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MASTER THESIS

The associated factors with depression symptomatology among injecting drug users in Rwanda. Case study: KIGALI CITY.

The final Dissertation submitted in partial fulfillment Of the academic Requirements For award of Master's Degree with Honors' Public Health.

Presented by

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At Kigali,October 2019

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DEDICATION

To my Parents,

KANIMBA Gregoire(Father)

N.MPABANZI Phelomene

To relatives

To all my Friends

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immuno-Deficiency Syndrome
ARV	Anti-Retroviral
AUDIT	Alcohol Use Disorders Identification Test
CAST	Cannabis Abuse Screening Test
CBO	Community Based Organization
CVI	Content Valid Index
FGD	Focus Group Discussion
FSW	Female Sex Worker
GBV	Gender Based Violence
HCP	Health Care Provider
HDI	Health Development Initiative
HONC	Hooked on Nicotine Checklist
IDU	Injecting Drug User
HIV	Human Immuno-Deficiency Virus
KP	Key Population
LGBT	Lesbian Gay Bisexual and Transgender
M&E	Monitoring and Evaluation
MHD	Mental Health Disorder
MSM	Men who have sex with Men
NGO	Non-Government Organization
NIDA	National Institute of Drug Abuse
PCP	Phenyl Cyclohexyl Piperidine (Phencyclidine)
RBC	Rwanda Biomedical Center
RNEC	Rwanda National Ethics Committee
SPSS	Statistical Package for Social Sciences
STI	Sexually Transmitted Infection
THC	Tetra hydro cannabinol
USAID	United States Agency for International Development

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ABSTRACT

Introduction: Injecting drug use (IDU) is a key driver of the HIV epidemic particularly when individuals developed depression. The association between depressions and HIV/AIDS among Injecting Drug users in Rwanda is scarcely known by scholars. This study sets out to assess the associations between depression symptoms and frequency of Injecting, social demographic variables and HIV status among IDUS in Kigali. Also, the study understands the network, communication process and available equipment for injecting drugs in Rwanda.

Methods: The study employed a cross-sectional mixed method design randomized with snowballing sampling methods. The sample included 151 Injecting Drug Users (IDUS) from Kigali, Rwanda between November 2018 and March 2019. The validated tools and questionnaire used included socio-demographic information and self-reported substance use, HIV/AIDS and Focus Group Discussion (FGD) . The cross-tabulation Chi-square and multivariate regression analysis were used to demonstrate associations between depression symptoms and HIV/AIDS, frequencies of injection and social demographic variables exclude non-significant variables. We also used thematic analysis for qualitative data.

Results: On the 151 participants, 76.1%(118) presented depressive symptoms and majority of them had severe and moderate depression. The depression symptoms were significantly associated with injecting drugs 1 time to five times /week (AOR, 95% CI: 2.7,1.052 to 7.263) and having casual work (AOR, 95% CI: .229, .056 to .934).

The Age range, gender, marital status and HIV/AIDS status had no significant associations with depression symptoms'. The study found that bars, dealers places, social media, member of the families and friends are the network channels used by IDUrs to communicate. Indeed, water, paper, band and needles are available equipment used during injecting drugs in Kigali.

Conclusion: This study found that severe and moderate depressive symptoms were high among injecting drug users in Kigali. Mental health interventions and better quality of rehabilitation centers should be important in reducing depression, frequencies of drug injection and substance use in Rwanda.

Keywords: IDU, Depression, symptoms, association, Kigali

CHAPTER 1. GENERAL INTRODUCTION

1.1. Background of the study

The depression disorder in Injection Drug Users (IDU) is a global concern in Public health, and affects every level of society (1) Individuals, families, communities, and overall government expenses are impacted by the use of licit and illicit substances in both developed and lower middle-income countries (2). Depression is the third leading cause of death among American youth age 10–19 (3). The prevalence of depression symptoms varied from 27.7% to more than 50% among students in USA (4). Moreover among Men having sex with Men (MSM) in Chicago, the 38% to 58% are meeting depression criteria (5)(6): in this studies was used the Beck Depression Inventory (BDI), and was found that 51.3% reported minimal depression, 18.6% reported moderate depression, and 13.6% reported severe depression. The study conducted by using SCID-III-R found that 26% of IDUs had a current diagnosis of depression. Depression disorder is highly associated with injecting drug use (6).

According to Diagnostic and Statistical Manual of Mental Disorders (8) to make a diagnosis of depression it is required the presence of five or more persistent symptoms in a period of two weeks. The symptoms are loss of interest or pleasure, loss of appetite or weight changes, sleep difficulties, psychomotor agitation or retardation, fatigue or loss of energy, diminished ability to think or concentrate, feelings of worthlessness or excessive guilt and suicide thoughts (9).

The morbidity and mortality among IDU is more than 11-21 million of people aged from 15-64 years old and among them 3 million are HIV/AIDS patients(2). Besides, the study conducted on Injection Drug Users receiving Antiretroviral Treatment in Indonesia demonstrated that 33% of the participants showed significant depression symptoms (10). Also, the prevalence of IDU varies from one country to another (11).

In Eastern Europe, more than 1,5% of the population is drug injectors and in Australia and New Zealand more than 1,06% (12). It is estimated that the injecting drug use may vary from 1% of adolescents in Australia to as high as 2.5% in the US male adolescents (13).

In Eastern African countries, including Rwanda, the IDUs prevalence is different from one country to another and depends on population types. The Heroin injection is more occurring in large towns of Kenya and Tanzania (14). Moreover, it is revealed that the 44,9% among 336 heroin users in Nairobi, Kenya was, or had been, injectors in their life (14).

In Rwanda, currently, the rate of depression depends on types of population. With referring to the mental health survey in Rwanda, depression is 12% among general population, however genocide survivors scored 35% (MOH, 2018), 19% of Rwandan community presented depression symptoms (15), as 15% of Rwandan youth (16).
In addition, the IDUs are at high risk of HIV contamination through sharing needle and practicing unprotected sex when they lose control (17) Therefore, the IDU is strongly associated with HIV/AIDS spreading. The National AIDS Control Organization (2011) revealed that IDU is one of the main driving forces behind the human immunodeficiency virus (HIV) epidemic, linking it intricately to preventive aspects for HIV from a public health perspective.

Furthermore, injection drug users (IDUs) are especially exposed to both HIV disease and depression disorders resulting from drug addiction and the stress of living with HIV, which contributes to mental health worsening(18). In addition, among drugs abuser, 22 (52.4%) patients used multiple substances like alcohol and cannabis, 11 (26.2%) patients used Heroin, 6 (14.3%) patients used drugs like Diazepam, Dextropropoxyphene, Nitrazepam and Promethazine and 3 of them (7.1%) used Buprenorphine(19). The study conducted on association between HIV/AIDS and depression in Indonesia demonstrated large effects where by depression contribute the drug non-adherence of HIV/AIDS among IDU. Thus, the presence of depression and HIV/IDS seems to limit the patients' life expectancy (6,13,18,20).

The severity of depression on IDU is explained by the risk of high frequency of injection (21)(22). Some authors revealed that out of 109 subjects, 63% of which were male, 82% Caucasian, and 10% HIV positive, the sample's mean on modified Hamilton depression scale was 21.0(SD=3.9) (22). The data revealed that among IDUs, women have higher levels of depression than men and may be more likely to

use substances to cope with negative affect of IDU(21) Thus, the people who are injecting drugs are stimulating as many as possible psychological problems.

The severity of depression symptoms among injecting drug users is moderated by individual characteristics. Injection drug users (IDUs) are especially vulnerable to both HIV infection and MDD (23). Physical, psychological and social dysfunctions resulting from drug addiction can add to the stress of living with HIV, accelerating the deterioration of mental health. Depression, in turn, is associated with poorer biological responses, faster clinical progression and higher mortality among people living with the virus (24). The study conducted in Indonesia on injecting drug users living with HIV/AIDS indicated that about 10% lower per year of age and about 80% less with full-time employment and living with parents are significant factors contributing to depression among IDUs(10).

Another key aspect for the expanding number of IDU, is the social network and the ways of communication used among injecting drug users. The study indicated that comparing injecting drug users and non-injectors on use of social networks, the IDUs are more likely to have a higher number of friends within their networks (OR = 1.01; 95% CI = 1.01, 1.21; $P < 0.05$) and a larger sex network size (OR = 1.51; 95% CI = 1.14, 1.99; $P < 0.01$) (25).

1.2. Problem statement

In Rwanda, a large number of young and old people is involving in consuming substance in different ways, that affect them differently. The increase of substance users in Rwanda catches the attention of the researchers. Recently, the study conducted by Kanyoni et al (2015) revealed that the prevalence of substance use in Rwanda is around 34% for alcohol, 8.5% for tobacco smoking, 2.7% for cannabis, 0.2% for glue and 0.1% for drugs such as diazepam. The 7.46% (one in thirteen) of the youth were alcohol dependent, 4.88% (one in twenty) were nicotine dependent, and 2.54% (one in forty) were dependent on cannabis (26). Despite these efforts to successfully address the dual epidemic of drug addiction and its prevalence in Rwanda, little appears known about the mental health problems that can accompany these co-conditions. The association between depressions and HIV/AIDS among Injecting Drug users in Rwanda is scarcely known by scholars.

1.3. The main objectives of the study

1.3.1. Main objectives

The main objective of this study is to evaluate the factors associating with depression symptoms among injecting drug users in Rwanda

1.3.2. Specific Objectives

- ✓ To assess the association between depression symptoms and frequency of Injecting Drug users in Kigali.
- ✓ To demonstrate the association between depression symptoms and social demographic variable among Injecting Drug users in Kigali.
- ✓ To examine the relationship between HIV/AIDS and depression symptoms among Injecting Drug users in Kigali
- ✓ To understand the network, communication process and available equipment for injecting drugs users in Kigali.

CHAPTER 2. RESEARCH METHODS

2.1 Study Design

A cross sectional mixed method (qualitative and quantitative) study occurred in all three districts of the City of Kigali, Gasabo, Kicukiro, and Nyarugenge. This study used data from Project Harm reduction for Health Development Initiatives (HDI). This project assessed HIV prevalence, substance use risk and mental health issues among key population. From November 2018 to February 2019, Injecting Drug users, male and female, were recruited to participate in the survey. The location sites included Health Development Initiative (HDI) headquarters (Center for health and rights Kicukiro) and Nyakabanda outreach center. The respondents were tested for HIV/AIDS by nurses working in HDI and after that filled the questionnaires. Respondents were given $5 for transportation from their place to survey center.

2.2. Population of the study

The study populations are injecting drug users who are living in the city of Kigali, aged from 18 to 65 years old, both male and female.

2.2.1.Inclusion Criteria

- The Injecting drug user lives in Kigali city
- Both male and female aged from 18 till 65.

2.2.1.Exclusion Criteria

- Participants under 18 years old and beyond 65 years old
- Unable to communicate

2.3 Sample size and sampling technics

The sample size was 151 participants who attended the research in both studies setting in determined period of research. The sampling method was Snowball sampling (Nonprobability methods) whereby research participants were recruiting other participants for the study. Because of the sensitive topic, it was hard to find participants. We identified only one or two participants for every site of survey, and

we asked them to recruit other people. These steps were repeated until the end of the period of data collection. Therefore, we obtained the sample size.

2.4.The procedures of data collection

Both questionnaire survey and Focus Group Discussion were administrated on sample size in Kigali city. It was used the translations of the tools in Kinyarwanda as it is the native language for the whole population. Data collectors had two days of trainings for learning the use of questionnaires and interview guide.

The psychologists were part of data collection team in order to deal with any emotional distress that could happen during the survey. Also, the nurses working in HDI took blood sample and tested it for HIV/AIDS before study participation.

2.4.1. Study tools

The investigators of this study were responsible for collecting quantitative data using the psychological tools, socio-demographic information using a well-structured questionnaire and qualitative data by using Focus Group discussion. The data collectors were fluent in Kinyarwanda and trained on using the psychological tests for measuring the BDI, MINI among the participants.

Demographic Questionnaire

Demographic variables examined in this study included, age, marital status, gender, and education. Other variables were indagated, such as types of injecting drugs used and Frequencies of Injecting drugs, HIV/AIDS status and substance user. This tool has 25 items.

Beck Depression and Inventory scales (BDI) version 2 (27) assessed for depression. This test was validated for the assessment of the severity of depressive symptoms, it is very sensitive and has high predictive value. BDI-II presents 21-items rated on a Likert scale from 0 to 3, with a maximum achievable score of 63. A result beneath 14 indicates minimal symptoms of depression, from 14 to 19 indicates mild depressive symptoms, from 20 to 28 indicates moderate depressive symptoms; whereas $\geq$ 29 indicates severe depressive symptoms (28).

The M.I.N.I.: The Mini-International Neuropsychiatric Interview (M.I.N.I.) is a short structured diagnostic interview, developed jointly by psychiatrists and clinicians in the United States and Europe, for DSM-IV and ICD-10 psychiatric disorders. With an administration time of approximately 15 minutes, it was designed to meet the need for a short but accurate structured psychiatric interview for multicenter clinical trials and

epidemiology studies and to be used as a first step in outcome tracking in non-research clinical settings (Sheehan DV et al, 1998). The M.I.N.I. is divided into modules identified by letters, each corresponding to a diagnostic category. In this study we have taken only two modules including alcohol user and drug users.

HIV testing

During the informed consent process, participants were informed that the study would involve a rapid test for HIV. Willingness to undergo HIV testing was an eligibility criteria for enrolling in the study. The study participants underwent pre-test and post-test counseling by research assistants trained in HIV counseling, testing, and referral. Participants were also asked if they had been previously tested for HIV and, if so, asked the result of their most recent test. HIV serology was determined using a rapid test of HIV; positive results were confirmed with a second rapid test. Two positive results were required for subjects to be classified HIV positive. The participants who had discordant results between the two tests were classified as HIV negative. Indeed, those who came and confirmed to be HIV/AIDS positive, under treatment, were only tested for HIV one time.

Focus Group Discussion

The FGDs were performed a week after conducting quantitative data. A moderator performed all interviews and a co-moderator taking turns in being responsible for the interviews. A note-taker and a research assistant were also present during all FGD to record them. The language used in all FGD was the Rwanda mother tongue, Kinyarwanda, as in the quantitate questionnaires; the interviews lasted on average 1h15 min. FGD was audio record with participants' permission. All recordings were transcribed and translated into English for the purpose of analysis. Parts of the transcripts were back translated to Kinyarwanda to secure the accuracy of the translations.

2.4.2. Pilot Study

A pilot survey was conducted to test questionnaires and responses. Then the feedbacks from the field were discussed between Principle investigator and data collectors. The pilot test was carried out once with HDI patients, then with MSN communities. It allowed researchers to test the questionnaire among the same population and to readjust the demographic background to ensure the appropriateness of the questionnaire. Also, enumerators get experienced in content and using tools.

2.5 Ethical Considerations

WHO recommendations on ethics and safety in studies of mental health were cross checked and adhered to this study. The study approved by Rwanda National Ethics Committee (RNEC). It protects the rights and welfare of human subjects. Informed consent process had been done to ensure the right and dignity of the participants. Due to the sensitivity of the topic, various precautions have been used to guarantee the privacy during the interviews. During the data collector training, an extensive module on ethical research behavior has been discussed. The data collectors learned about the ethical principles of conducting research, and to base their relationship with a respondent on honesty, trust and respect.

The principal investigator mentored the process of data collection. Interviewers have been instructed to ensure that respondents are comfortable with the location of the interview. If privacy could not be ensured, the interviewer rescheduled the interview for another time. The consent form and questionnaires are secured in a private place to guarantee the confidentiality. All documents are locked into a secured room. Statistician and data manager have performed data cleaning and data entry on a secured computer.

2.6. Data Analysis Procedure

Data were collected and entered Microsoft Excel (ME) for processing, then imported into SPSS version 22 for analysis. The chi-square cross-tabulation test was initially performed in order to evaluate the association between depression symptoms and frequency of injecting drug users. We used chi-square to evaluate the association between social demographics variables and depression symptoms among IDUs. We also used binary logistic regression in order to determine the association between the HIV/AIDS status with depressive symptomatology (compared levels of depression) and all potentially explanatory variables.

We performed Focus Group with 10 participants each, and thematical analysis was run on qualitative data. We extracted theme to be revised by investigators and analyzed based understanding the network, communication process and available equipment for injecting drugs in Rwanda.

CHAPTER 3. FINDINGS.

3.1. The results from quantitative data.

3.1.1. Descriptive statistics.

The table (1) presents the socio-demographic background of respondents among 151 Injecting Drug users. The 72,7% of the respondents were male, 27,3% were female. The table demonstrated that a great part of the sample (40 %) is aged from 21 to 25.

Concerning the years of education, the high (78,8%) attended secondary school and high education, whereas the low numbers of them are illiterate. In addition, the HIV/AIDS among Injecting drug users demonstrated that 5.3% are HIV/AIDS positive and great numbers are HIV/AIDS negative with 94.7%.

Also, the data indicates that the high number of drug injector users have Severe Depression with 29.1% and Moderate depression with 28.5%. The injecting drug users are more likely to use heroine in injecting (98%), cocaine with 1.3% rather than ketamine (0.7%). To conclude, a big percentage of injecting drug users shows depression symptoms (76.1%).

Table 1:Descriptive of participants of the study

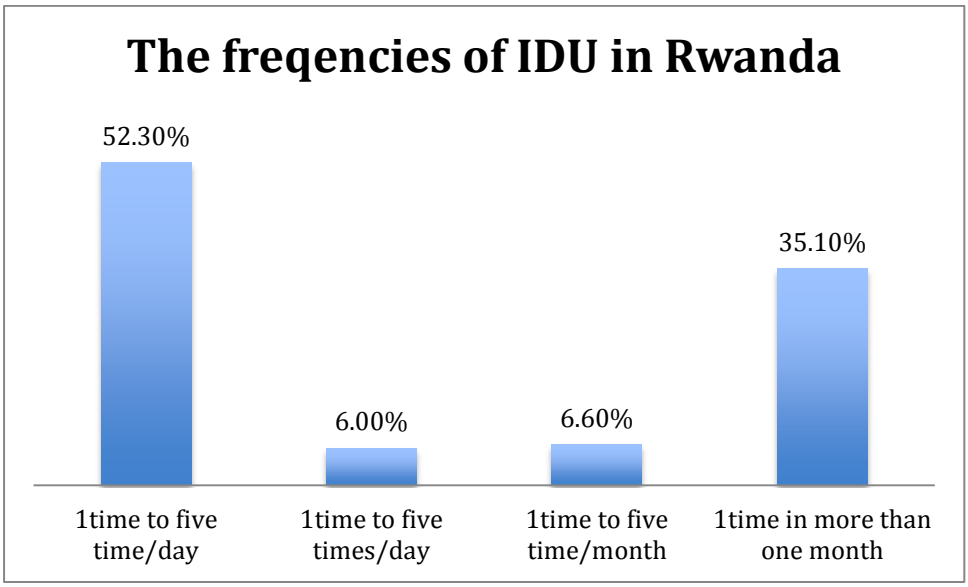
Variables	Categories	Frequencies	Percentages (%)
Age group	up to 20	19	13
	21-25	59	40
	26-30	40	27
	31-35	19	13
	36-40	7	5
	41 and above	7	5
Education level	Non formal education	4	2.6
	Primary education	28	18.4
	Secondary education and above	119	78.8

Employment level	Unemployed	54	34.5
	Student	24	15.8
	Salary employed	15	9.9
	Causal work	58	38.2
HIV status	Positive	8	5.3
	Negative	143	94.1
Marital status	Single	135	88.8
	Married with one partner	9	5.9
	Divorced	7	4.6
The level of depression	Normal	24	15.9
	Mild depression	9	6.0
	Borderline depression	12	7.9
	Moderate depression	43	28.5
	Severe Depression	44	29.1
	Extreme depression	19	12.6
Gender category	Male	115	72,7
	Female	35	27,3
Localization by District	Nyarugenge	102	67.7
	Gasabo	8	5.2
	Kicukiro	41	27.1
Depression status	Yes	118	76.1
	No	33	23.9
Types of Injecting drugs	Heroine	148	98
	Cocaine	2	1.3
	Ketamine	1	0.7

3.1.2. The Frequencies of IDU in Kigali

Figure (1) illustrates frequencies of injecting drugs in Kigali city. Most people are injecting drugs from 1 to more than 5 times per day with n=79(52.3%) while the least of them injected 1 to 5 time/month: n=10 (6.6%) and the least are one time to five time per day with 6%of users.

Figure 1:The Frequencies of IDUS in Kigali city



3.2.Factors associated with depression symptoms among IDUrs

3.2.1. The association between social demographic variable and depression symptoms among Injecting Drug users in Kigali.

Table (2), The results indicated that there is statistically significant relationship between occupation, district localization of IDU and depression among IDUrs (n=151 p=.000).However other social demographic variables like education, age, HIV status and marital status, were not significantly factors of depression symptoms among IDUrs

Table 2: Bivariate analysis of the association between depression symptoms and social demographic variable among Injecting Drug users in Kigali.

		Depression Status		
		Yes	No	**P-value**
Variable	**Categories**	118(76.1%)	33(23.9)	
Age Group	< 21	16(10.5%)	3(1.9%)	
	21-25	47(31.1%)	13(8.6%)	
	26-30	28(18.5%)	13(8.6%)	
	31-35	16(10.5%)	2(1.3%)	
	36-40	7(5%)	0(0%)	
	41 and above	4(2.6%)	2(1.3%)	.271
Educational level	Non formal education	3(1.9%)	1(0.6%)	
	Primary education	19(12.5%)	9(5.9%)	
	Secondary education and above	96(63.5%)	23(15.2%)	.332
Occupation level	Unemployed	34(22.5%)	20(13.2%)	
	Student	23(15.2%)	1(0.6%)	
	Salary employed	9(5.9%)	6(3.9%)	
	Casual work	52(34.4%)	6(3.9%)	.000
District localization	Nyarugenge	87(67.7%)	15(9.9%)	
	Kicukiro	24(67.7%)	17(11.2%)	
	Gasabo	7(5.2%)	1(.06%)	.000
Marital status	Single	105(69.5.8%)	30(19.8%)	
	Married with one partner	6(5.9%)	3(1.9%)	
	Divorced	7(4.6%)	0	.264
Gender	Male	78(51.6%)	37(24.55%)	.104

Female	30(19,8%)	5(3.3%)

Table 3: The bivariate analysis of relationship between frequency and depression symptoms of Injecting Drug users in Kigali.

These results indicated that there is statistically significant relationship between Frequencies of IDU and depression among IDUrs (n=118(76.1%), p=.000).

		Depression Status		
		Yes	**No**	**P-value**
Variable	**Categories**	118(76.1%)	33(23.9)	
Frequency of Injecting drugs	One time to five time/day	78(51.6%)	0	.000
	One time to five time/week	8(5.2%)	0	
	One time to five time /month	6(3.9%)	0	
	One time to five time more than one month	26(17.2%)	33(23.9%)	

Table 4:The bivariate analysis relationship between HIV/AIDS and depression symptoms among Injecting Drug users in Kigali

These results indicated that there is not statistically significant relationship between HIV/AIDS and depression among IDUrs (n=118(76.1%), p=. 124).

		Depression Status		
		Yes	No	P-value
Variable	**Categories**	118(76.1%)	33(23.9)	
HIV status	Positive	33(21.8%)	0	.124
	Negative	18(11.9%)	100(66.2%)	

3.1.5. Multivariate regression model

Multivariate regression was performed to recognize factors associated with depression among the 151 IDUs in Kigali city. All variables shown in table 2 were included, along with the demographic characteristics (age group, gender, occupation, marital status, localization, and education level.) After removing non-significant effects, the analysis identified four factors independently associated with depression, summarized in table 3. The results from multivariate regression analysis indicated that doing casual works is significantly associated with OR=. 229 [95%, CI.056; .934] as well as using drugs from one to five times per week with OR=2.7, [95%, CI.1.052 7.263].

Table 5.The logistic regression analysis of factors associated with depression

Variables	**Categories**	**0R**	**95 %CI**		**P Values**
Frequencies of IDU	One time to five time per day		**1**		
	One time to five time/week	2.7	1.052	7.263	.039**
	One time to five time per month	.914	.152	5.502	.092
	One time to five time more than a month	1.569	.041	4.006	.407
Occupation of IDUS	Unemployed		1		
	Student	.404	.144	1.135	.085
	Monthly Paid	.656	.165	2.607	.549
	Casual work	.229	.056	.934	.040**
Localization of IDU	Nyarugenge		**1**		
	kicukiro	.568	.060	5.369	.622
	Gasabo	.317	.032	3.159	.328

3.3.The network, communication process and available equipment for injecting drugs users in Kigali

Table 2: Summaries of qualitative data

Theme	*Categories*	*Sub-categories*
To understand the network, communication process and availability of equipment for injecting drugs users in Kigali	*The network and communication process of IDU*	*Social media and telephone call* *Dealers' place* *Bars, Hotels and Ipoto Network* *Using Informal language and signs*
	Available materials used in Injecting drugs	*Water, needles* *Aluminum paper, bandage.*
What do you think about HIV/AIDS and depression and possible reasons of making more injection in short time	*Understanding of HIV/AIDS infection among IDUs*	*Sharing needles* *Multiple partners,* *Problem of ejaculation*
	Depression *The reasons of more injections*	*Suicide ideation* *Anger and cutting the body* *More depressed* *Searching pleasure*

Table 5 shows the themes "*To understand the network, communication process and available equipment for injecting drugs in Kigali"* and "*What do you think about HIV/AIDS and depression and possible reasons of making more injection in shorter time"*. Regarding the first theme, there are possible subcategories mentioned in different interviews and FGD: "*social media and telephone calls; dealers' place; bars, hotels and Ipoto network(an electricity pylon) using informal language and signs*. The second theme also has its subcategories: sharing needles, multiple partners,

problem of ejaculation, suicide ideation, anger and cutting the body, more depressed, searching pleasure. The results are presented in categories as title and followed with subcategories and the quotes of participants from FGD as they are presented in italics.

3.3.1. The network and communication process of IDUs

The network IDUs use to communicate and know each other is very complex. They are aware that their activities of injecting drugs are illicit and harmful to their lives, so they communicate in multiple ways.

- ✓ **Social media and telephone calls**

According to the participants, they use the social media like Facebook and WhatsApp, and some of them prefer to use telephone calls and texting each other; however they use their own informal language which is hard to detect and makes communication easier for them.

"*You see, a jank(IDU) can't miss away to hide babilone(non IDUS) and communicate with a Rast(Most IDUs), I can even have more facebook account and I sometimes use Whatsapp…. even i can make a phone call but is easier for us. However the problem for use when you missed Ihumbi(money to buy a drug), you can sell every things includes phone."* Male of 23-year university students.

- ✓ **Common place (Dealers home, bars, Ipoto Network)**

The IDUs are communicating and meeting each other in bars, in places where they can buy the drugs like dealers place, Ipoto network (known place by each other where they can meet with only purpose of exchanging money with drugs. These places help them to communicate and extending network. In this places they share everyone knows and is able to identify each other.

The data collected from FGD showed that IDUs in Kigali have many ways of communication which strengthen their relationship. One woman participant, who is aged 35 years old said: "*for us , we use only IPOTO networking .When I have tacki (need for drug injection), I only use line of Ipoto for meeting a doctor (their distributors of Injecting). I know the Ipoto where I could meet him or her. When I meet him, he give me Umuzigo (drugs and injection materials) then I go back to my home to shut my self so that I can feel relaxed. In that case, I can meet there with others sick people so that we can share costs and share Injection. Since that time we become Rast Friends (Friends meeting on ID)".*

A 24 years old man said *"you see me; it is easier to meet a jank (users of Injecting Drug users) because even when I see him, I detect him. Sometimes I meet them in bar or dealers' "home".* Another participants said *"I am woman who have children. When, I don't have money to buy Umuzigo (heroine for injection),I only go to visit my friend in his or her home. So I request him to shut me a time per day and I become health then, and when I buy Umuzigo, I pay him (vis versa). He could not refuse because he is aware that even her tomorrow, he will need me".*

3.2.2. Available materials used in injecting drugs

Injecting Drug users use many different things while they are injecting drugs. Their best target is to let the drugs reach in blood. This is quite easily done, and the materials they use are commonly available. This way of administration is more risky, because of the blood contact, but the attitude they share is to tend to resolve the current problems, without thinking about long-term consequences.

- ✓ **Water, Needles, Aluminum paper, bandage,**

The majority of IDUs in Rwanda use, when they inject, several materials: once they have bought the drug, they need some supply to inject, that they could either buy in pharmacies or boutiques, or share with friends.

Among them needles, cotton, bandages, aluminum and bland. A participant said "*We are friends. At that time, we use also small water and bandage for searching the muscles in the arm*".

3.3.2. Understanding of HIV/AIDS infection among IDUs

The IDUs know that HIV is a public health problem and are aware of how the transmission in blood of infected and non-infected people happens. Nonetheless, sharing needles, having multiple partners and engage in unprotected sex are common practices among IDUs in Kigali.

- ✓ **Sharing needles unprotected sex and multiple partners,**

The injecting drug users in Kigali share needles while they are shutting their blood(Intravenous injection) and they also practice unprotected sex with their friends whom they share injections with. Some of them suffer retard ejaculation , and this could push them to change multiple partners to fulfill their sexual needs.

A young man of 21 year old said "*When a jank (IDUs) wants sex, he can pass to ten sex workers without ejaculating .I continues everywhere to everyone without taking care to HIV/AIDS and also while we are injecting drug, we share with anyone whom we are together any things we have. He injects and I bring my arm in order to inject me and we make like ten people. In that time I feel very well. If he /she is a girl, we immediatly have sex without any problems. And sometimes, we had sex while we have the some sex (MSM). We don't think HIV/AIDS because we are already hopeless and pessimistic. So we don't care to our lives. We only care drug".*

3.2.4. Depression and frequency of injections

The majority of injecting drug users is hapOless and they don't care of their lives because of different factors, including family group, life conditions and also the use of drugs as a solution to hide anger, depression and sadness.

- ✓ **Suicide ideation and cutting the skin during injections**

Suicide ideation and suicide attempt are two other signs of severe depression. The injecting drug users are more depressed than any kinds of substance users and some of them has the recurring thought of cutting some parts of its body; someother prefer to inject more often to be constantly asleep and prevent anger and fear of dye.

The FGD mentioned that the majority of drug injectors is more depressed with severe symptoms than alcohol users.. A 26 year old young man said *"I am working in a bar. I feel depressed with a lot of anger and sadness. The only thing I want to do is to take a razor and cut my body everywhere or to inject drug many times as I can do so that I can keep sleeping all my day without knowing where I am and when I become sober". "When you think the moneys you pay in order to buy a drug, it is a lot of money. Sometimes children do not have anything to eat and you prefer to buy a drug. So when I become sober, I think about it. I become more depressed and I feel I can suicide but when I inject a drug, I immediacy sleep and I am no long think where I am."* Said a 48 years old women.

CHAPTER 4. DISCUSSION

This study indicated that the injecting drug users in Kigali city have severe and moderate symptoms of depression based on the cut-off of level of depression. According to Yi Li et al (2014) the IDUs in Indonesia presented severe depression symptoms that are strongly associate with HIV/AIDS. Indeed, Borelli and Bradshaw (2013) found that injecting drug users are likely to have severe depression that lead to increase of mortality and morbidities. In addition, in Kenya, the injecting drug users are suffering with depression at 88% (29).

The multivariate regression analysis showed that the risk factors associated with depression among IDUS were the frequency of use of drugs and the occupation of the participants. Depression leads to have more and more time for injecting drugs regular, weekly or monthly. The Li et al (2013) mentioned that there is a strong association between depression symptomatology and the frequency of drug injections per day (17). Also the severity of depression in IDUs is explained by the high frequency of injections and other behaviors at risk (22). According to our data there is no association between depression and other factors like educational level, HIV/AIDS, age group, and marital status and gender. The literature confirms that depression level might or might not be associated with socio-demographic variable (30).

Moreover, depression symptoms are more severe in heroin users. The findings show that heroin is the most and almost only used injecting drug in Rwanda. Recent

Researches reported that symptom severity, and prevalence of depressive disorder was common among heroin users in Asians and Caucasians subjects (30).

Many studies confirmed the association between depression and HIV/AIDS status among IDUs. It is indicated that people living with HIV experience depression at rates twice or more than uninfected individuals (21,30,31). Major Depressive Disorder (MDD) is among the most commonly diagnosed comorbidities in people living with the HIV with prevalence rates in the U.S. ranging up to 50%(32). In Kenya, the Injecting drug users are suffering from depression and aggravated depression that adherence to HIV/AIDS treatment (29). However, in this sample size, the association between depression and HIV status doesn't seem significant.

Indeed, the FGD data mentioned that the more the people are depressed, in anger, attempt suicide, and experience lack of sleep and hopelessness, the more they involve in risky behaviors, such as unprotected sex and sharing needles during injecting time. Besides, the researches confirm that HIV/AIDS and depression among injecting drug users are related and can influence each other (22).

The study also finds that the IDUs use social networks and communication process in order to know and support each other. They use social media like Facebook, WhatsApp while some of them still prefer to use telephone calls and texting. Some use to meet in common places like bars, dealers' and friends' houses and hotels. Indeed, The injecting drug users use different materials like water, Ipamba, needles and other materials like aluminum paper. The recent research indicated that Social networks could also be viewed from the perspective of role relationships, such as family, friends, and co-workers (Wellman, et al 199). Their communication is stronger due to the use of informal language that is uncommon in society.

Limitations

The study is limited with sample size; a bigger sample would be preferable for better inferences. The snowballing sampling methods limited us to determine populations and sample size calculation, therefore we should not generalize the results of the study. The further researchers should use sample size calculation on evaluating all mental health problems associated with injecting drug users in Rwanda.

CHAPTER 5.CONCLUSION AND RECOMMENDATION

5.1. Conclusion

From a public health perspective, this study is an important first step in identifying the association between depression and demographic variables and frequencies of IDU among injecting drug users In Kigali city.

This study reveals important findings whereby more than half of IDUs suffer from severe and moderate depression and dramatically, the most of them is aged between 21 and 30 years old. Indeed, the frequency of injecting dug users is associated with the level of depression.

The occupations and frequency of IDU are strongly associated with depression symptoms among IDUs. However, the depression symptoms were not associated with educational level, gender, and marital status of IDUS in Rwanda. The study also shows that in Rwanda, heroine is the mostly used drug with almost 100 percent of IDUs using it, and it is strongly associated with the level of depression.

Finally, the study confirms that IDUs have their own language, social media, bars, hotels, Ipoto network and telephone calls that they use for communication and networking. They also use informal language which favorite them to know each other and communicate with the drugs producers. Needles, water, bandage and cotton are the materials they use for injecting drugs. This study is going to contribute more the way for decreasing extending of IDUs, frequency of IDUs and contribute in identifying the reason of persisting of injecting drugs through depression symptoms.

5.2.Recommendation

The study is recommending Ministry of Health of Rwanda and NGOs working on key population to introduce and enforce psychological intervention on IDUs. To increase mobilization and sensitization of impact of injecting drugs, HIV/AIDS in bars, hotels and other places for targeting the consumers. The rehabilitation center is advisable in order to help them in decreasing the depression symptoms and frequencies in Injecting drugs users. It is also advisable to increase job availability to the adolescent in Kigali city

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