalence recorded all drugs combined for the past 3-months (Peltzer K, 2018).

In our country, Rwanda, substance use is pervasive and endemic among adolescents. The percentage of substance dependences in teenagers and young adult in 2015 were as follow: one person in thirteen were alcohol dependent, one in twenty were nicotine dependent, and one in forty dependent on cannabis (Kanyoni, 2015).

3 Effects of drug use

Drug overdose, mainly due to opioids, is rising in many developed countries; in the United States, drug overdose has been the leading cause of injury-related death since 2009, with opioid overdose alone the leading cause in 2016 (CDC, 2020).

Globally, from an earlier estimation of 30.5 million, 35 million people, suffer from drug use disorders and need management services. The mortality is upper: 585,000 people lost life from drug use in 2017 (Phillip Coffin, et al., 2020).

In regular cannabis users 10 percent develop Cannabis use disorder, and may be associated with cognitive impairment, psychiatric comorbidity such as mood disorders, psychosis and poor work or school performance (David A Gorelick, et al., 2020).

There is substantial bi-directional comorbidity between cannabis use or cannabis use disorder and alcohol use or alcohol use disorder. A cross-sectional survey of 36,309 community-living adults in the United States found those with current (past 12 months) alcohol use disorder were six times more likely compared with those without alcohol use disorder to have current cannabis use disorder with a prevalence rate 10.9 percent (Bradley T Kerridge , 2018).

A higher rates of personality disorders and lower social support was associated with Cannabis dependence (Jesse R Cougle , 2020).

One of the key effects of illicit drug use on civilization is the negative health consequences experienced by the community. Adding on heavy financial problem on individuals, families and society (WHO, 2020).

4 Prevention of drug use disorders

To impact the drug use situation, are required: drug dependence treatment and care, long-term actions on prevention and supply reduction efforts (FDA, 2017). The prices of evidence-based management is proved to be lower compare to the costs indirectly caused by untreated drug dependence (penitentiaries, job loss, and law application and health costs).

Studies shows that expenditure on treatment care produces savings in reducing number of criminality victims, and reduces expenses for the criminal justice structure (WHO, 2008)

5 List of illicit drugs:

The first multilingual list of substances under global control, who covering illicit drugs was established in 1958 ((UN), 1958).

Over the last decade, an expansion of the substances offered on the drug black markets has been recorded. Synthetic drugs and non-prescribed medicines use was added to known plant-based substance – as cannabis, cocaine and heroin. More intoxicating drugs are accessible and the growing number of substance, and their combinations, present a bigger risk (UNODC, 2019);

The non-prescribed tramadol use, has developed considerably in sub-saharian region, such as West and Central Africa as well as North Africa (UNODC, 2019).

Cannabis use has increased considerably in Africa, America and Asia, while in Western and Central Europe is stated as becoming stable (UNODC, 2019).

the first large-scale national drug use survey conducted in Nigeria, in 2017, found a high prevalence of the non-medical use of prescription opioids (mainly tramadol), which was second to the use of cannabis, with a past-year prevalence of 4.7 per cent (UNODC, 2019) (UNODC, 2019);

6 Factors influencing the use of drugs:

On a global scale, multiple factors have been found to be associated with drug use: specific sociodemographic factors (Karl Peltzer , 2018), (Peltzer K, 2008) like living in a developing city and having medium, low income or not employed in a high demanding city, have been associated with an increase in risk of using illicit drugs. Studies show a high prevalence in male gender than in female. (Peltzer K, 2008), (Van Heerden MS, 2009). younger age population are more affect (Peltzer K, 2008) and some specific groups such as mixed race and white people, (Peltzer K, 2008), (Van Heerden MS, 2009). Some common mental disorders such as major depression, anxiety disorders, (Conway KP, 2016), (Lai HM, 2015) and alcohol use disorders, (Teesson M, 2012) expose patients on using illicit drugs as self-medication.

In the study done in South Africa, Peltzer et Al found an association between past three months drug use, having been a victim of violent crime and having psychological distress among women and sexual risk behavior in men (Peltzer K, 2018). Whereas in Kenya, researchers found that age, occupation, religion, and marital status were contributing to drug abuse. Social learning from parents, peer pressure influence, one's perceived respect by others, the social environment, , one's culture and cultural believes, customs, norms and values are social-cultural aspects working in close relationship with Demographic aspects. Economic factors also play a great role in determining one's behavior especially in cases of deviance. One's economic status may influence one's indulgence in such activities.

Chapter 3 METHODOLOGY

1 Study description

This is a qualitative study, non-probabilistic, theoretical, cross cutting study, with purposing sampling.

2 Study site

The study was conducted at Icyizere Center in Kicukiro district, Kigali, Rwanda. A branch of Ndera neuro-psychiatric Hospital, the only inpatients psychiatric hospital in Rwanda. The center was established in 2003 to provide specialized mental health care and addiction treatment for those suffering from trauma and substance use disorders. The center has a capacity of 36 beds for inpatients and beds are divided into two wings; the general psychiatry unit with 16 beds and 11 beds in the substances use unit. The center has also an outpatients department, providing psychotherapy and psychiatric care. Icyizere center has a multidisciplinary team, with the presence of psychologists, psychiatrists, general nurses, mental health nurses and occupation therapists. This is the only center in Kigali, with a specialized department in addiction medicine. The length of inpatient stay varies from 2 weeks to 8 weeks. At admission 1 or 2 individual sessions are done, during the sessions a therapy is done on the determination of the patient, of coming off substance misuse. Once the introduction program is complete a relapse prevention assessment is done and goals are set. During the time of hospitalization, a symptomatic treatment is prescribed for the withdraw syndromes. Unfortunately no substitutions molecules are available as for now in the center. After the physical withdraw, group therapies are done on the prevalence of relapse. During the sessions many modules are done including, but not limited to: urges and Cravings Management; High Risk Situations Management (Identifying Triggers), Set-ups (Pros and Cons are Identified throughout an exercise of Cost- benefits matrix using a decision balance sheet), Managing Emotions (Identifying negative emotions always linked to substance use and learn ways of dealing with them), life style (sleep management, balanced diet, structuring daytime activities). On discharge patients are oriented in self-help groups (like Alcoolique anonimous and Narcotique anonimous) and an outpatient follow-up in the center.

3 Study population:

This study concerns all illicit drug users hospitalized in icyizere center during the study period and who was meeting the inclusions criteria.

The study period were the month of September 2020, and the study was resumed in February and March 2021.

Inclusion Criteria

- All persons in the center with positive history of using illicit Drugs.
- Above 18 years old of age
- Competent enough to sign the consent.

Exclusion Criteria

- Bellow 18 years old of age.
- 65 years and above
- Those who will refuse to sign the consent

3.1 Sampling

Every person meeting the inclusion criteria at the Icyizere Center, was requested to participate in the study. The participants were enrolled till we get the data saturation.

4 Study procedures

4.1 Procedures at enrollment

Every patient admitted or consulting the Icyizere center during the weeks of data collection was approached individually and given explanations regarding the study. Patients who accepted to participate were given the consent form. After the signature, the participants went through individual interviews. A focus group discussion was done after getting a group of six to eight participants. The enrollment was done every day till the data saturation. The data saturation was reached after ten days with twenty six patients. Three days was added on data collection and

enrollment to make sure that the data saturation was reached. The enrollment and data collection was done by nurses of the center to minimize bias and answers orientations by the researchers.

4.2 Sample Size

This study being a qualitative research with a purposive (nonprobability) sample and considering many theories on the qualitative sample size calculation. It is suggest that purposive sample sizes should be large enough to obtain enough data to sufficiently describe the phenomenon of interest and address the research question (Kirsti Malterud, 2016). In this specific research we were able to get valuable information from individual interview and Focus group discussion (FGD) on the illicit drugs used in Rwanda. However the enrolment of participants continued till we reached data saturation.

4.3 Data management

To assure the privacy of the patient no name was recorded. A data set key was created by the Principle Investigator (PI) assigning a unique identifier to each enrolled participant's for recording individual participants study data. Resultant study data was therefore de-identified and then stored electronically in password protected files on an encrypted computer. The PI is responsible for overseeing data management.

4.4 Proposed data analysis

A survey was conducted on patients. Questions were asked on the known and used drugs in Rwanda. Free space was allowed to participants to list their known illicit drugs and additional questions were asked to assess the environmental and age of their first use. Groups of six to seven participants was formed for Focus group discussion (FGD) after the administration of questionnaires. Individual questionnaire made available to guarantee participant's privacy and freedom of speech, needed for the answers on source of illicit drugs; risk factors for the first use of drugs and the motivation of use. The dynamic environment of the FGD was used to fill the gap of short memory that may happen in individual interview while answering questions on illicit drug available in Rwanda and local names given to illicit drugs. The data analysis was done every day; collecting information given and filling the lists addressing specific objectives of the study. Three

days of data collection was done after the saturation was attained mainly to confirm that the data saturation was reached.

5 Ethical considerations

5.1 Privacy and Confidentiality

Participation in the study was voluntary and the information collected during the study was only used for the purpose of the study. Information about the persons in question cannot be in any case released without their consent, in accordance with international laws on human rights.

Study participants were assured of confidentiality, their names was not used and there was no material gain from the study.

5.2 Informed consent

Written informed consent (annex) was sought from all research participants before including them in the study. This following a full and detailed explanation on the study.

5.3 Ethical approval

Data collection started after ethical approval from the Institutes review board (IRB) College of Medicine and health sciences, University of Rwanda.

5.4 Logistics

5.4.1 Distribution of responsibilities

The principal investigator was financially and logistically responsible of all steps of the study.

Chapter 4. Research Results

1 Introduction:

The results of this qualitative study are based on interviews and focus group discussion of thirty eight drug users from twenty three different sectors in seven different districts of four provinces in Rwanda. All the thirty eight participants answered the individual questionnaires. Only twenty five participants presented them self for the focus group discussion which was planned one day after the individual interviews. Each participants was diagnosed with SUD and was following a treatment. All participants used illicit drugs for at least two years.

The primary purpose of this study was to elaborate a list of illicit drugs available on Rwanda black market. The other purpose was to find factors influencing the use of illicit drugs in Rwanda.

Participants' experiences and feedback added insight to the research purposes. By listening and analyzing the experience of participants, valuable information was obtained on what can be done to prevent the use of illicit drugs in the Rwandan population.

In this chapter, the three research questions are addressed with supporting evidence, including quotations and feedback from the participants.

2 Demographics of participants

All participants voluntarily participated in the study after giving their consent. The characteristics of participants are summarized in the table1.

Five participants were female, representing 13% of the study population. On marital status, five were married, one was divorced, one was widow and thirty one were still single. All participants didn't know each other before they meet in the therapeutic center. They had different life background and had different educations levels. Two of the participants had a Master's degree, nineteen had a bachelor degree and fifteen had high school education, one of the participants finished primary school and only the remaining one had no formal education. The youngest being 21 years old, the older was 49 years old.

Table1: Characteristics of participants:

Variables		Frequency	%
Sex of participants	Male	33	87
	Female	5	13
	Total	38	100
Age categories	(18-25) Years	10	26
	(26-30) Years	11	29
	(31-35) Years	9	23
	(36-40) Years	4	11
	(41-50) Years	4	11
	Total	38	100
Marital status	Single	31	81
	Married	5	13
	Divorced	1	3
	Widow	1	3
	Total	38	100
District	Gasabo	8	21
	Nyarugenge	7	18
	Musanze	3	8
	Gakenke	1	3
	Bugesera	1	3
	Kicukiro	17	44
	Rutsiro	1	3
	Total	38	100
High education level	Less than 6 years	1	3
	Primary	1	3
	O level	0	0
	A level	15	38
	Bachelor	19	50
	Master	2	6
	Vocation training	0	0
	Total	38	100
Years spent using drugs	Less than 5 years	5	13
	(5-10) years	14	37
	More than 10 years	19	50
	Total	38	100

3 Research Results:

The result was discussed using three themes that emerged from the research data, to address the specific objectives of the study.

Theme 1: Illicit drugs available on Rwandan black market.

Theme 2: environment and motivations influencing the use of illicit drugs.

Theme 3: solutions for the prevention of illicit drug use.

Theme 1 answered the first research question: **"***what are the illicit drugs available on the Rwandan black market?"* And addressed the first specific objective: *to determine the illicit drugs available in Rwanda, their local names and identifying some of them with risk of overdose.* Theme 2 addresses the second research question: "*what are the factors influencing the use of illicit drugs in Rwanda?"* And answered the second specific objective: *To identify the risk factors for the first use of drugs and the motivation of use.* Theme 3 discusses the third research question*: "what can be done to prevent illicit drug use in the Rwandan population?"*

3.1 Theme 1: Illicit drugs available on Rwandan black market.

Marijuana was quoted by all participants. The substance has many local names: ***"Urumogi, Ganja, weed, umuti, kibaba, etc."***

Heroine called ***Mugo*** locally.

Cocaine also cited by all participants.

Caps drug that was not related to any specific substance known scientifically. *"They are called caps, it is pills soled by 10 in a box. We don't known the composition. They are stimulant more like heroine than cannabis"* quoted a participant trying to explain the drug effect of the substance.

LSD (Lysergic acid diethylamide) is also cited as available in Rwanda.

Gasoline, participants confirmed that is used mainly in car repair garage and by people with a low income.

Glue, the wood glue is reported to be used by street kids who can't afford expensive drugs. It is taken by inhalation. Locally it's called ***Kore***.

Mairungi or ***Mirra*** a local plant used to stay awake.

Alcohol, here they were talking about inhaling medical alcohol used in barber shops and clinics.

36 oiseaux, a French name meaning "36 birds". It's a local plant named ***Rwiziringa,*** users eat the seed and hallucinate. The drug is also taken by putting the seeds in the shoes close to the feet. With this route it is reported that the drug is absorbed slowly from the sole of the foot.

Shisha and electronic cigarette, since 2018, these are prohibited in Rwanda by the ministerial order (Nº 001/MoH/2019). But they are still available and consumed illegally.

Benzodiazepine, participants declared, benzodiazepines are sold mainly by pharmacist or health care workers.

Morphine, it is also available on the Rwandan on the black market through health care providers.

Pethidine is more observed coming from hospitals through health care workers, declared the participants.

3.2 Theme 2: environment and motivations influencing the use of illicit drugs.

The school and job environments were cited by three participants. One of the participant declared using drugs since forth year primary school. This was due to drug users who used to consume Marijuana in a forest near the primary school. The school didn't have fence, so the student could easily go in forest. The participant and his colleagues used to go under the tree used for consumption, seeking for the seed left. Their motivation was longing for intelligence and concentration. *"We were convinced that **smoking increase intelligence**"* said the participant. A previously barman shared his experience. When working, many of his colleagues used to use marijuana to relax. Stressed with the late night work, he was introduced to ***smoke Marijuana to***

be calm and able to sleep. *"They told me that I was the one stressed because I didn't smoke. Since that time I tried and manage to sleep and be calm at work".*

Home was also mentioned by participants. Quoting ***Isolation and both psychological and physical trauma*** as factors that influence the first use of drugs. The participant 02 mentioned ***using drugs to escape the reality***. Back when he was young the country was experiencing discrimination based on ethnicity. He and his family were persecuted due to their origin. "*I needed an escape, I was too angry because we were persecuted and didn't have any other solution for that."*

"*after the accident I needed a pain killer and booster to be able to enjoy again my life. My friends recommended me to use drugs and at time it worked. I could slowly get back in my social life, regardless of my medical status."* mentioned the participant 03.

Friend's place (Irigara: local name to a dealer or friend's place where you can use illicit drugs) was quoted by the remaining two participants. *"I tried by* ***curiosity****, my friends were using it"* said the participants 01. The ***peer's pressure*** was mentioned by the participant 08: "My friends asked me to try too*, I couldn't say no"*.

During the FGD participants incriminated ***experienced drugs users*** to be the promotors and initiators of the first use. *"They are the ones who mislead teenagers"* quoted a participant. Others factors mentioned are: ***music, video clips, stars and some cultures***. *"Nowadays' music and video clips talk about using drugs to be happy and stars are seen using drugs. Teenagers tend to also use drugs in order to be cool and have the image of their idols."; "People are convinced that the Rasta culture oblige people to smoke Marijuana".* The ***responsibility of parents*** was mentioned. "Some parents use illicit drugs in the presence of their children at a young age."; "parents discuss illicit drugs use with their children only when one of them (children) is caught using drugs."

Questions was asked in the FGD on other factors that may contribute to drug use. "***The first use stimulate the second one****. And even if the first experience didn't went well, the experienced users convince you to* ***have another experience to get your body used to drugs****"* concluded the FGD. The participants took time explaining the effect of ***sending children abroad***. "*When you are a teenager and sent alone abroad, you get to many temptations of using illicit drugs. And being alone doesn't help"; "once you are abroad, you can do anything because you are not fearing the parental*

authority"; "you are free to do whatever you want, you are not home."; "some countries legalized some of the illicit drugs in Rwanda. You take them legally abroad and get addicted. Once in Rwanda you continue the consumption."

Some effect of the drugs are needed by users depending on the situations or mood they are in. drugs are used ***to be fearless***; ***changing the mood*** when filling depressed; ***gaining appetite*** and relieving withdraw symptoms for drugs dependent users.

3.3 Theme 3: solutions for the prevention of illicit drug use.

Education from childhood

All participants agreed and insisted on the fact that the education on illicit drugs is necessary from a younger age. The participant 04 and 05 reported in the interview: 04 "*the key of antidrug fight is in educating the youth*" 05 "*The parents, the government and its partners have to inform the youth about the consequence of illicit drug use*." During the FGD, many points raised on this subject. All participants of the FGD agreed that, parents get time to discuss with their children about illicit drugs only when one of their children is caught using drugs. For the participants it's already too late. One of the participants mentioned *"when you use the drug once, other advices are useless when you have experienced the pleasure you get when under substance influence*". The participant who started the use of cannabis in Primary four (P4) reported: "*The lack of information on illicit drugs in child wood, the presence of risk factors and miss-information on the so called "**benefit of using drugs**" leave children unequipped to resist on temptations".* Education on drugs at young age will help teenagers to resist the temptations. From the discussions some statement were reported like; "*From the religion's education children fear God and the sins, why can't we educate our kids to fear drugs" "we fear carnivorous animals way before being in their presence, we can educate our children to fear and report drug use before their exposure."*

Patient with drug user disorder can help in the fight against illicit drugs

Drugs users can help the authorities' identifying drugs dealers. The participants asked to be part of the fighting team as educator and informer. *"Who knows dealer than us their clients?" "Who can explain the consequences of drugs use than someone who lost his family, job and the trust of friends*

than the person who experienced all this?" patient undergoing SUD treatment are motivated and willing to help the young people to avoid drug use temptations. The route of educations identified by the participants are "Isibo, Umugoroba w'ababyeyi, Umuganda" regular meetings organized on the local government level in all villages. *"We (drug users) are many to have the willing to help. We can easily cover the country."* Said a participant.

Summary:

This chapter presented the results from thirty eight personal interviews of drug users, participants in the study, and four focal groups' discussions with six or seven participants, representing a total of twenty five participants. Findings were presented in three sections that corresponded with the primary themes that emerged from the results.

Drugs users are the only one that can truly know available drugs and evaluate factors that lead to illicit drugs use. From the results numerous illicit drugs were enumerated, multiple influencing and motivation factors identified and solutions to this devastating condition cited. It is clear that in Rwanda there is a lot of illicit drugs available on the black market. The lack of adequate information and miss-information to teenagers, is one of the factors influencing the use of illicit drugs. Experienced drug users play a role in the first use of drugs. Patients going through SUD treatments are willing to help in the fight against illicit drugs in Rwanda.

Chapter 5. DISCUSSIONS

1 Introduction

Rwanda drug black market is well supplied and diversified in the illicit drugs. As for now no publication were found on the available illicit drugs in Rwanda.

Chapter 4 provided the results of this study. In this chapter we are going to discuss and compare the findings with other studies done on the subject. Due to some gaps in the available data for Rwanda and the region, international studies will be used. The discussion is done in two themes addressing the specific objective of the study.

Theme 1: Illicit drugs available in Rwanda and their characteristics. This is addressing the first specific objectives of the study: *to determine the illicit drugs available in Rwanda, their local names and identifying some of them with risk of overdose.*

Theme 2: Motivation of using illicit drugs and Risk factors for the first use. This is addressing the second specific objective of the study: *To identify the risk factors for the first use of drugs and the motivation of use.*

2 Illicit drugs available in Rwanda and their characteristics:

Through this study a number of illicit drugs was identified being available in Rwanda. Many of them are subject to overdose and some can be lethal to the users (A table listing the illicit drugs is available in the appendix). During the focus group discussion participants had the chance to list and brain storm about illicit drugs and their characteristics. Cannabis was cited by all participants in personal interviews and in FGD. Despites its legalization in some countries,cannabis remain one of the substance under international control by UNODC (UNODC, 2016). Since 1961 during the Single Convention on Narcotic Drug, Cannabis, Morphine, heroin, pethidine and cocaine are noted as illicit drug by the United Nations (UN 1972). Let's clarify that Cannabis remain illegal in Rwanda, even though its legalization in some countries.

Morphine, Heroin and Pethidine are opioids, subject to overdose and now days sold on the black market in Rwanda. Morphine, is the most prevalent alkaloid extracted from opium or poppy straw (Kim J, 2016). Heroin locally named Mugo, is an opioid drug made from morphine (Simon Haysom, 2018). Pethidine, is a strong opioid analgesic, when wrongly administered it has same symptoms as a cocaine or heroin addiction (Brenya, 2015). Intentionally or accidentally, too much opioids can lead to overdose. This can have life-threatening toxic properties in multiple organ systems. Normal pharmacokinetic properties of analgesic opioids, are often disrupted through an overdose and can stretch intoxication radically (Edward W. Boyer, 2013). The overdose can depresses heart rate and breathing to the extent that the patient cannot survive without medical intervention. Naloxone (drug that is now in the *Rwandan list of essential drugs*) is an opioid receptor antagonist medication that can eliminate all signs of opioid intoxication to reverse the overdose. Due to the opioids crisis in some countries like USA and Switzerland Naloxone have been made accessible to nonmedical personnel use. This has been shown to be cost-effective and lives saving (Coffin & and Sullivan, 2013).

During the study all participants confirmed the availability Cocaine in Rwanda, a strongly addictive stimulant drug made from the coca plant. The local name is kokayine. Even if a high intake of cocaine can lead to overdose, in severe overdose cases, cocaine is mixed with drugs like opioids. And this can lead to serious health consequences, including death. Some of the symptoms of cocaine alone overdose are high blood pressure, palpitations, chest pain, dilated pupils, severe confusion, Seizures and death (Kennon Heard, 2009). The treatment of cocaine overdose is symptomatic. Some drugs commonly used are benzodiazepines, calcium channels blockers, phentolamine, labetalol, and antipsychotics such as haloperidol and olanzapine for agitated patients (Richards & K., 2020).

Benzodiazepine sold in Rwanda in the tablet form, according to participants, are a class of psychoactive drugs whose core chemical structure is the fusion of a benzene ring and a diazepam ring. A large number of overdose deaths worldwide has been associated with Non-medical use of prescription benzodiazepines (UNODC, 2017). However taken alone without other coingestants rarely cause a significant toxidrome. The presentation of isolated benzodiazepine overdose will consist of central nervous system depression with normal or near-normal vital signs. Other symptoms include ataxia, slurred speech and altered mental status. Respiratory depression can be

noted, if taken with coingestants such as ethanol or other drugs. The treatment for benzodiazepine overdose is supportive care and the use of Flumazenil (drug not yet in the Rwandan list of essential drugs), a nonspecific competitive antagonist at the benzodiazepine receptor that can reverse benzodiazepine induced sedation (Kang, et al., 2020).

Concerning Inhaled Alcohol , during the study, it was confirmed that in Rwanda, Street kids usually inhale medical alcohol to get high. Scientifically detailed reviews assessing the possible effects of inhaled alcohol in humans are lacking (Robert Ross MacLean, 2017). However, Studies in rats show that chronic alcohol inhalation leads to more and more alcohol-seeking behaviors (Gilpin NW, 2008). Inhaled alcohol rapidly reaches the arterial circulation and the brain by passing the stomach and liver, suggesting an increased risk of addiction and overdose. Symptoms of alcohol overdose are confusion, vomiting, seizures, severe dehydration, hypoglycemia, hypothermia and irregular heartbeat. It can potentially lead to a coma, brain damage and death. The treatment is usually supportive, while your body rids itself of the alcohol. The use of vitamins and glucose help prevent serious complications (Clinic, 2018).

Lysergic acid diethylamide, product identified to be sold in Rwanda, commonly referred to as “acid” or LSD, is a psychedelic hallucinogen that produces changes in perception, emotions, and orientation. No study was found on the overdose of D-lysergic acid diethylamide. Nevertheless cases report were published with contravention outcome. The overdose of LSD was associated with Emesis, coma and respiratory arrest (John C. Klock, 1974). In January 2020 2 Canadian researchers reported three cases of LSD overdose with positive outcomes. The first documents significant reductions in mania with psychotic features. The second case documents an overdose of LSD early in the first trimester of pregnancy with no teratogenic or other negative developmental to the child. The third report indicates that intranasal ingestion of 550 times the normal recreational dosage of LSD was not fatal and had positive effects on pain levels and subsequent morphine withdrawal (MARKHADEN, 2020).

For other substances quoted by the participants, we didn’t objectivate literature supporting their evidence of overdose effect. Gasoline, also called gas or petrol, known in Rwanda under the name “essence”, is mixture of volatile, flammable liquid hydrocarbons derived from petroleum and used as fuel for internal-combustion engines. Since 1950 there have been report multiple cases of

muffing petroleum product (Foxnews 2019). No specific study found on its addiction. The psychological and physical effects of muffing gasoline including visual hallucinations, changes in consciousness, euphoria, nystagmus, dizziness, weakness and tremors (Mosallai, 2010). Cannabis, also known as Marijuana or weed. Locally named “Urumogi” or “Umuti”, contains a number of chemical substances, however the most predominant and only psychoactive substance is the trans-delta-9-tetrahydrocannabinol (delta-9-THC or THC). Glue, named Kore in Rwanda, is a sticky substance used for joining things together. It has been reported to be inhaled mainly by adolescents as a cheaper and more easily accessible alternative to other drugs (Roland, 2018). Khat, locally known as Mairungi or mirra. Its scientific name is Catha edulis Forsk. It is a local plant. The leaves are chewed for their psychostimulant and euphoric effects (Drugs.com, 2019). Shisha and electronic cigarette, since 2018 they are cited in illicit drugs in Rwanda by the ministerial order Nº 001/MoH/2019 (Health, 2019). 36 oiseaux, also known under the name Rwiziringa is a local natural bush plant. It is used manly in country side. By the time of the study there were no scientific study published yet on the subject. Again we failed to identify the scientific composition of the product named “Caps”.

3 Motivation of using illicit drugs and Risk factors for the first use.

According to the American addiction centers, the boredom is the most common reason for teenagers to experience drugs. A bonding experience, depression, curiosity, stress and peer pressure are also noted as reasons of using drugs for the first time. This confirm the findings in this study. Where participants mentioned using drugs due to peer pressure, curiosity, working stress and Isolation. This was also confirmed by J. Howard in a study done on detained young offenders. In his study, he added also the need of feeling good (Zibert, 2009) as one of the factors influencing the use of illicit drugs. This correlate with the condition of the participant 03 who used drugs to feel good after an accident. The miss-information was emphasized in the two publication as factor leading the use of drugs by curiosity.

The responsibility of family and parents was also accentuated as the solution of many of the factors. Teenagers need more attention on their mood and activities when they change schools or living environment. “*You may see a sullen attitudes as “just being a teenager”, but there may be a deeper depression within”.* Quoted the American addiction centers journal. The article encourage parents

to help teenagers to have extra curriculum activities as sport and clubs, so that they stay active around healthily living friends.

In this study we tried to point out motivations leading to continuous use of drugs. Through the interviews participants tended to deny any benefits from the use of drugs, focusing mainly on the harms they got form the use. During the FGDs another mood was installed and the groups were dynamic sharing the reasons and benefit of using illicit drugs. Motivations quoted were: To be calm when agitated, being able to sleep, escape the reality when they have problems, to be fearless and overcome their anxiety, changing mood when they feel depressed, having a good appetite and mainly relieving the withdraw symptoms for the ones with addiction. Our finds are similar to the results obtained by Celia JA Morgan and colleagues in an international survey conducted in 40 countries with 5791 participants and drug users in total (Celia J A Morgan, 2013). The study aimed to identify harms and benefits associated with psychoactive drug use. The benefits identified was classified in ten groups with different items in each group: the first was Sociability including Lose inhibitions, being more sociable, Feeling more confident and feeling part of a social group; the second benefit was Enjoyment like Enhance activities, Enhance sense of fun/humor, Help with creativity/ abstract thinking, Increase sexual function and euphoria; the State of mind was the third group including open up to new experiences, altered senses, Increase existential awareness, Find meaning in the self and the world and to get out of patient's self-head (escapism); Relieving symptoms of disease and physical pain was the fourth group; and the remaining groups were: Relieving anxiety/ depression; Feel more relaxed/ relieve stress; Change appearance of body (bulk up/ lose weight); Help wake up (have more energy); Help to get to sleep and Improve attention (memory and concentration).

4 Study limitations:

Our study has numerous limitations. The first being the Covid 19 pandemic. Due to measures put in place and lock down, we were not able to collect data in the Kicukiro transit center. One of the two sites that were cited in the protocol of this study. Secondly the study was only done in Kigali. With this limitations, we cannot confirm to have the exhaustive list of illicit drugs available in Rwanda and all factors influencing their use.

CONCLUSION AND RECOMMANDATIONS

CONCLUSION

As a result of the qualitative study done in Icyizere Neuro-psychiatric center, the only therapeutique center on SUDs in Kigali, fourteen products have been identified as illicit drugs sold on the Rwandan black market. Some of them are at high risk of overdose and treatment are not available in Rwanda. Case of the Flumazenil an antidote of benzodiazepine overdose. Caps were identified as illicit products sold in the country and used for recreation and leisure purposes. The composition of this drug was unknown by user and no literature done on it. Product like Rwiziringa are known but no study done on their psychoactive effect on the human body.

Factors identified to be leading the use of illicit drugs was meanly due to lack of accurate information on drugs in the child and teenager woods and miss-information transmitted by experienced drug users on the benefits of using drugs. Teenagers are locked in a circuit of isolation, peers pressure, looking for happiness and finding a place in their environment with a so called solution “Use of drugs”. Children and teenagers will be safer if an effective education on illicit drugs is given since childhood by families, schools and government.

RECOMMANDATIONS

According to the United Nations, over the period 2000-2018 Drug use increased rapidly among developing countries compare to developed countries. Adolescents and young adults represent the largest share of those using drugs, while teenagers are also the most susceptible to the effects of drugs because their brains are still developing (UNODC, 2020). The east Africa Region is now experiencing the sharpest increase in heroin use worldwide and a spectrum of criminal networks (Simone Haysom, 2018). Rwanda being an East African and developing country, it is urgent to take action and face illicit drug use problem. From the results of this study here are some recommendations made:

- Parents have to be more present for their children. Family education can be the key to the miss information leading teenagers to experience drugs by curiosity.

- A control on the showbiz industry is needed to manage the miss-information and its influence in illicit drug use.
- Screening and Intervention on teenagers with mental health conditions can help in decreasing drug use as self-medication.
- Involving previous and current drug users, willing to help, in the fight against illicit drug use.
- Adding Flumazenil, in essential drugs in Rwanda will be a good help in fighting against benzodiazepines' side effects.
- More studies on illicit drugs and their use are needed. In this study we managed to get a number of drugs used in the country and factors influencing the use. And numerous issues were raised. We have illicit products consumed but not identified. Caps are pills available in the community but no data or research were found on these products. 36 oiseaux is a known illicit drug, available as it's a forest plant (Rwiziringa) growing almost everywhere in the country. For the two products (Caps and 36 oiseaux) no scientific study was found on their psychoactive properties.

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Appendix:

Recapitulative table of illicit drugs available in Rwanda

Product	**Local name**	**Overdose**	**antidote**
Heroine	mugo	possible	Naloxone
Morphine	morufine	Possible	Naloxone
Pethidine	petidine	Possible	Naloxone
cocaine	Kokayine	Possible	Sumptomatic treatement
LSD	LSD	Possible	None
Benzodiazepine	-	Possible	Flumazenil
Cannabis	urumogi	Not objectivated	none
Alcohol inhaled	arukoro	Possible	Symptomatic treatement
Glue	kore	Not objectivated	none
Gasoline	essence	Not objectivated	none
Khat	Mairungi	Not objectivated	none
36 oiseaux	Rwiziringa	Not objectivated	None
caps	caps	Unknown	unknown
Shisha and electronic cigarets	-	Not objectivated	none

Informed consents

Kinyarwanda version

Kugira uruhare mu bushakashatsi kubushake

Nitwa Audace NIYIGENA. Turashaka gukora ubushakashatsi bwo kugerageza gukora urutonde rw'ibiyobyabwenge biboneka mu Rwanda. Ibizava muri ubu bushakashatsi bishobora kuzafasha mu kuvura abakoresha ibiyobyabwenge ndetse no gufasha abatarabikoresha kubyirinda.

Turabasaba kugira uruhare muri ubu bushakashatsi. Nimuramuka mubyemeye turabasa gusinya mwemeza ko mwabyemeye ku bushake bwanyu.

Ibirimo

Gukoresha ibiyobyabwenge bigira ingaruka, ku ubikoresha ndetse no kubamwegereye. Ubu bushakashatsi buzadufasha kumenya ibiyobyabwenge bikoreshwa mu Rwanda mu rwego rwo gushakira ababikoresha ibisubizo bihamye.

Uko bizakorwa

Abantu bazagira uruhare muri ubu bushakashatsi ni urubyiruko rukoresha ibiyobya bwenge rukurikiranirwa muri centre icyizere ya caraes ndetse n'urubyiruko ruri muri transit centre igikondo. Abemera kugira uruhare muri ubu bushakashatsi barabisinyira babyemeza. Nyuma yo gusinya babazwa ibibazo bigamije gushakisha amakuru kubiyobyabwenge biri mu Rwanda.

Ingaruka zishoboka

Kumuntu wemeye kugira uruhare mubushakashatsi, abazwa ibibazo byerekeye imikoresherezeye y'ibiyobyabwenge. N'ubwo nta bubabare cyangwa ingaruka zo kumubiri, ibi bishobora kwibutsa ukorerwaho ubushakashatsi bimwe mubyaba byaramubabaje cyera. Uzagira ihungabana kubera kwibuka ibyamubayeho azakurikiranwa n'abaganga babizobereyemo.

Inyungu z'ubu bushakashatsi

Ubumenyi tuzakura muri ubu bushakashatsi bushobora kuzadufasha gukurikirana neza birushijeho abakoresha ibiyobyabwenge, namwe murimo, no gukumira ingaruka zijyanye nikoreshwa ry'ibiyobyabwenge.

Niba mwasobanukiwe neza kandi mukumva bifafitiye akamaro mwakuzuza inyandiko ikurikira kandi mukadushyiriraho umukono wanyu.

Mufite uburenganzira bwo kwifatira icyemezo mu gutanga umusanzu wanyu. Mufite ubushobozi bwo kuba mwahindura icyemezo cyanyu igihe icyo ari cyo cyose ubu bushakashatsi buzaba bukorwa kandi nta ngaruka bizagira ku bufasha mwari musanzwe muhabwa kwa muganga.

Uwemeye kugira uruhare mu bushakashatsi.

Amazina yombi:……..

Itariki y'amavuko:…….

Umukono:…….. Itariki:……..

Uwayoboye igikorwa cyo kugirana amasezerano:

Amazina yombi:……..

Umukono:…….. Itariki:……..

Abashinzwe kugenzura imigendekere myiza y'ubushakashatsi.

- Francois Xavier Sunday (secretary) 0788563311
- Prof. JB Gahutu (Chairperson) 0783340040

English version

Informed consent

My name is Audace NIYIGENA. We are conducting a study in which we try to establish the list of available drugs in Rwanda. The outcome of this research will help to develop adequate package of follow up to drug users and good strategies for anti-drug policies in the country.

You are asked to participate in this study. In case you agree, you will sign a written informed consent form. It is completely voluntary to participate in this study.

Background

The use of drugs affect the users and his environment. This study will help to establish an exhaustive list of illicit drugs available in Rwanda. This will help in adequate planification of drugs user package and better plan of anti-drug policies.

Procedures

The participants in the study are patients with drugs addictions followed in Icyizere psychotherapeutic center and youth using illicit drugs in Gikondo transit center. After the agreement to participate, a consent form is signed and the participant answer a serial of question on drugs and drugs use in Rwanda.

Risks

If you accept to participate in this study no physical harm will happen. But questions on the past use of drugs may revivify traumatic event. Any patient who will experience that, will be followed by specialist.

Benefits

Information to be learned from this study may help in better follow up of patients with addictions issues and better planification of anti-drugs policies.

If you have understood and are willing to take part in this study, then kindly sign below. You have the right to decide to participate or to withdraw at any point and this will not affect your medical care.

Participant:

Full name:

Date of Birth: Signature:

Date: ……..

The person who conducted the informed consent discussion

Full name:…….

Signature:……..Date……

IRB contacts: Francois Xavier Sunday (secretary) 0788563311

Prof JB Gahutu (Chairperson) 0783340040

Questionnaire

Identifiers	Code: ……
Igitsina	□ Gabo □ Gore
Imyaka y'ubazwa	Umwaka yavukiyemo

Irangamimerere	□ Narashatse □Umupfakazi □ Yatandukanye n'uwo bashakanye □Ingaragu
Aho ubazwa atuye	Akarere…… Umurenge……
Icyiciro cy'amashuri yize	□Ntiyize □ Amashuri abanza □ icyiciro rusange □Amashuri yisumbuye □Kaminuza □ Mastazi □ Imyuga
Igihe amaze akoresha ibiyobyabwenge	Munsi y'imyaka 5, hagati y'imyaka 5-10, hejuru y'imyaka 10. Umwaka yakoresheje ibiyobyabwenge bwambere:
Aho yarari akoresha ibiyobyabwenge bwa mbere:	Murugo; Ku ishuri; Ku kazi; Yasuye inshuti; Ahandi : ……..
Abo bari kumwe akoresha ibiyobyabwenge bwambere	Abavandimwe; Inshuti; Ababyeyi; Abo bigana; Abandi : ……
Icyatumye ukoresha ibiyobyabwenge uwo munsi	…….. …….
Icyaba cyarateye gukomeza gukoresha ibiyobyabwenge	…….. ……
Inyungu ukura mugukoresha ibiyobyabwenge	…… …….
Ingaruka watewe no gukoresha ibiyobya bwenge	……. ……..
Urutonde rw'ibiyobya bwenge azi bibaho kw'isi:	• …….. • ……. • ……. • ……. • ……. • …….

	• …….
Urutonde rw'ibiyobya bwenge azi biboneka mu Rwanda	• …….. • ……. • ……. • ……. • ……. • ……. • ……. • ……. • ……. • …….. • ……..
Ibyifuzo	