

Factors Contributing to the Prevalence of HIV Infections in Mwandi District of Zambia: A Three Year Retrospective Review

Tinkler Saul Simbeye¹, Ebenezer Obi. Daniel², Queen Mulenga³, Paul Olaiya Abiodun¹, Ahmed Mamuda Bello¹, Israel Olukayode Popoola⁴, Michael Avwerhota⁵, Azeezat Abimbola Oyewande⁶, Christiana Asibi-Ogben Inegbeboh¹, Michael Olabode Tomori¹, Friday Iyobosa Igbinovia¹, Adebanke Adetutu Ogun⁷, Oladapo Michael Olagbegi⁸

¹Department of Public Health, Texila American University, Georgetown, Guyana

²Department of Public Health, Swansea University, Swansea, United Kingdom

³Catholic Relief Services (CRS), Provincial Health Office, Choma, Zambia

⁴Department of Epidemiology and Community Health, University of Ilorin, Ilorin, Nigeria

⁵Department of Public Health, Atlantic International University, Hawaii, United States of American

⁶Department of Family Medicine, Lagos State Health Service Commission, General Hospital Lagos State, Lagos, Nigeria

⁷International Organization for Migration, Abuja, Nigeria

⁸South African National Bioinformatics Institute, University of the Western Cape, Western Cape, South Africa

Email address:

tisasi1983@gmail.com (Tinkler Saul Simbeye)

To cite this article:

Tinkler Saul Simbeye, Ebenezer Obi. Daniel, Queen Mulenga, Paul Olaiya Abiodun, Ahmed Mamuda Bello, Israel Olukayode Popoola, Michael Avwerhota, Azeezat Abimbola Oyewande, Christiana Asibi-Ogben Inegbeboh, Michael Olabode Tomori, Friday Iyobosa Igbinovia, Adebanke Adetutu Ogun, Oladapo Michael Olagbegi. Factors Contributing to the Prevalence of HIV Infections in Mwandi District of Zambia: A Three Year Retrospective Review. *International Journal of HIV/AIDS Prevention, Education and Behavioural Science*. Vol. 9, No. 1, 2023, pp. 1-8. doi: 10.11648/j.ijhpebs.20230901.11

Received: November 26, 2022; **Accepted:** December 21, 2022; **Published:** January 13, 2023

Abstract: Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) is a major public health problem in Zambia affecting people in their prime and most productive years (15-49) of life. The cross sectional study was aimed at determining the factors contributing to HIV prevalence in Mwandi district of Zambia from 2016 to 2018. Two hundred and sixty-nine (269) participants were recruited using simple random sampling technique. The study disclosed that, a large proportion of study participants 50.6% (136) were females. The study also revealed that most of the respondents 43.5% (117) had attained some secondary level of education. The study further revealed that the majority 98.1% (264) of the respondents associated HIV transmission with unprotected sexual intercourse. The study also disclosed that most of the respondents 98.5% (265) and 98.1% (264) received health education on HIV/AIDS from hospital and clinics respectively while a considerable proportion of study participants 66.2% (178) acquired health education on HIV/AIDS through reading magazines. Also, this study exposed that, most 87.7% (236) of the respondents had adequate level of knowledge on HIV/AIDS. Level of education, occupation and number of children were found to have statistically significant relationship with level of knowledge on HIV/AIDS ($P < 0.05$). Apart from that, this study also revealed that 78.8% (212) of study participants had good adherence to STI/HIV/AIDS treatment while 21.7% (57) had poor drug adherence. Level of education was also found to have statistically significant association with drug adherence on HIV/AIDS ($P < 0.05$). The study also uncovered that 88.8% (239) of the respondents did not have access to the laboratory health services in the health facilities in Mwandi district of Zambia. Conversely, only 11.2% (30) of the respondents had access to the laboratory services in the health facilities. It is suggested that the Ministry of health should make it a policy for every health facility to have its own laboratory diagnostic facilities in order to enhance accessibility to diagnostic laboratory testing services in low-resource settings like Zambia.

Keywords: HIV/AIDS, Prevalence, Mwand District, Zambia

1. Introduction

Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome (HIV/AIDS) is one of the Sexually Transmitted Infections which is a major global public health concern; even though it has been drastically neglected for the past few decades as a public health priority, and control efforts continue to fall. In fact, Human Immunodeficiency Virus (HIV) is one of the most genetically diverse pathogens due to its high-mutation and recombination rates, large population size and rapid replication rate. In fact, Human Immunodeficiency Virus (HIV) is one of the most genetically diverse pathogens due to its high-mutation and recombination rates, large population size and rapid replication rate. Though Sub-Saharan Africa is the most affected region, no country can ignore the problem. The incidence and prevalence of HIV/AIDS continue to rise and cause serious social and economic havoc around the world [1].

Not only that, HIV/AIDS is a major public health problem in Zambia affecting people in their prime and most productive years (15-49) of life. Also, globally evidence shows that by the end of 2003, there were 40 million people who were living with HIV/AIDS and 2.5 million of those people were children under the age of 15. Other than that, study also uncovered that there were 5 million new cases of HIV and over 3 million deaths due to HIV/AIDS. Of the 40 million HIV positive individuals, 26 million (65%) were living in Sub-Saharan African. There were also 3.2 million new cases of HIV in the region that claimed 2.3 million of African lives during the same period [2].

In addition, UNAID advocated for a combination prevention strategy. A combination prevention strategy is an HIV prevention programme which is a right-based, evidence-informed and community owned programme that uses a mixture of biomedical, behavioural and structural interventions, well prioritised to meet the current HIV prevention needs of particular individuals and communities so as to have the greatest sustained impact on reducing new infections. Also combination prevention strategy advocates for a holistic approach whereby HIV prevention is not a single intervention but the simultaneous use of complementary behavioural, biomedical and structural prevention strategies. Combination prevention programmes consider factors specific to each setting such as levels of infrastructure, local culture and traditional beliefs as well as populations most affected by HIV. And these programmes are implemented at individual, community and population levels in order to reinvigorate the global response and make a sustained impact on global HIV incidence rates [3].

Moreover, evidence explains that Sub-Saharan Africa continues to be the area most afflicted by HIV/AIDS, which

has remained a severe global health concern. In Sub-Saharan Africa, there are presently about 25.6 million people living with HIV. Not only that, more than 70% of all AIDS-related deaths and two-thirds of recent global HIV infections are attributable to this. In 2015, the adult HIV prevalence rate in Eastern and Southern Africa was about 7.1% (about 19 million HIV patients), while Western and Central Africa recorded 2.2% (about 6.5 million HIV patients). And in nations like Lesotho (22.7%), Botswana (22.2%), and South Africa (19.2%), the prevalence of HIV has been rising. There are far too many sexual partners engaged in unsafe sexual behavior, despite the fact that prevention, treatment, and care programs are highly effective [4].

2. Methods

Both descriptive cross sectional and retrospective studies of all HIV infection prevalence that occurred over a 3-year period starting from January 1, 2016 to December 31, 2018 in Mwand district of Zambia were employed. This study was conducted in Mwand District of Western Province of Zambia at randomly selected health facilities from a total of 10 health facilities. The total sample size for this study was 269. Not only that, ethical approval was sought and obtained from the research and ethics committee of Texila American University, Mwand District Health Office and Mwand Mission Hospital respectively. The pilot study was carried out at Twazamba Rural Health Centre in Mwand district so as to test the validity and reliability of the data collection instrument. Also a written informed consent was obtained from the respondents before the researcher proceeded with the study. Structured interview questionnaire was used to collect data from the clients who came to seek health services in selected health facilities by asking each and every randomly selected candidate a set of questions in a one-on-one interview and record answers in the questionnaires. The collected data was analysed using Statistical Package for Social Sciences (SPSS version 20), and was represented by tables, pie charts and graphs. Chi-square was used to test for association between the socio-demographic variables and the HIV/AIDS parameters. The study population comprised of patients who previously died of HIV/AIDS and clients coming to seek health services at selected health facilities in Mwand District of Zambia. It mainly consisted of both male and female respondents aged between 15 and 49 years who were selected by simple random sampling technique.

3. Results

A huge proportion of participants were aged between 15 and 49 years with mean value of 2.29 ± 1.51 years. Other than that, the majority of respondents 50.6% (136) were females while 49.4% (133) of respondents were males. The

study also revealed that the majority of the respondents 43.5% (117) had attained some secondary level of education and 27.5% (74) had attained tertiary level of education. Conversely, 20.1% (54) had attained primary level of education while 8.9% (24) had never been to school in their lives.

Table 1. Demographic Data (n=269).

VARIABLE	FREQUENCY (n)	PERCENTAGE %
SEX		
MALE	133	49.4%
FEMALE	136	50.6%
TOTAL	269	100%
AGE		
15-20	37	13.8%
21-30	104	38.7%
31-40	80	29.7%
41-49	48	17.8%
TOTAL	269	100%
MARITAL STATUS		
SINGLE	91	33.9%
MARRIED	105	39%
DIVORCED	26	9.7%
WIDOWED	28	10.4%
SEPARATED	19	7%
TOTAL	269	100%
SOCIAL CLASS		
UPPER CLASS	48	18%
MIDDLE CLASS	73	27%
LOWER CLASS	148	55%
TOTAL	269	100%
RELIGION		
CHRISTIAN	216	80.3%
MUSLIM	53	19.7%
TOTAL	269	100%
LEVEL OF EDUCATION		
NONE	24	8.9%
PRIMARY	54	20.1%
SECONDARY	117	43.5%
TERTIARY	74	27.5%
TOTAL	269	100%
OCCUPATION		
HOUSE WIFE	110	40.9%
FARMING	51	19%
TEACHING	31	11.5%
HEATHCARE	27	10%
FISHING	50	18.6%
TOTAL	269	100%
NUMBER OF CHILDREN		
ONE	65	24.2%
TWO	40	14.9%
THREE	86	32%
FOUR	23	8.6%
FIVE	8	3%
SIX	47	17.5%
TOTAL	269	100%

3.1. Mode of HIV Transmission

Distribution of mode of HIV transmission among the respondents is represented by Table 2. Around 98.1% (264) of the respondents associated HIV transmission to unprotected sexual intercourse while 95.8% (258) of the respondents did associate HIV transmission with mother to child mode of transmission.

Table 2. Mode of HIV transmission.

Mode of HIV Transmission	FREQUENCY	PERCENTAGE
Unprotected Sex	YES 264	98.1%
	NO 5	1.9%
Kissing	YES 95	35.3%
	NO 174	64.7%
Mother To Child Transmission	YES 258	95.9%
	NO 11	4.1%
Accidental needle Pricks	YES 247	91.8%
	NO 22	8.2%
Direct Physical Contact	YES 96	35.7%
	NO 173	64.3%
Via Sharing Utensils	YES 39	14.5%
	NO 230	85.5%
Alcohol and drug abuse	YES 241	89.6%
	NO 28	10.4%
Blood transfusion	YES 241	89.6%
	NO 28	10.4%
Transplanted Organs.	YES 177	65.8%
	NO 92	34.2%
Sharing clothes	YES 55	20.4
	NO 214	79.6

3.2. Sources of Information, Education and Communication on HIV/AIDS

Table 3 indicates that, the majority of the respondents 98.5% (265) and 98.1% (264) received health education on HIV/AIDS from hospital and clinics while 95.9% (258) of the respondents received health education on HIV/AIDS via the radio, 93.7% (252) via television and church, and 92.9% (250) through friends.

Table 3. Sources of information, education and communication on HIV/AIDS.

SOURCES OF IEC SERVICES ON HIV	FREQUENCY	PERCENTAGE
Clinic	YES 264	98.1%
	NO 5	1.9%
TOTAL	269	100%
Hospital	YES 265	98.5%
	NO 4	1.5%
TOTAL	269	100%
Radio	YES 258	95.9%
	NO 11	4.1%
TOTAL	269	100%
Television	YES 252	93.7%
	NO 17	6.3%
TOTAL	269	100%
News paper	YES 215	79.9%
	NO 54	20.1%
TOTAL	269	100%
Magazines	YES 178	66.2%
	NO 91	33.8%
TOTAL	269	100%
Facebook	YES 189	70.3%
	NO 80	29.7%
TOTAL	269	100%
Whatsup	YES 183	68%
	NO 86	32%
TOTAL	269	100%
Friends	YES 250	92.9%
	NO 19	7.1%
TOTAL	269	100%
Church/school	YES 252	93.7%
	NO 17	6.3%
TOTAL	269	100%

3.3. Level of Knowledge on HIV/AIDS

Figure 1 below shows that 87.7% (236) of the respondents had adequate level of knowledge on HIV/AIDS while 12.3% (33) of the study participants had poor level of knowledge on HIV/AIDS in Monze District of Zambia (P<0.05).

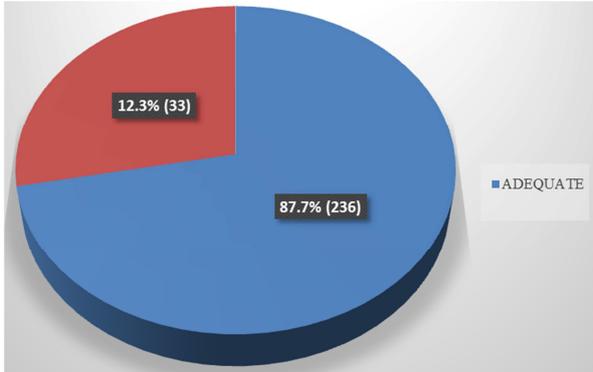


Figure 1. Level of knowledge on HIV/AIDS.

3.4. Drug Adherence

Figure 2 shows that 78.8% (212) of the respondents had good drug adherence to HIV/AIDS treatment while 21.2% (57) of the study participants had poor drug adherence to HIV/AIDS treatment.

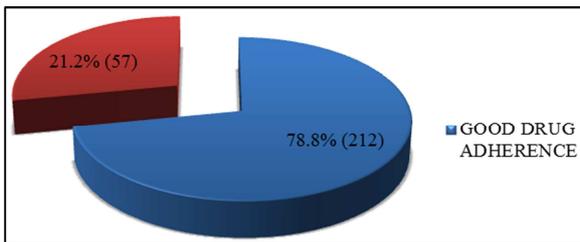


Figure 2. Drug adherence.

3.5. Availability of Laboratory Services in Health Facilities

Figure 3 below shows that the majority of the respondents 88.8% (239) did not have access to laboratory diagnostic health services in the health facilities while only 11.2% (30) had access to laboratory diagnostic health services in the health facilities in Mwandia district of Zambia.

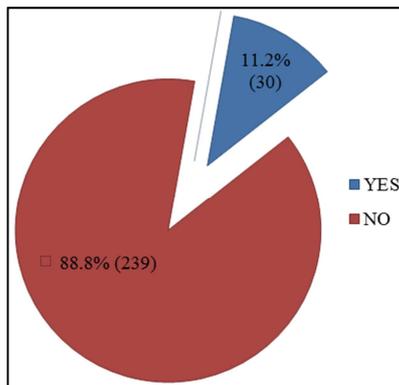


Figure 3. Availability of laboratory services in health facilities.

Association Between Respondent’s Level of Knowledge and Socio-Demographic Variables is Shown in Table 4.

The correlation between the level of knowledge and socio-demographic variables of the respondents is well illustrated in table 4. Level of education, occupation and number of children were found to have statistically significant relationship with level of knowledge on HIV/AIDS (P<0.05).

Table 4. Chi-Square analysis demonstrating an association between level of knowledge and socio-demographic characteristics of the respondents.

Socio-demographic Variables	χ^2 value	Df	p value
Age	5.614	4	0.125
Marital status	2.184	3	0.334
Religion	1.137	1	0.263
Level of Education	25.385	3	0.001 **
Occupation	26.526	5	0.001 **
Number of children	21.463	6	0.002 **
Social class	32.312	7	0.513
Religion	41.351	4	0.611

**Significant at P<0.05

Association Between Respondents’ Drug Adherence and Socio-Demographic Variables is Shown in Table 5.

The relationship between the drug adherence and socio-demographic variables of the study participants is shown in table 5. Level of education was found to have statistically significant relationship with drug adherence on HIV/AIDS (P<0.05).

Table 5. Chi-Square analysis demonstrating an association between drug adherence and socio-demographic characteristics of the respondents.

Socio-demographic Variables	χ^2 value	Df	p value
Age	4.614	3	0.435
Marital status	2.281	3	0.234
Religion	1.137	1	0.364
Level of Education	25.385	3	0.021 **
Occupation	26.526	5	0.341
Number of children	21.463	6	0.212
Social class	22.312	6	0.413
Religion	24.351	4	0.511
Occupation	20.271	5	0.321

**Significant at P<0.05

4. Discussion

Socio-demographic characteristics in table 1 show that a large proportion of participants were aged between 15 and 49 years with mean value of 2.29 ± 1.51 years. Other than that, the majority of respondents 50.6% (136) were females while 49.4% (133) of respondents were males. Also the study revealed that, the majority of the respondents 43.5% (117) had attained some secondary level of education and 27.5% (74) had attained tertiary level of education followed by 20.1% (54) who had attained primary level of education while 8.9% (24) had never been to school.

Moreover, the findings from this study in Table 2 found that the majority of the respondents 98.1% (264) associated HIV transmission with unprotected sexual intercourse while 95.8% (258) of the respondents did associate HIV

transmission with mother to child mode of transmission which affects all demographic groups or population, including children, women, adolescents, adults, and men. And 89.6% (241) of the respondents said that HIV is mainly acquired by people via blood transfusion, alcohol and drug abuse respectively. This is attributed to the unwillingness of people to use condom, inability to negotiate condom use, and having multiple concurrent sexual partners, work related migration, cohabiting, and low rates of male circumcision which greatly contributes to the escalating high HIV prevalence. Other than that, these findings are similar to the findings from the study which was conducted by UNAIDS which discovered that Zimbabwe had one of the highest HIV prevalence in Sub Saharan Africa which stands at 13.3% with 1.3 million people living with HIV in 2017 and that HIV prevalence in Zimbabwe is largely driven by unprotected heterosexual sex among the sex workers and men who have unprotected sex with men (MSM). UNAIDS further explained that HIV prevalence is mainly fueled by drug abuse and unprotected sexual intercourse due to the in-availability or in-acceptability of condoms which in turn puts the people at sexual risk behaviour. UNAIDS also indicated that HIV is transmitted from an infected person to another person via unprotected sexual intercourse, blood transfusion, contaminated needles and from mother to child mode of transmission [5]. These findings are also in line with the findings from the study which found that multiple sexual partners and drug abusers have an increased probability of becoming HIV-positive and that risky behaviours such as substance abuse, heavy alcohol consumption, unprotected sexual intercourse, cohabiting, reckless driving, or extreme sports are considered serious routes through which HIV is transmitted and acquired [6].

Furthermore, the findings from this study in Table 3 indicate that, the majority of the respondents 98.5% (265) and 98.1% (264) received information, education and communication on HIV/AIDS from hospital and clinics respectively while 95.9% (258) of the respondents received health education on HIV/AIDS via the radio, 93.7% (252) via television and church, and 92.9% (250) through friends. The findings from this study are similar to the findings from the study which was conducted by Magnussen et al in India on the relevance and sources of Information Education and Communication (IEC) materials among people living with HIV. The study revealed that the vast majority of the respondents 97.5% of the target people received IEC materials on HIV/AIDS from health facilities. The study also indicated that 86.9% of them had read the IEC materials and that 81.1% of them responded that the IEC materials were easy to understand. This study further uncovered that the IEC materials were very useful for the target population because 91.8% of the respondents wished to continue to receive IEC materials on HIV even after completion of the project which in turn played a vital role in raising community awareness for the prevention of HIV/AIDS and extended health care services and support to the people living with HIV (PLHIV) and their family members and helped in reducing stigma and

discrimination and facilitated access to available health care services [7].

The findings from this study are also in line with the findings from the study which was conducted in Addis Ababa in Ethiopia on the usefulness of IEC materials on HIV/AIDS and injecting drug use among high school youths. The study disclosed that the majority of the respondents 87.6% accessed information, education and communication on HIV/AIDS from health facilities. It further revealed that health education on HIV/AIDS acquainted respondents with the disease rather than equipping them with knowledge and skills needed in their daily lives. Therefore, primary prevention through the provision of information, education and communication coupled with service provision and a supportive social environment targeted at modifying behaviours remains top public health priority in HIV/AIDS prevention and control effort as it enhances stigmatizing as well as discriminatory attitudes towards HIV positive people [8].

Another finding of this study in figure 1 has also shown that most of the respondents 87.7% (236) had adequate level of knowledge on HIV/AIDS while 12.3% (33) of the study participants had poor level of knowledge on HIV/AIDS in Mwandia District of Zambia. The level of education, occupation and number of children were found to have statistically significant correlation with level of knowledge on HIV/AIDS ($P < 0.05$). The outcome of this study is consistent with the research findings from the study which was conducted by Galindo in 380 randomly chosen college students at the University of the Immaculate Conception in Davao City, Philippines. The study found that the students had a high level of knowledge about HIV/AIDS and a moderately positive attitude toward all aspects of the disease. When the data were subjected to a Pearson r analysis, it was discovered that there was a moderately significant association between college students' knowledge and attitudes towards HIV/AIDS [9].

The findings of this study are also alike to the study which was undertaken on the prevalence of HIV infection among pregnant women of various age groups who visited the Ajiko Medical Clinic in Damaturu, Nigeria. The study disclosed that, 70% of pregnant women had sufficient level of knowledge on HIV infection and 33% of pregnant women knew about the main modes of HIV transmission. It further revealed that, HIV prevalence was determined to be zero among women aged between 15–25 age group, with a maximum prevalence rate of 12.5% in the 36–45 age group and a minimum prevalence rate of 5% in the 26–35 age group. Pregnant women overall had a 4% prevalence rate. Because of the high prevalence rate, general information, training, and public health education programs about HIV prevention need to be geared towards older women in the age group of 36–45 [10].

Apart from that, in assessing the levels of HIV related knowledge and attitudes towards HIV infected patients among undergraduate dental students at Ain Shams University in Egypt, Abou El Fadl et al found that the majority of students had unsatisfactory levels of knowledge

about HIV and its frequently associated oral manifestations, such as oral candidiasis, Kaposi sarcoma, and leukoplakia. Approximately 94% of survey participants believed mistakenly that dentists had a significant risk of contracting HIV, and 47% thought that saliva was a method of HIV transmission. The author goes on to say that just 33% of the students thought that they were knowledgeable enough to provide oral care to people living with HIV (PLHIV), despite the fact that 69% of them were ready to do so [11].

Also, these findings are similar to the findings from the study carried out in Nepal which revealed that most of the respondents (91.6%) had adequate level of knowledge on HIV/AIDS which was acquired through listening to the mass media such as television, radio and peer educators. Regarding the modes of transmission, the study found that more than two thirds of respondents had also learned about the modes of HIV transmission such as unsafe sexual intercourse (85%), tainted blood (72%), vertical transmission (67%), and not knowing how HIV is spread (27%). Vitaly, adequate level of knowledge among the people on HIV in many developing countries like Zambia has helped them to adopt compensatory behaviour changes such as delayed age of sexual debut, reduced number of sexual partners, exercising abstinence, avoiding cohabiting, seeking HIV testing services, and increased consistent use of condoms especially among high-risk partners [12].

The findings from this study are also in line with those of the study which revealed that 71% of young men and women had sufficient level of knowledge about HIV/AIDS in Zambia due to the readily availability of messages informing people about the danger of HIV/AIDS, how it spreads, its management cascade and how it can be prevented. Also hundreds of peer educators across African continent visit local bars, beer gardens, hotels, schools, colleges, universities, STI clinics and work sites to teach clients, workers and patients on the dangers of STIs, the role that STIs play in the transmission of HIV and how they can be prevented [13]. These peer educators also distribute condoms in bars and places of work as well [14].

However, these findings are not in line with the findings from the study conducted in Ghana which revealed that participants' understanding of HIV/AIDS was inadequate, they had negative attitude toward people living with HIV/AIDS, and that they also engaged in risky sexual behaviour that could have put them at risk of acquiring HIV infection. These findings highlight the need for basic HIV education that is age- and culturally-appropriate for youths in urban areas, including information about risky student behaviours related to HIV and misconceptions about how the virus spreads [15].

The results in Figure 2 also indicate that 78.8% (212) of the respondents had good drug adherence to HIV/AIDS treatment while 21.2% (57) of the respondents had poor drug adherence to HIV/AIDS regimen. Good drug adherence to ART among the people living with HIV (PLHIV) in Mwandia District is mainly due to massive community sensitization conducted by health facility based front line health care

providers on the importance of adhering to ART regimen. It is also due to the good counselling services offered to the people living with HIV in the community by Adherence Supporters which enhances the knowledge, attitudes and practice of the people towards ARVs regimen. This is also attributable to health care professionals' positive attitude on HIV-infected patients' medication-taking behaviors through routine, ongoing conversations at each office visit that highlight the advantages of ART adherence, track clinical indicators that are influenced by adherence like a viral load; identify barriers to adherence, offer adherence support services, and provide details on other interventions that can enhance adherence and lower the risk of serious adverse events. Poor ART adherence raises viremia, which promotes the course of the illness and the spread of drug-resistant HIV strains. However, level of education was found to have statistically significant relationship with drug adherence to HIV/AIDS treatment regimen ($P < 0.05$).

These findings are in line with the findings from the study which was conducted in Kenya which revealed that the study participants had high drug adherence (86%) to ARV regimen. This was attributed to good support from immediate family members (3.7 ± 0.6) and social support groups (3.1 ± 0.8). The study further expatiated that good drug compliance coupled with good follow-up and balanced diet lower the chances of the patients to develop drug resistance to ARVs which in turn reduces the rate at which HIV is transmitted to other people [16]. Also, WHO & Bhatti *et al* carried out a study and found that timely testing, diagnosis and engagement of patients living with HIV in ART treatment and care, and good drug adherence maintenance help individuals living with HIV to achieve viral load suppression. Also evidence shows that, good adherence to ART helps to keep the viral load under total control and prolong the time of progression to AIDS, resulting in near normal life expectancy. And a consistent body of research indicates that when patients consistently adhere to ART treatment, this helps to reduce the HIV viral load in an individual's blood, semen, vaginal fluid and rectal fluid to such a low level that viral load tests cannot detect the HIV. This is described as an 'undetectable' viral load or viral load suppression. Viral load suppression can only be confirmed if a person is accessing regular ART treatment support, monitoring and viral load testing from healthcare providers. Hence, the term undetectable is equal to un-transmissible (U=U) [17].

These findings are also similar to the study which was conducted on the level of adherence and associated factors among HIV-Infected patients on Antiretroviral Therapy in Northern Ethiopia which revealed that most of study participants (94.8%) had good adherence to ART regimen which contributes to greater growth of CD4 cell counts, viral load suppression, good treatment outcome, and slow the development of drug resistance. Widespread good adherence may also result in a lighter load on the healthcare system and cheaper expenses for HIV treatment. This is due to the possibility of fewer hospitalizations for illnesses linked to

untreated HIV due to improved adherence [18].

The findings in Figure 3 indicate that the majority 88.4% (221) of the respondents do not have access to laboratory services in the health facilities in Mwandu district while 11.6% (29) have access to laboratory services in the health facilities. The findings from this study are in line with the findings from the study which was conducted in Geneva Switzerland which revealed that Cost and inconsistent availability of supplies, support, expertise and lack of laboratory facilities in health institutions severely limit the practicality and availability of laboratory investigations and access to diagnostic laboratory testing services especially in low-resource settings [19]. Lack of access to reliable diagnostic laboratory testing services is also mainly due to lack of laboratory facilities caused by lack of resource allocation for improving and setting up of laboratory facilities in the health institutions [20].

5. Conclusion

All in all, research has unveiled that HIV is mainly transmitted via unprotected sexual intercourse, mother to child transmission and unscreened blood transfusion as well as via drug and alcohol abuse. It was also found that drug and alcohol abuse impairs decision making capacity and cause people to have unprotected sex with people whose HIV status is not known. The study has also disclosed that the majority of the respondents received information, education and communication on HIV/AIDS from hospital and clinics respectively. Another finding of this study showed that most of the respondents had adequate level of knowledge on HIV/AIDS. Also the results from this study indicate that the respondents had good drug adherence to STI/HIV/AIDS treatment. Research has also revealed that HIV prevalence in Mwandu district is caused by lack of laboratory facilities in most of the health facilities. This substantially restricts the accessibility of diagnostic laboratory testing services as well as the practicality and availability of laboratory investigation services especially in low income countries like Zambia.

A wide array of evidence presented in this study has also shown that, the best ways to prevent new HIV infections are to ensure timely HIV testing, diagnosis, and linkage to care and treatment for those who are living with HIV. This should be done in order to increase the percentage of persons with HIV who have achieved viral suppression. Additionally, community-based volunteers, community health workers, faith-based leaders, traditional leaders, advocates for adherence, significant stakeholders, teachers, and neighborhood health committees should be involved in the creation of locally customized, community-driven plans that will serve as the cornerstone for scaling up the initiative's key strategies in ways that respond to local needs, achieve health equity, and enhance HIV prevention and care in these communities. Also, this will support improvements in HIV prevention, testing, diagnosis, linkage, treatment, and outbreak response. The other thing that should be done is to allocate adequate prevention resources to the places with the

largest disease burden and the greatest risk especially hotspot areas. Apart from that, there is also need to ensure that the most effective prevention strategies are prioritized and effectively implemented. Other than that, it is also strongly recommended that the Ministry of health should make it a policy for every health facility to have its own laboratory diagnostic department with well-trained Laboratory Personnel. Also Mwandu District Health Office and its cooperating partners should step up its efforts in sensitizing the people in the community on the dangers of alcohol and substance abuse largely because they lower people's inhibitions and reduce their likelihood of using condoms, which can indirectly increase the risks of acquiring HIV infection. They should also sensitize the people in the community on the dangers of having multiple sexual partners and cohabiting (including fishing camps) in order to halt or reverse HIV transmission and other STIs in the district.

References

- [1] Aitken JM, Kemp J, (2019), HIV/AIDS, Equity and health sector personnel in Southern Africa: Network for Equity in Health in Southern Africa, 3rd Edition, Harare Publishers, Harare.
- [2] UNAIDS & WHO. (2020), AIDS Epidemic, Retrieved September 27, 2022 from http://www.unaids.org/wad/2003/press/Epiupdate2003_en/Epi03_00_en.htm.
- [3] UNAIDS, (2019), New HIV/AIDS infections, Retrieved September 24, 2022 from <https://unaids-ap.org/2014/12/>
- [4] Amuche JN, Emmanuel IE and Nweze EI, (2017), HIV/AIDS in Sub-Saharan Africa: Current status, Challenges and Prospects, Asian Pacific Journal of Tropical Diseases, Volume 7, Pages 239.
- [5] UNAID, (2018), Distribution of new HIV infections among population groups, 2nd edition, Elsevier Inc, New York.
- [6] WHO 2019 WHO, (2019), World Health Statistics. Retrieved December 15, 2022 from <https://apps.who.int/iris/bitstream/handle/10665/324835/9789241565707-eng.pdf?ua=1>
- [7] Magnussen et al, (2004), Interventions to prevent HIV/AIDS among adolescents in less developed countries: are they effective? *Int J Adolesc Med Health*, 1 (16). P. 303-23.
- [8] Aggleton et al, (2005), HIV/AIDS and injecting drug use: information, education and communication. *International Journal of drug policy*, 16 (1), P. 21-30.
- [9] Galindo, Q. M, (2014), knowledge and attitudes on HIV and AIDS: Standpoint of College students of the University of the Immaculate Conception. *UIC Research Journals*. 20 (1). P. 139-158. Retrieved May 14, 2022 from <http://research.uic.edu.ph/ojs/>
- [10] Khanam, S. (2019). Prevalence of HIV infection among pregnant women attending Ajiko Medical Clinic. *Journal of Clinical Research in HIV/AIDS and prevention*, 3 (4), p.7, DOI: <https://doi.org/10.14302/issn.2324-7339.jerhap-19-2746>

- [11] Abou el Fadl et al. (2019). Assessing the levels of HIV-related knowledge and attitudes toward HIV-infected patients among undergraduate dental students: A cross-sectional study. *HIV/AIDS – Research and Palliative Care*, 11 (1), p. 83-92.
- [12] Bhandari T. R., (2010), Knowledge on HIV/AIDS among Secondary Level School Students in Kathmandu, *Journal of Health and Allied Sciences*, 1 (1), P. 16-19.
- [13] Zambia Demographic Health Survey, (ZDHS, 2018), Preliminary report on HIV. Central Statistical Office. Lusaka. Zambia.
- [14] UNAIDS, (2017), Peer education and HIV/AIDS: Concepts, uses and challenges. Retrieved June 17, 2022 from http://data.unaids.org/publications/IRC-pub01/jc291-peereduc_en.pdf
- [15] Zah et al, (2019), Knowledge, attitudes and practices regarding HIV/AIDS among senior high school students in Sekondi-Takoradi metropolis in Ghana, *Afr J Prim Health Care Fam Med*, 11 (1). doi: 10.4102/phcfm.v11i1.1875
- [16] Kioko, MT., & Pertet, AM, (2017), Factors contributing to antiretroviral drug adherence among adults living with HIV or AIDS in a Kenyan rural community, *Afr J Prim Health Care Fam Med*, 9 (1), doi: 10.4102/phcfm.v9i1.1343
- [17] WHO, (2021), & Bhatti et al, (2019), Current scenario of HIV/AIDS, treatment options, and major challenges with compliance to antiretroviral therapy. *Cureus*, 8 (3), doi: 10.7759/cureus.51
- [18] Desta, A. A., Kidane, K. M., Woldegebriel, A. G., Ajemu, K. F., Berhe, A. A., Zgita, D. N., Teweldemedhn, L. W., Woldegebriel, L. L., Bezabih, N. M., Woldearegay, T. W. (2020). Level of Adherence and Associated Factors Among HIV-Infected Patients on Antiretroviral Therapy in Northern Ethiopia: Retrospective Analysis. *Patient Prefer Adherence*. 14 (1), p. 1585-1594, DOI: <https://doi.org/10.2147/PPA.S268395>
- [19] WHO & UNAIDS, (2018), Comprehensive Approach to HIV/AIDS Treatment and Prevention New AIDS Medicine and Diagnostics Service Simple Treatment Regimens Published Training Tens of Thousands of People to Support AIDS Treatment and Prevention. Retrieved December 15, 2022 from <https://www.who.int/news/item/01-12-2003-world-health-organization-and-unaid-unveil-plan-to-get-3-million-aids-patients-on-treatment-by-2020>
- [20] WHO, (2014), HIV/AIDS. Global update on the health sector response to HIV 2014. Retrieved December 18, 2022 from https://apps.who.int/iris/bitstream/handle/10665/128196/WHO_HIV_2014.15_eng.pdf?sequence=1