

Unveiling the structures of HIV and Recommended Policy Levers

Dr.Ijaz Yusuf^{1*}and Maroa Alkamel²

¹ Department of Operations and Supply Chain, Dr. Hasan Murad School of Management, University of Management and Technology, Lahore, Pakistan; (Corresponding Author)

²MBA Student from UMT

Abstract

HIV is the deadly virus that attacks the immune system of human beings. The source of the disease is highly negated and rejected by the society's norms. So the infected people try to hide the disease and do not find the appropriate policy levers to overcome this challenge. Fear of death and humility in society as a sexually engaged human being is highly rejected and insulted by all concerned. This paper aims to unveil the underlying barriers and to trace the effectiveness strategy at the community level using the mental model. The ultimate goal of this research is to have the system dynamics model to recommend policies based on parametric changings and structural changes. Development of the feedback loops to give insight into the problem understudy and give a clear picture while mentioning the dynamic variables which are interlinked, interdependent, and interrelated.

The proposed model is the blend of authors' own experience working within the national hospitals in Yemen and Pakistan along with the in-depth study of literature. The mental model based on systems thinking provides a foundation to formulate the System Dynamics Model and design rational polices to create awareness and fear to avoid sexual contact which is one (WHO, HIV/AIDS, 2020) of the powerful instrument for HIV spread. The well-conceived mental model has the potential to propose the appropriate measures to reduce its spread. The policies proposed are on the basis of literature insight and experiential wisdom of the dynamic variables so far.

Keywords: HIV; Mental Modell; Systems Thinking; Policy Design; Yeman.

Introduction

HIV (Human Immunodeficiency Virus) is a virus that attacks the immune system, specifically the CD4+ T cells, which help the body fight off infections. HIV is primarily spread through sexual contact, but can also be spread through sharing needles or from mother to child during pregnancy, breastfeeding, or during birth. When HIV infects CD4+ T cells, it can either directly kill the cells or it can cause them to become latent, meaning they are still infected with the virus but are not actively reproducing. Over time, as more and more CD4+ T cells become infected and/or latent, the immune system becomes weaker and weaker, making the person more susceptible to other infections. (WHO, HIV/AIDS, 2020)

Acquired immunodeficiency syndrome, or AIDS, is an illness that is associated with HIV, but not all people with HIV have AIDS, and those who receive prompt and consistent treatment after contracting HIV are less likely to develop AIDS. If someone is diagnosed with AIDS, it means that their immune system has become severely weakened. (Affairs, 2018)

There are two types of HIV: HIV-1 and HIV-2. HIV-1 is more virulent and is the cause of the majority of HIV infections worldwide. HIV-2 is primarily found in West Africa and is less easily transmitted and has a slower progression to AIDS. There is no cure for HIV, but there are antiretroviral drugs (ART) that can slow the progression of the disease and help keep the virus under control. ART works by preventing the virus from replicating and thereby reducing the amount of virus in the body (viral load). When taken as prescribed, ART can effectively suppress the virus and allow people living with HIV to live long, healthy lives. However, if ART is not taken as prescribed, the virus can develop resistance to the drugs and become more difficult to treat, other important interventions for people living with HIV include pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP) which can help reduce the risk of HIV transmission. (WHO, HIV/AIDS, 2020)

The significance of research:

HIV in Yemen is a significant public health concern, with an estimated 10 000 people living with HIV and the estimated number of new HIV infections was around 6000 (UNAIDS, Joint United Nations Panel on HIV/AIDS (UNAIDS) Global Report, 2012). The primary mode of transmission is through unprotected sexual contact. (UNAIDS, Joint United Nations Panel on HIV/AIDS (UNAIDS) Global Report, 2012) However, due to the ongoing civil war and humanitarian crisis, access to HIV prevention and control services is limited, and the many epidemics are likely to continue to grow.

4st International Congress of Social Science, Innovation & Educational Technologies

Improving access to HIV testing and counseling services: Research can help identify barriers to testing and counseling services and develop strategies to overcome them. This can help increase the number of people who are aware of their HIV status and receive appropriate care and treatment.

Research Objectives:

The objectives of the research are as under:

- 1) To identify and understand the barriers to accessing HIV testing and counseling services in Yemen
- 2) To develop strategies to overcome these barriers to increase the number of people who are aware of their HIV status and receive appropriate care and treatment.
- 3) To recommend and suggest evidence-based policies and programs to control and prevent the spread of the virus.

Research questions:

1. What are the barriers to accessing HIV testing and counseling services in Yemen, and how can these barriers be overcome?
2. What are the barriers that prevent individuals from accessing HIV prevention and care services in Yemen, and how can these barriers be overcome?
3. How can the understanding of the cultural and religious factors influencing the perception and acceptance of HIV in Yemen be improved to improve the effectiveness of the prevention and control of HIV?

Literature Review:

The identification of HIV in 1981 marked the beginning of a global health concern, with the disease swiftly gaining significance around the world) Colebrunders R(1990 ‘

The incidence of HIV/AIDS has been reported in practically every nation, yet detailed information on HIV seroprevalence, the total number of AIDS cases, and a precise measure of the disease's burden remain (Elusive,) J(1996 ‘

Developing countries have been particularly averted by the HIV/AIDS pandemic. The combination of low education, high fertility, and low contraceptive prevalence rates were the primary reasons for

4st International Congress of Social Science, Innovation & Educational Technologies

the rapid spread of HIV through Sub-Saharan Africa, where prevalence rates in high risk populations have been found to be in excess of 40%. (Cleland J, 1995)

The urgent need to limit the spread of HIV in numerous countries has resulted in the implementation of several measures and prevention strategies policies by governments and international organizations. These measures include the promotion of safe sex practices, HIV testing, and counseling, and antiretroviral therapy.

Promotion of safe sex practices Via Religious Beliefs:

The actions of religious leaders and organizations have, at times, contributed to the stigma surrounding HIV and AIDS, (Parker, 2002) notes that religious leaders may promote particular moral and ethical stances on sexual behavior that reinforce the notion that those who are infected with HIV have committed a sin and deserve to be "punished. (Singh, 2001). Furthermore, some religious leaders may oppose condom promotion for HIV prevention, viewing it as promoting immoral behavior (Mas'udi, 2000). Other studies have found that there is a connection between Islamic-related doctrines and lower rates of HIV prevalence among Muslims (Nunn, 1994) (Ridanovic, 2004)

Islamic cultural values that consider premarital sex to be a sin are often cited as a factor in the transmission of HIV, as it results in the rejection of safe-sex practices. Furthermore, the stigma associated with such behavior is thought to hinder access to care for those infected with HIV. On the other hand, the comparatively low incidence of HIV infection in Islamic populations is sometimes attributed to the adherence to religious values such as abstinence. In light of this ongoing debate, a study was carried out to examine the potential of using Islamic texts as a framework for promoting HIV prevention and reducing HIV/AIDS-related stigma. (Jewkes, 2006)

Promotion of safe sex practices via using Condom:

The effectiveness of condoms in preventing the transmission of HIV is dependent on their proper use. When used perfectly, condoms are highly efficacious in reducing the probability of HIV transmission. Efficacy is the theoretical effectiveness of an intervention. For instance, if condoms reduced the likelihood of HIV transmission by 100 times when used perfectly, their efficacy would be 99%. However, in practice, condoms may not always be used perfectly, and their effectiveness would be lower than their efficacy.

For example, if condoms as typically used reduced the risk of HIV transmission by a factor of 10, their effectiveness would be 90%. (Bretzman, 1994) (Hearst, 1988)

4st International Congress of Social Science, Innovation & Educational Technologies

Studies have shown that people can be convinced to use condoms effectively to prevent the spread of HIV and other sexually transmitted infections. The earliest evidence of this came from studies of men who have sex with men, where condom use became widespread and significantly reduced the incidence of HIV and other STIs in this population. (Hessol, 1989). For example, studies conducted by (Catania, 1991) found that condom use had become the norm among men who have sex with men in many areas, leading to a significant reduction in the spread of HIV and other STIs.

HIV testing and counseling:

Since the establishment of WHO guidelines in 2007, the use of provider-initiated HIV testing and counseling (PITC) has expanded a study sought to conduct a systematic review of PITC in low- and middle-income countries.

HIV testing and counseling is the first step in the UNAIDS' 'Getting to zero' campaign, which emphasizes the importance of early diagnosis and treatment. Despite this, the data shows that almost 50% of individuals living with HIV are not aware of their diagnosis, resulting in missed opportunities for prevention and treatment and leading to poorer health outcomes. In contrast, early diagnosis and treatment have been proven to improve clinical outcomes, quality of life, and economic productivity. Therefore, delayed diagnosis can have adverse effects, while timely diagnosis and treatment can have positive benefits (UNAIDS, 2012)

HIV testing and counseling (HTC) is an important public health measure that aims to diagnose HIV infection and encourage behavior that reduces the risk of HIV transmission through counseling. It has been established through studies that being aware of one's HIV status can help prevent the transmission of HIV and enable timely treatment. HTC provides an opportunity for individuals to take necessary precautions to protect themselves and others from HIV transmission. If an individual tests positive for HIV, they can start treatment promptly, which can improve their health outcomes and reduce the likelihood of transmitting HIV to others.

(Desgre^{es}-du-Lou[^] A, 2009) (Higgins DL G. C., 1991) (Marks G, 2005)

The pre- and post-counseling received during HIV testing is critical for providing individuals with HIV risk-reduction knowledge. If an individual tests positive for HIV, they can start antiretroviral treatment (ART) early before they become symptomatic, which can improve their health outcomes and reduce the likelihood of transmitting HIV to others. They can also use condoms and practice safe injecting drug practices to prevent the transmission of HIV to their partners. Therefore, HIV testing and counseling not only provides an opportunity for early diagnosis and treatment but also equips

4st International Congress of Social Science, Innovation & Educational Technologies

individuals with knowledge and tools to prevent the transmission of HIV to others. (Efficacy of risk-reduction counseling to prevent human immunodeficiency virus and sexually transmitted diseases, 1998) (Higgins DL G. C., 1991).

Appropriate treatment for HIV during pregnancy and labor can significantly reduce the risk of vertical transmission of HIV from mother to child. Pregnant women who receive appropriate treatment can reduce the risk of transmission from 15–40% to 1–2% or less. Additionally, the newborn can receive treatment for six weeks following delivery, which further reduces the risk of transmission. Therefore, it is critical for pregnant women living with HIV to receive appropriate treatment throughout pregnancy and labor to protect their unborn children from HIV transmission. (Cooper E, 2002) (Keenan-Lindsay L, 2006) (Dorenbaum A, 2002) (Mofenson L, 2000).

Although HIV testing and counseling can play a critical role in preventing the transmission of HIV, it is unclear to what extent individuals who receive a negative test result adopt safe behavior. Despite receiving a negative result, individuals may still engage in risky behavior, which can increase their risk of HIV transmission. Therefore, it is important to continue educating individuals on safe behavior practices and the importance of regular HIV testing. By doing so, individuals can better protect themselves and others from HIV transmission, even if they receive a negative test result (Ickovics J, 1994) (Ryder K, 2005).

Pre-exposure prophylaxis (PrEP):

Pre-exposure prophylaxis, also known as PrEP, is a method used to prevent new HIV infections in individuals who are HIV-negative but engage in high-risk behavior. This is done by using antiretroviral medications, which are drugs that target the virus and prevent it from replicating in the body. PrEP has been studied using both topical and systemic drugs. Systemic PrEP can be administered as continuous or intermittent therapy, meaning that individuals can take the medication either every day or intermittently based on their sexual behavior. PrEP has been shown to be highly effective in preventing HIV transmission when taken consistently and as directed. It is important to note that PrEP does not protect against other sexually transmitted infections and should be used in combination with other prevention methods, such as condom use. (Kelesidis T, 2011).

PrEP, is a prevention strategy that involves administering antiretroviral drugs to individuals who are at high risk of acquiring HIV infection but are currently HIV-negative. PrEP has been shown to reduce the risk of acquiring HIV infection by over 85% in some clinical trials. This means that PrEP is a highly effective tool for preventing HIV transmission when taken consistently and as directed.

4st International Congress of Social Science, Innovation & Educational Technologies

It is important to note that PrEP does not protect against other sexually transmitted infections and should be used in combination with other prevention methods, such as condom use. Additionally, PrEP should only be prescribed by a healthcare provider and requires regular monitoring to ensure its effectiveness and safety. (Molina JM, 2015) (McCormack S, 2016). In 2014, the World Health Organization (WHO) recommended the use of pre-exposure prophylaxis (PrEP) as a preventative measure against HIV transmission. This was based on the initial studies that were conducted on PrEP and their positive results in reducing the risk of acquiring HIV infection. (WHO, Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations , 2014)

Post-exposure prophylaxis (PEP):

Post-exposure prophylaxis (PEP) using antiretroviral drugs is now commonly administered globally for those who have experienced occupational exposure to blood or other blood-containing fluids, as well as no occupational exposure, such as through sexual contact or injection-drug use. While its efficacy has not been fully established, it is believed to decrease the risk of HIV transmission by at least 80%. To enhance its cost-effectiveness and guide healthcare professionals in their decision to administer PEP, multiple countries have released guidelines.

A study has examined various antiretroviral drug combinations utilized for PEP, their safety profiles, as well as the indications and recommendations for administering PEP. The study also details the initial evaluation process for individuals who have been exposed, along with the follow-up care required during and after PEP treatment. (Rey, 2011).

Antiretroviral therapy:

Antiretroviral therapy (ART) is a treatment for HIV that has been shown to effectively inhibit the replication of the virus and preserve or restore the immune system's function. This therapy has been found to reduce both the frequency and severity of illness associated with HIV, leading to a decrease in mortality rates. Additionally, individuals undergoing ART can now expect to live as long as those without HIV. (Samji H, 2013) (May MT, 2014) (Lohse N, 2016)

The initial ART regimens consist of three medications for treating HIV, which are combined into a single pill taken orally once a day. These regimens, also known as first-line regimens, have been shown to achieve virology suppression in over 80% of people living with HIV in both clinical studies and real-world patient populations. This means that the therapy is successful in reducing the amount of virus in a patient's blood, which is important for both the patient's health and for reducing the transmission of HIV to others. (Serv., 2018) (Gunthard HF, 2016)

4st International Congress of Social Science, Innovation & Educational Technologies

ART is a crucial therapy for individuals living with HIV as it is effective in reducing the virus's replication and associated illness, preserving immune system function, and improving life expectancy. Additionally, the first-line regimens have high success rates and are relatively easy to take, consisting of a single pill once a day. (WHO, (World Health Organ.), 2016). Antiretroviral therapy is both increasingly effective and complex. However, it can have numerous adverse effects on different organ systems, which may result in symptoms. (Carr A, 2000)

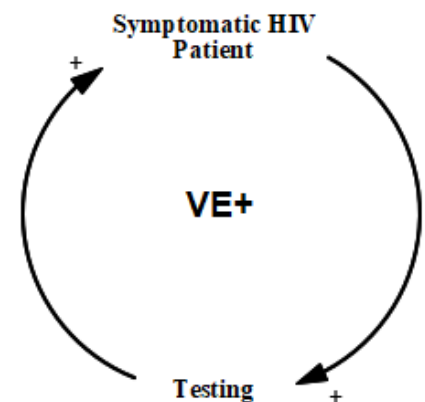
Despite the potency of current antiretroviral regimens from an antiviral perspective, patient non-adherence often causes treatment failure. Some of the common adverse effects of antiretroviral therapy include gastrointestinal issues like bloating, nausea, and diarrhea, as well as fatigue and headaches. (Phillips Insights into the reasons for discontinuation of the first highly active antiretroviral therapy (HAART), 2000) (Lucas GM, 1999). To ensure maximum efficacy and adherence, clinicians need to prioritize preventing adverse effects and distinguishing between self-limited and potentially serious ones.

HIV Causal Loops:

Loop 1: The Relationship between Symptomatic HIV Patient and Testing

This loop explains the relationship between patients who are suffering HIV symptoms and access to HIV testing.

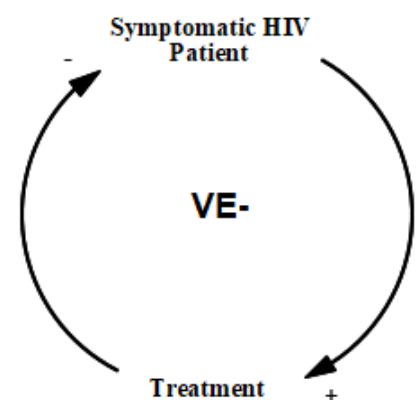
The loop shows a positive relationship: an increase in the number of Symptomatic HIV patients will lead to an increase in the number of HIV tests being conducted. Similarly, an increase in HIV testing will result in an increase in the number of diagnosed HIV patients



Loop2: The Relationship between Symptomatic HIV Patient and Treatment

This loop explains the relationship between patients who are suffering From HIV symptoms and access to HIV treatment.

The loop shows a negative relationship: an increase in the number Of symptomatic HIV patients will lead to an increase in the number Of patients receiving HIV treatment.



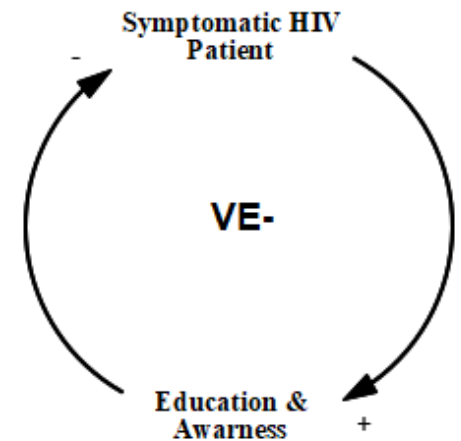
4st International Congress of Social Science, Innovation & Educational Technologies

In turn, an increase in the number of patients receiving HIV treatment
Will result in a decrease in the number of symptomatic HIV patients.

Loop3: The Relationship between Symptomatic HIV Patient and Education& Awareness

This loop explains the relationship between patients who are suffering
From HIV symptoms and Education& Awareness.

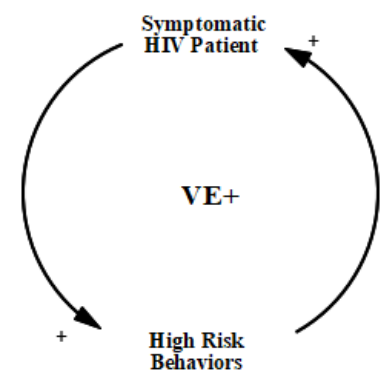
The loop shows a negative relationship: an increase in the number
Of symptomatic HIV patients will lead to an increase in the Education
Awareness about this disease in turn, an increase in the Education&
Awareness will result in a decrease in the number of
Symptomatic HIV patients.



Loop4: The Relationship between Symptomatic HIV Patient and High Risk Behaviors

This loop explains the relationship between patients who are suffering from
HIV symptoms and High Risk Behaviors

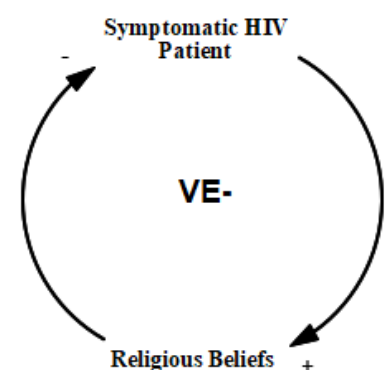
The loop shows a positive relationship: an increase in the number of
Symptomatic HIV patients will lead to an increase in the high
Risk behaviors. Similarly, an increase of high risk behaviors will result
In an increase in the number of Symptomatic HIV patients.



Loop5: The Relationship between Symptomatic HIV Patient and Religious Beliefs

This loop explains the relationship between patients who are suffering
From HIV symptoms and Religious Beliefs.

The loop shows a negative relationship: an increase in the number
Of symptomatic HIV patients will lead to an increase Religious Beliefs
About this disease in turn, an increase in the Religious Beliefs will



4st International Congress of Social Science, Innovation & Educational Technologies

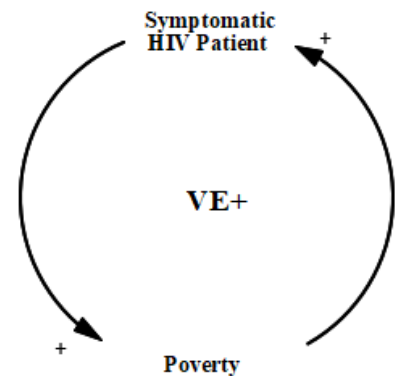
Result in a decrease in the number of Symptomatic HIV patients.

Loop6: The Relationship between Symptomatic HIV Patient and Poverty

This loop explains the relationship between patients who are suffering from HIV symptoms and Poverty

The loop shows a positive relationship: an increase in the number of Symptomatic HIV patients will lead to an increase in the Poverty.

Similarly, a Poverty will result in an increase in the number of Symptomatic HIV patients.

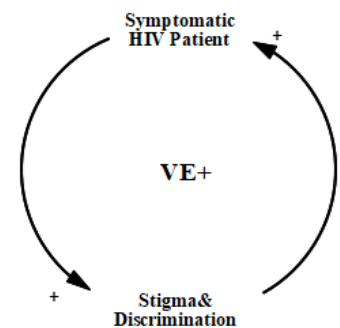


Loop7: The Relationship between Symptomatic HIV Patient and Stigma & Discrimination

This loop explains the relationship between patients who are suffering from HIV symptoms and stigma and discrimination highlights the importance of Addressing social and cultural attitudes towards HIV/AIDS

The loop shows a positive relationship: an increase in the number of Symptomatic HIV patients will lead to an increase stigma and discrimination

Similarly, an increase in stigma and discrimination will result in an increase in the number of HIV patients



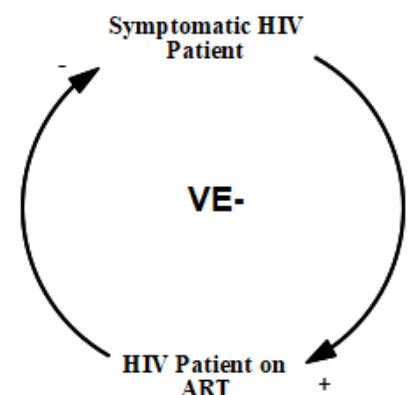
Loop8: The Relationship between Symptomatic HIV Patient and ART

This loop explains the relationship between patients who are suffering from HIV symptoms and antiretroviral therapy (ART)

The loop shows a negative relationship: an increase in the number of Symptomatic HIV patients will lead to an increase number of Patients

On Antiretroviral therapy (ART), an increase number of Patients

On ART will Result in a decrease in the number of Symptomatic HIV patients



Loop9: The Relationship between Symptomatic HIV Patient and Access to Prevention Methods

This loop explains the relationship between patients who are suffering

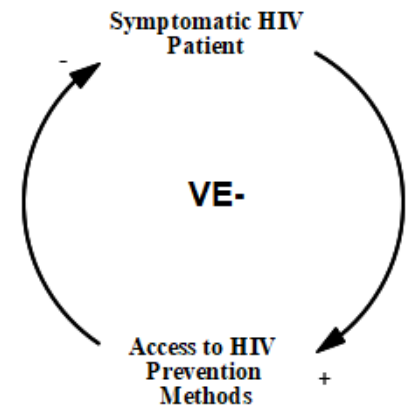
From HIV symptoms and Access to HIV Prevention Methods.

The loop shows a negative relationship: an increase in the number

Of symptomatic HIV patients will lead to an increase Access to HIV

Prevention Methods, an increase in the Access to HIV Prevention Methods

Will Result in a decrease in the number of Symptomatic HIV patients

**Loop10: The Relationship between Symptomatic HIV Patient, ART patient and High mortality**

This loop shows the Relationship between Symptomatic

HIV Patient, Antiretroviral therapy (ART) patient and

High mortality.

The increase in symptomatic HIV patients will increase

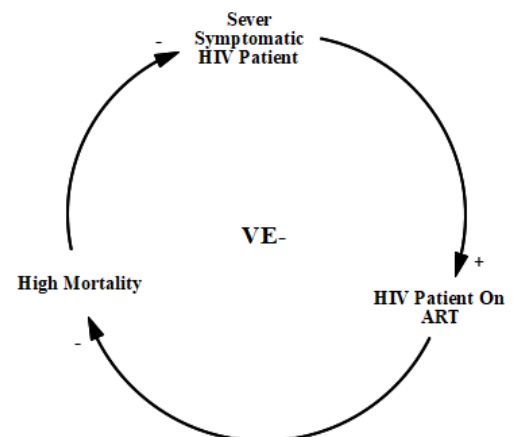
The patients on ART ,the increase of the patient on ART

As the results the rate of mortality will decrease

The decrease in the rate of mortality will increase

The symptomatic HIV patient

So, this loop has NEGATIVE RELATIONSHIP

**Loop11: The Relationship between Number of people living healthy with HIV, Safe sex practices, Religious Beliefs and HIV Awareness**

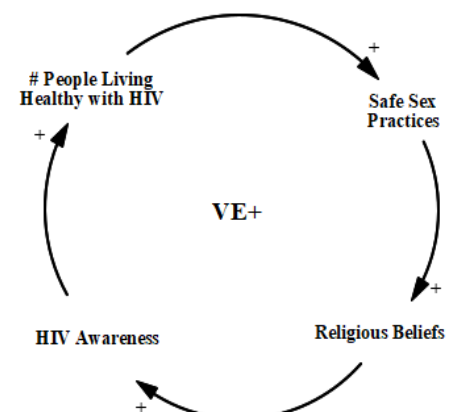
This loop shows the Relationship between Numbers of

People Living healthy with HIV, Safe sex practices,

Religious Beliefs and HIV Awareness.

The increase of the people who are living healthy

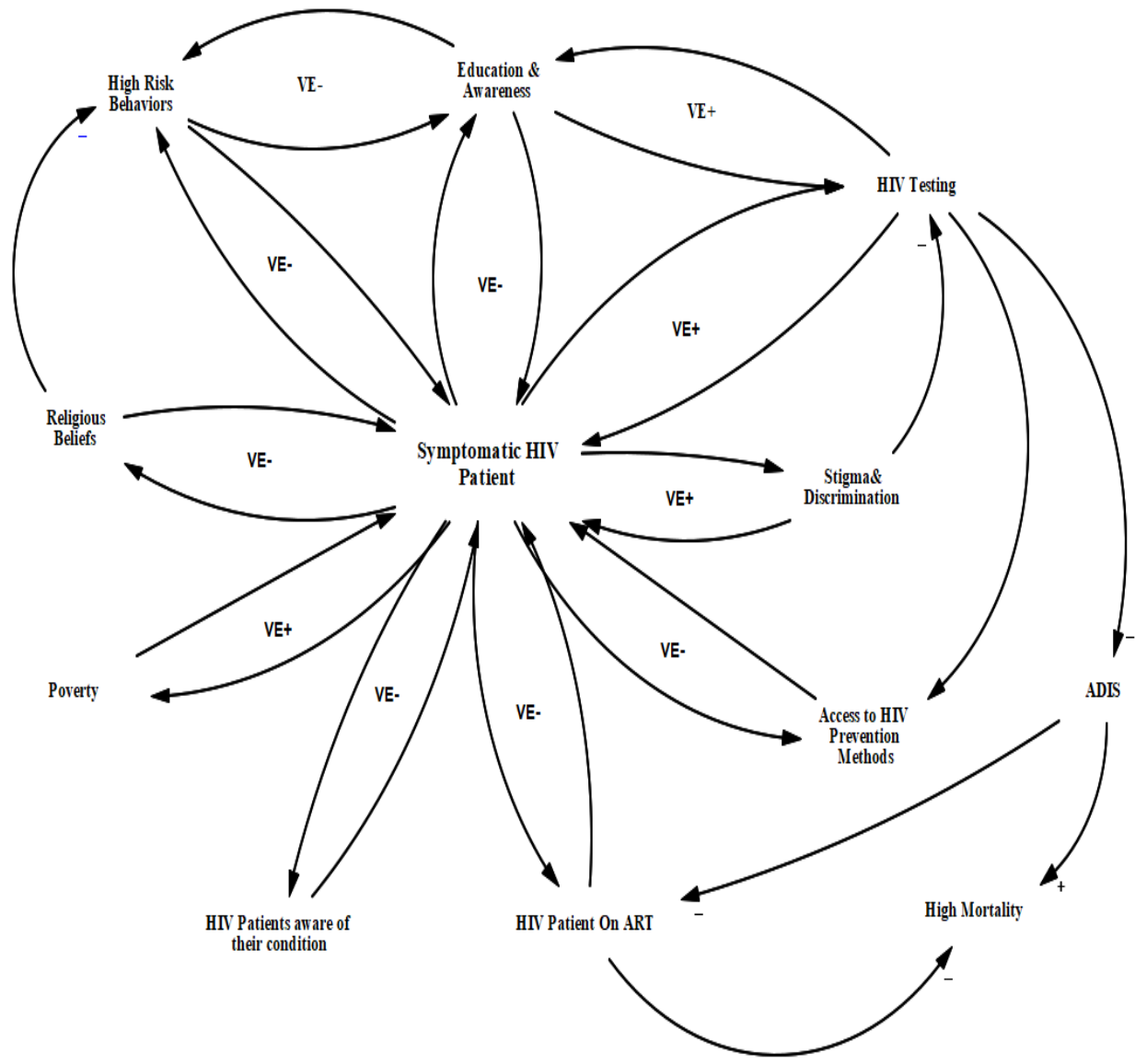
Non symptomatic HIV this led to increase in safe



4st International Congress of Social Science, Innovation & Educational Technologies

Sex practices, the increase in safe Sex practices will
Increase the religious beliefs, the Increase the religious
Beliefs will led to increase HIV Awareness and this will
Increase the number of people living healthy with HIV
So, this loop has POSITIVE RELATIONSHIP

HIV Mental Model



Recommended policies to the Government can implement to reduce HIV in Yemen:**Increase awareness:**

The government can launch a comprehensive public awareness campaign about HIV/AIDS, its causes, prevention, and treatment. This campaign can use various mediums such as television, radio, social media, and billboards to reach a broader population in the Yemen and increase the awareness and education

Promote safe sex practices:

The government can promote safe sex practices such as the use of condoms and other barrier methods. This can be done by distributing free condoms, providing sex education to young people.

Improve access to testing and treatment:

The government can improve access to testing and treatment for HIV by providing free or low-cost testing, and ensuring that antiretroviral therapy (ART) is available to all those who need it. This can be done by strengthening the healthcare system and increasing the number of HIV testing and treatment centers in the country.

Combat stigma and discrimination:

The government can work to combat the stigma and discrimination faced by people living with HIV/AIDS. This can be done by launching a public education campaign to raise awareness about the disease, and by providing legal protections for people living with HIV/AIDS.

Collaborate with civil society organizations:

The government can work with civil society organizations to implement these policies effectively. Civil society organizations can help to raise awareness, provide HIV testing and treatment services, and advocate for the rights of people living with HIV/AIDS. for example, the government can work together with WHO and UNICEF also UNAIDS.

Conclusion:

The structure of HIV has been a topic of intense study over the past several decades, and recent advances in technology and research have provided important insights into its molecular architecture. By understanding the structure of HIV and the possible high risk behaviors

Researchers can better develop effective treatments and prevention strategies to combat the spread of the virus.

4st International Congress of Social Science, Innovation & Educational Technologies

Furthermore, our Research Paper on policy levers highlights the importance of focusing on education and awareness campaigns, increasing access to testing and treatment, and high accessibility to HIV prevention drugs.

These policy levers can help reduce the stigma and discrimination faced by people living with HIV, promote prevention strategies, and ultimately reduce the number of new infections.

It is clear that continued research into the structure and behavior of HIV, but till now they didn't figures out a cure treatment for HIV they set a combination of prevention strategies and policy interventions, is essential to effectively address the global HIV epidemic. By working together, scientists, policymakers, and communities can make significant progress in reducing the impact of HIV and improving the lives of people affected by the virus.

References

- Affairs, U. o. (2018). *HIV/AIDS Basics*. Retrieved from U.S.Department of Veterants Affairs : <https://www.hiv.va.gov/patient/basics/index.asp>
- Bretzman, M. a. (1994). Condoms, IUDs, counseling and natural family planning. *American Family Physician*, 50(4): 766–768.
- Carr A, C. D. (2000). Adverse effects of antiretroviral therapy. *Lancet*, 356:1423-30.
- Catania, J. T. (1991). Changes in condom use among homosexual men in San Francisco. *Health Psychology*, 10(3): 190–199.
- Cleland J, F. B. (1995). *Sexual Behavior and AIDS in the developing world* . Retrieved from World Health Organization.
- Colebrunders R, Q. T. (1990). Retroviruses and the human immunodeficiency syndrome. *Tropical and geographical medicine*, 728–750.
- Cooper E, C. M. (2002). Combination antiretroviral strategies for the treatment of pregnant HIV-1-infected women and prevention of perinatal HIV-1 transmission. . *J Acq Immun Def Synd*, 29:484–94.
- Desgre' es-du-Lou^ A, B. H. (2009). prenatal HIV testing of the mother to prevention of sexual HIV transmission within the couple. *Soc Sci Med*, 69:892–9.
- Dorenbaum A, C. C. (2002). Two-dose intrapartum/newborn nevirapine and standard antiretroviral therapy to reduce perinatal HIV transmission. *J Amer Med Assoc*, 288:189–98.
- Efficacy of risk-reduction counseling to prevent human immunodeficiency virus and sexually transmitted diseases, Kamb M, Fishbein M, Douglas J, Rhodes F, Rogers J, Bolan G, et al (J Amer Med Assoc 1998).
- Gunthard HF, S. M. (2016). Antiretroviral drugs for treatment and prevention of HIV infection in adults. *International Antiviral Society-USA Panel. JAMA*, 316:191–210.
- Hearst, N. a. (1988). Preventing the heterosexual spread of AIDS. *Journal of the American Medical Association*, 259(16): 2,428– 2,432.

4st International Congress of Social Science, Innovation & Educational Technologies

- Hessol, N. A. (1989). Prevalence, incidence, and progression of human immunodeficiency virus infection in homosexual and bisexual men in hepatitis B vaccine trials. *American Journal of Epidemiology*, 130(6): 1,167–1,175.
- Higgins DL, G. C. (1991). Evidence for the effects of HIV antibody counseling and testing on risk behaviors. *J Amer Med Assoc*, 266:2419–29.
- Higgins DL, G. C. (1991). Evidence for the effects of HIV antibody counseling and testing on risk behaviors. *J Amer Med Assoc*, 266:2419–29.
- Ickovics J, M. A. (1994). Limited effects of HIV counseling and testing for women: a prospective study of behavioral and psychological consequences. *J Amer Med Assoc*, 273:443–8.
- J, B. (1996). Global trends in AIDS mortality. *Population and Development Review*, 22:21–45.
- Jewkes, R. N. (2006). A cluster randomized-controlled trial to determine the effectiveness of Stepping Stones in preventing HIV infections and promoting safer sexual behaviour amongst youth in the rural Eastern Cape, South Africa: trial design, methods and baseline findings. *Tropical medicine & international health*, 11(1), 3-16.
- Keenan-Lindsay L, Y. M. (2006). HIV screening in pregnancy. *J Obstet Gynaecol Can*, 28:1103–7.
- Kelesidis T, L. R. (2011). *Preexposure prophylaxis for HIV prevention*. Curr HIV/AIDS Report.
- Lohse N, O. N. (2016). Update of survival for persons with HIV infection in Denmark. *Ann. Intern. Med*, 165:749–50.
- Lucas GM, C. R. (1999). Highly active antiretroviral therapy in a large urban clinic: risk factors for virologic failure and adverse drug reactions. *Ann Intern Med*, 131:81-7.
- Marks G, C. N. (2005). analysis of high-risk sexual behaviour in persons aware and unaware they are infected with HIV in the Unites States. *Jacq Immun Def Synd*, 39:446–53.
- Mas’udi, M. F. (2000). International Newsletter on HIV/AIDS prevention and care. *Ministry of Health [MOH]*, AIDS Action, 47, pp 6.
- May MT, G. M. (2014). Impact on life expectancy of HIV-1 positive individuals of CD4+ cell count and viral load response to antiretroviral therapy. *AIDS*, 28:1193–202.
- McCormack S, D. D. (2016). Pre-exposure prophylaxis to prevent the acquisition effectiveness results from the pilot phase of a pragmatic open-label randomised trial. *Lancet*, 387:53–60.
- Mofenson L, M. J. (2000). Advances and research directions in the prevention of mother-to-child HIV-1 transmission. *Lancet*, 355:2237–44.
- Molina JM, C. C. (2015). On-demand preexposure prophylaxis in men at high risk for HIV-1 infection. *N. Engl. J. Med*, 373:2237–46.
- Nunn, A. J.-K. (1994). Risk factors for HIV-1-infection in adults in a rural Ugandan community. *A population study*.
- Parker, R. A. (2002). *HIV/AIDS-related Stigma and Discrimination: A Conceptual Framework and an Agenda for Action [online]*. Retrieved from The Population Council.

4st International Congress of Social Science, Innovation & Educational Technologies

- Phillips Insights into the reasons for discontinuation of the first highly active antiretroviral therapy (HAART), 14:499-507 (Italian Cohort of AntiretroviralNaïve Patients. 2000).
- Rey, D. (2011). Post-exposure prophylaxis for HIV infection. *Expert Rev. Anti Infect. Ther*, 9(4), 431–442.
- Ridanovic, Z. (2004). HIV and Islam: is HIV prevalence lower among Muslims? *Social Science and Medicine*, 58, 1751–1756.
- Ryder K, H. D. (2005). Psychosocial impact of repeat HIV-negative testing. *AIDS Behav* , 9:459–64.
- Samji H, C. A. (2013). Closing the gap: increases in life expectancy among treated HIV-positive individuals in the United States and Canada. *PLOS ONE*, 8:e81355.
- Serv., U. D. (2018). *Antiretroviral Ther. Guidel. Panel*. Retrieved from AIDSinfo, US Dep: <https://aidsinfo.nih.gov/guidelines/html/1/adult-and-adolescent-arv/0>
- Singh, B. (2001). *Breaking the silence on HIV/AIDS: religious health organizations and reproductive health*. Retrieved from Conscience, Catholics for a Free Choice.
- UNAIDS. (2012).
- UNAIDS. (2012). *Joint United Nations Panel on HIV/AIDS (UNAIDS) Global Report*. Geneva: global AIDS epidemic. Retrieved from UNAIDS: <https://www.unaids.org/en/regionscountries/countries/yemen>
- WHO. (2014). *Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations* . Retrieved from WHO: <http://www.who.int/hiv/pub/guidelines/keypopulations/en/>.
- WHO. (2016). (*World Health Organ.*). Retrieved from Consolidated Guidelines on the Use of Antiretroviral Drugs for Treating and Preventing HIV Infection: <http://www.who.int/hiv/pub/arv/arv-2016/en/>
- WHO. (2020). *HIV/AIDS*. Retrieved from WHO: https://www.who.int/health-topics/hiv-aids#tab=tab_1