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e is the margin error which is 0.05  
In this study, N is 200 and e is 0.05  
 $n=200/1+200(0.05)^2=133$

The researcher used sampling technique to get all youth who came for rehabilitation center during the period of the study data collection for 4 months and who meet the criteria as well as sign the consent form. . The use of this technique was more effective as it gave an equal probability of respondents being selected. Both men and women were selected equally to collect views from both genders.

The researcher used different research instruments including questionnaires. A study questionnaire was developed according to the related study objectives. Questionnaire had the following parts: Part 1 was social demographic data, part 2 was risk factors associated with drug abuse, prevalence on relapse and then last part on factors associated with drug abuse relapse data. As well attached at the appendices, the research instrument used in this study was a questionnaire designed to use closed ended questions.

In addition, Descriptive statistics was used to obtain the frequencies, percentages, means and standard deviations including a frequency table to select socio-demographic and other factors. A bivariate logistic analysis regression model was used to identify factors associated with relapse. Multivariate analysis was used with adjusted odds ratios (AOR) of 95% confidence interval (CI) to determine the final model, which showed strength of the predictors.

#### IV. DATA ANALYSIS AND RESULTS

Characteristics that were considered in the study include; age of respondents, sex, location, education attainment, marital status, religion, employment and if live with parents.

**Table 4. 1: Demographic characteristics of respondents**

| Demographic characteristics (n=133) | Frequency | Percentage % |
|-------------------------------------|-----------|--------------|
| <b>Age (years)</b>                  |           |              |
| <=25                                | 88        | 66.2         |
| >25                                 | 45        | 33.8         |
| <b>Gender</b>                       |           |              |
| Male                                | 99        | 74.4         |
| Female                              | 34        | 25.6         |
| <b>Location</b>                     |           |              |
| Rural                               | 21        | 15.8         |
| Urban                               | 112       | 84.2         |
| <b>Education attainment</b>         |           |              |
| Primary                             | 5         | 3.8          |
| Secondary                           | 46        | 34.6         |

|   |     |      |
|---|-----|------|
| University                              | 80  | 60.2 |
| None                                    | 2   | 1.5  |
| <b>Marital status of the respondent</b> |     |      |
| Single                                  | 129 | 97   |
| Married                                 | 3   | 2.3  |
| Divorced                                | 1   | 0.8  |
| <b>Religion of respondents</b>          |     |      |
| None                                    | 14  | 10.5 |
| Protestant                              | 33  | 24.8 |
| Muslim                                  | 8   | 6    |
| Catholic                                | 78  | 58.6 |
| <b>Employment</b>                       |     |      |
| Unemployed                              | 24  | 18   |
| Student                                 | 91  | 68.4 |
| Cultivator                              | 18  | 13.5 |
| <b>Live with parents</b>                |     |      |
| All parents                             | 84  | 63.2 |
| Single parent                           | 35  | 26.3 |

**Source: Primary data from this study, September 2020**

The study targeted population who were in age range between 14 to 35 years according to the ministry of youth as per the definition (Ministry of youth, National Youth Policy, 2015), but at the study area respondents involved 133 youths who were between 20-35 years during data collection. Age were grouped and 66.2% of the respondents had less or equal to 25 years old while 33.8% had above 25 years old. The mean age was 25 years old. As gender is an important indicator of the demographic characteristics of a certain population, the study also has considered it and the table above demonstrates the majority of the respondents that were male at 74.4% while female occupy 25.6%. Living location of respondents were asked too and about only 15.8% live in rural area while 84.2% live in urban area. Education attainment imitate what skills are available to society and the level of understanding. It is in this regard that this indicator was examined in this study. Several categories such as Primary, Secondary, University and no education has used to examine the indicator among the study respondents. According to the results of the research, the education of the respondents is high where 60.2% of the respondent have been able to attain university level.

Marital state of respondents were identified and about 97% respondents are currently single while 2.3% married. Respondent's religion were also identified and the majority of them at 58.6% are catholic with few of them who belong to Muslim at 6%. Employment of the respondents was equally important in this study. It was examined in categories such as unemployed, student and cultivator. As per the table above, 18% of youth interviewed are not employed and 68.4% of the respondents are involved in studies. Based on the table of demographic, the findings on living parents from the respondents demonstrates that about 63.2% of the respondents live with their all parents while 26.3% live with a single parent.

**Table 4. 2: Drug abuse characteristics among participants**

| Reason for drug abuse n=133      | Frequency | Percentage % |
|----------------------------------|-----------|--------------|
| <b>Age group onset</b>           |           |              |
| < ,=25                           | 131       | 98.5         |
| >25                              | 2         | 1.5          |
| <b>Type of drug used</b>         |           |              |
| Alcohol                          | 6         | 4.5          |
| Tobacco                          | 3         | 2.3          |
| Cannabis                         | 39        | 29.3         |
| Heroin                           | 10        | 7.5          |
| Marijuana                        | 2         | 1.5          |
| More than one drug               | 73        | 54.9         |
| <b>Reason for drug abuse</b>     |           |              |
| Peer Pressure                    | 85        | 63.9         |
| Curiosity                        | 5         | 3.8          |
| To cope with family/home problem | 29        | 21.8         |
| To relieve stress                | 3         | 2.3          |
| More than one                    | 11        | 8.3          |
| <b>Accessibility of drug</b>     |           |              |
| Free                             | 42        | 31.6         |
| Buying                           | 4         | 3            |
| Both                             | 87        | 65.4         |

**Source: Primary data from this study, September 2020**

A large percentage at 98.5% have started drug abuse in their age that are less or equal to 25 years old with the mean age of drug abuse onset of 15 years old where the minimum age to start drug abuse is 10 years while the maximum age is 29 years. Types of drug abused were identified and 29.3% of the respondents abuse cannabis while 54.9% of the respondents have mentioned that they have used more than one type of drugs among Alcohol, tobacco, cannabis, heroin and marijuana

but the study didn't assess what are those drugs abused in combination. According to the question asked about reason for drug abuse, the majority of the respondents at 63.9% mentioned that peer pressure influenced them more to start drug abuse followed by to cope with family/home problem 21.8% as per the respondents. Accessibility of drug was also assessed where by 65.4% of the respondent accessed drugs from buying them either to dealers or to the market and also from their friends as free access.

**Table 4. 3: Risk factors to relapse of drug abuse**

| <b>n=122</b>                         | Frequency | Percentage % |
|--------------------------------------|-----------|--------------|
| Stress                               | 2         | 1.5          |
| None compliance on treatment         | 46        | 34.6         |
| Stigma                               | 2         | 1.5          |
| Exposure to old friend that use drug | 61        | 45.9         |
| More than one                        | 22        | 16.5         |

Source: Primary data from this study, September 2020

Exposure to old friend that use drug was one of the reasons highlighted to contribute to relapse on drug abuse according to 45.9% of the respondents. 34.6% of them reported noncompliance on treatment but it doesn't mean that more than one factors among stress, none compliance on treatment, stigma and exposure to old friend that use drug can't contribute to relapse according to 16.5% that have revealed it.

**Table 4.4: Multivariate analysis of risk factors associated with relapse of drug abuse**

|                  | Relapse risk factors |                    | OR        | 95%CI      | P-value |
|------------------|----------------------|--------------------|-----------|------------|---------|
|                  | No n=11<br>N (%)     | Yes n=122<br>N (%) |           |            |         |
| <b>Age group</b> |                      |                    |           |            |         |
| <=25             | 7(8)                 | 81(92)             | 1.129     | 0.312-4.07 | 0.853   |
| >25              | 4(8.9)               | 41(91)             | 1.0 (Ref) |            |         |
| <b>Gender</b>    |                      |                    |           |            |         |
| Male             | 10(10.1)             | 89(89)             | 1.0(Ref)  |            |         |
| Female           | 2(2.9)               | 33(97.1)           | 3.708     | 0.45-30.10 | 0.220   |

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|                                      |         |           |          |              |       |
|--------------------------------------|---------|-----------|----------|--------------|-------|
| <b>Location</b>                      |         |           |          |              |       |
| Rural                                | 2(9.5)  | 19(90.5)  | 1.0(Ref) |              |       |
| Urban                                | 9(8)    | 103(92)   | 1.20     | 0.241-6.017  | 0.820 |
| <b>Education Level</b>               |         |           |          |              |       |
| Primary                              | 1(14.3) | 6(85.7)   | 1.0(Ref) |              |       |
| Secondary                            | 2(4.3)  | 45(95.7)  | 3.750    | 0.29-47.88   | 0.309 |
| University                           | 8(10.1) | 71(89.9)  | 1.479    | 0.15-13.88   | 0.732 |
| <b>Marital status</b>                |         |           |          |              |       |
| Single                               | 10(7.8) | 119(92.2) | 3.967    | 0.377-41.73  | 0.251 |
| Married                              | 1(25)   | 2(75)     | 1.0(Ref) |              |       |
| <b>Religion</b>                      |         |           |          |              |       |
| None                                 | 1(7.1)  | 13(92.9)  | 1.0(Ref) |              |       |
| Protestant                           | 2(6.1)  | 31(93.9)  | 1.19     | 0.09-14.32   | 0.89  |
| Muslim                               | 1(12.5) | 7(87.5)   | 0.53     | 0.02-9.98    | 0.67  |
| Catholic                             | 7(9.0)  | 71(91)    | 0.78     | 0.88-6.88    | 0.82  |
| <b>Employment</b>                    |         |           |          |              |       |
| Unemployed                           | 2(8.3)  | 22(91.7)  | 1.0(Ref) |              |       |
| Student                              | 5(5.5)  | 86(94.5)  | 1.56     | 0.284-8.605  | 0.607 |
| Cultivator                           | 4(22.2) | 14(77.8)  | 0.31     | 0.051-1.973  | 0.219 |
| <b>Live with parents</b>             |         |           |          |              |       |
| All parent                           | 6(7.1)  | 78(92.9)  | 1.47     | 0.426-5.12   | 0.538 |
| Single parent                        | 5(10.2) | 44(89.8)  | 1.0(Ref) |              |       |
| <b>Reason to drug abuse</b>          |         |           |          |              |       |
| Peer pressure                        | 8(8.9)  | 82(91.1)  | 1.025    | 0.116-9.068  | 0.98  |
| To cope with family and home problem | 2(6.3)  | 30(93.8)  | 1.5      | 0.123-18.363 | 0.75  |

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|                        |         |           |          |              |             |
|------------------------|---------|-----------|----------|--------------|-------------|
| More than one          | 1(9.1)  | 10(90.9)  | 1.0(Ref) |              |             |
| <b>Age group onset</b> |         |           |          |              |             |
| <=25                   | 10(7.6) | 121(92.4) | 12.1     | 0.703-208.31 | <b>0.03</b> |
| >25                    | 1(50)   | 1(50)     | 1.0(Ref) |              |             |

**Source: Primary data from this study, September 2020**

The majority of participant who developed relapse are in age group of <=25 with 92% (n=81) and are at 1.12 times high risk of developing relapse of drug abuse with reference to the group age above 25 years (OR=1.12), 95% CI [0.312-4.07]. Based on the location of the respondents, the majority of the participants who developed relapse were living in urban area with 92% (n=103) and are at 1.2 times higher risk of developing relapse of drug abuse with reference to living in rural area (OR=1.2), 95% CI [0.241-6.017]. According to education level, participants who were in primary level were represented by 85.7% (n=6). Secondary and university level were represented by 95.7% (n=45) and 89.9% (n=71) with respectively 3.75 and 1.47 times higher risk of developing relapse of drug abuse with reference to primary level of education [(OR=3.75), (OR=1.47)], 95% CI [0.29-47.88], [0.15-13.88]. Based on the marital status, participants who were single were the most to develop relapse at 92.2% (n=119) and were at 3.96 times higher risk to develop relapse of drug abuse with reference to married (OR=3.96), 95% CI [0.377-41.73]. As per the religion, the majority who developed relapse were catholic as well represented by 91% (n=71) followed by protestant at 93.9% (n=31). Few of the participants were Muslim and represented by 87.5% (n=7). Muslim and Catholic were respectively 0.53 and 0.78 less time to be at risk of developing relapse of drug abuse with reference to no religion [(OR=0.53), (OR=0.78)], 95% CI [0.02-9.98], [0.88-6.88]. Differently, Protestants were at 1.19 time higher risk to develop relapse of drug abuse with reference to no religion (OR=1.19), 95% CI [0.09-14.32]. Based on occupation, Student were the most to develop relapse of drug abuse represent by 94.5% (n=86). Unemployed and cultivators developed relapse at 91.7% (n=22) and 77.8% (n=14). Cultivator were found to be at 0.31 timeless to develop relapse of drug abuse in reference to unemployed 95% CI [0.051-1.973] and differently student were at 1.56 times high risk to develop relapse of drug abuse in reference to unemployed, 95% CI [0.284-8.605]. The majority of the respondent who live with their all parents have developed relapse of drug abuse at 92.9% (n=78) and are at 1.47 times high risk of developing relapse of drug abuse with reference to living with single parent (OR=1.47), 95% CI [0.426-5.12]. On the reason to drug abuse, those who have started drug abuse due to peer pressure and due to coping with family/home problems were most developed relapse of drug abuse as well represented by 91.1% (n=82) and 93.8% (n=30). In reference to youth who start drug abuse due to more than one factors among peer pressure, curiosity, to cope with family/home problem and to relieve stress; Peer pressure and to cope with family/home problem were respectively 1.025 and 1.5 times high risk of developing relapse of drug abuse [(OR=1.025), (OR=1.5)], 95% CI [0.116-9.068], [0.123-18.363]. The majority of the respondent who developed relapse on drug abuse have started drug abuse when less or equal to 25 years old with 92.46% (n=121) and are at 12.1 times high risk of developing relapse with reference to those who started when above 25 years old (OR=12.1), 95% CI [0.703-208.31].

## V. DISCUSSION

Relapse is a major challenge of being successfully free of drug abuse behaviors. When conducting a study on risk factors associated with relapse of drug abuse among youth at Huye Isange rehabilitation center, a cross sectional study for four months evident that prevalence of relapse of drug abuse among the study participants was 91.7%. With comparison to the study conducted in Iran with objective of doing estimation on relapse rate and determine its predictors have found that the relapse prevalence was 64.0% which is also significant (Mohammadpoorasl, 2012) When reviewing a similar study done exploring substance use disorders and relapse in Mauritian male addicts, 92% of the participants confirmed relapsing after a period of drug abuse cessation. Twenty nine percent relapsed after less than 3 months while only 17% were able to extend the cessation for a period of 1–3 years. Cumulatively, 59% were not able to maintain a ‘sober’ state for more than one year and the most cited justifications provided for relapsing among the male addicts related to their social group still abusing drugs (44.2%) and dealing with life stresses (45.9%) (Ramsewak, 2020). From these evidence, the study finds present result to be high prevalence compare to other studies where by it can be explained by the fact that improvement in practice to prevent relapse of drug abuse in youth is still needed and it implies that relapse prevention strategies should be targeted.

The second objective of this study was to establish factors associated with relapse of drug abuse. Among the sociodemographic factors, the key risk factors to relapse of drug abuse identified were age group onset, student by occupation, peer pressure and to cope with family/home problems with respectively strong association of a p- value (0.03) for age group onset and OR 12.1 at 95% CI [0.703-208.31], 1.56 at 95% CI [0.284-8.605], 1.025 at 95% CI [0.116-9.068] and 1.5 at 95% CI [0.123-18.363]. As per the association of the variables, younger age less or equal to 25 years old was identified as a mostly dominant associated with relapse of drug abuse and according to the study of University of Southern California, younger age was identified as a major risk factor for both men and women relapsing (Jenesse, 2021). Similarly a study conducted in Norway regarding relapse after inpatient substance use treatment: A prospective cohort study among users of illicit substances, the result of multivariable analysis showed that younger age were associated with an elevated relapse risk. Thus, identifying the treatment needs of young patients during and following inpatient substance treatment may contribute to reduced post-treatment relapse rates (Andersson, 2018). Having these evidences supporting the current study about the risk of group age less or equal to 25 years may be due to the fact that it is a period when youth are particularly susceptible to involvement in drug abuse due to the underdeveloped state of their brain, which can lead to reduced decision-making ability and increased long-term effects of drugs abuse in association with temptation of reusing drug. Student by occupation has been found to be a risk contributing to relapse of drug abuse. When compared to other study of the Recovery Research Institute in United States Colleges, for young adults in recovery from a substance use disorder who wish to start or return to school, such settings can present a formidable relapse risk and threat to recovery (Laudet, 2015). This is related to the fact that school is a transitional period in a young adult’s life marked by decreased supervision and an expansion of freedoms including a greater opportunity to engage in alcohol and other recreational drug use.

As per analysis peer pressure and to cope with family/home problem contribute to relapse of drug abuse. According to the study conducted in Pakistan the three main reasons of relapse were in association with having history of peer pressure, social rejection and lack of assertiveness (Mughal, 2018). Another supporting study conducted to examine the contributory factors of drug relapse among drug addicts and the treatment effectiveness of a center in Malaysia, indicated that peer influence and curiosity were the top two significant factors contributing to relapse of drug abuse. But based on the effectiveness of the treatment provided in the center the majority of the participants had a very low intention to relapse after recovered (Lian, 2008). Similarly, an exploratory research conducted on the role of family in youth's drug addiction

in Pakistan revealed that among their participants, 65% of them had received treatments 1–5 times, 30% were being treated for the first time and 5% had received treatments 19 times, indicating a high rate of relapse which can be linked to dysfunction within the family (Masood, 2014). By reviewing the study conducted among the clients of Journey of recovery rehabilitation Center of Chitawan district and Nirnaya rehabilitation center of Lalitpur district, the average of relapse on drug among the respondents were mainly caused by peer pressure and the family relations (Bhandari, 2019). Implication of these risk factors among youth at Huye Isange center may be linked with how youth turns to peers looking for comfort and reassurance in order to obtain approval and further acceptance from peers. Without proper guidance from a trusted adult, the individual has high probability to follow whatever required by the peers even if it is illegal or unreasonable.

## **VI. CONCLUSION**

This study was conducted to achieve the requirement of a degree in master's Public health, Global health option. Its purpose was to determine the prevalence and risk factors associated with relapse of drug abuse among youths at Huye Isange Rehabilitation Center, Rwanda. The study had two specific objective, to determine the prevalence of relapse of drug abuse among youth drug users at Huye Isange rehabilitation center and to determine risk factors associated with relapse of drug abuse. The study show that prevalence of relapse of drug abuse was 91% among followed youth at the center for four months. The study indicated that age group onset less or equal to 25 years, student by occupation, peer pressure and to cope with family/home problem were factors leading to develop relapse of drug abuse among youth. In general the findings shows that more efforts in practice improvement to prevent relapse of drug abuse in youth is still needed and relapse prevention strategies should be enforced.

## **VII. FUTURE RESEARCH**

Further studies are needed to evaluate the long-term effectiveness of relapse prevention strategies with youth in reducing factors associated with relapse of drug abuse.

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