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Neurodegenerative Diseases and Verbal Impairments from Sexual Intercourse in Canadian Teenagers

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Abstract: This Scholarly Article will analyse the links between HAND (HIV- associated neurocognitive disease), herpes simplex virus type 1 (HSV-1); neurodegenerative diseases such as Alzheimer's, amyotrophic lateral sclerosis (ALS) also known as Lou Gehrig's disease , glaucoma and their effects on how Canadian teens (specifically high school students) could potentially gain verbal and thought impairments or muscle paralysis (specifically vocal ones) by Teen sexual intercourse.

Keywords: *ALS, Canada, Disease, HAND, HSV-1, Glaucoma, Teenagers.*

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I. INTRODUCTION

The rate of Canadian Teenage sex decreased from 1997/1998-2005 by 8% for females and 0% for males; (subjects where between 15 to 19 years of age) (Statistics Canada, 2008); On the other hand, the existing risk of disease could relate to a decline in neuronal functions and mental processes, such as speech, thoughts, and mental function, which may pose a threat to teenagers. Transmissible Autoimmune diseases, such as HAND (HIV-associated neurocognitive disease), herpes simplex virus type 1 (HSV-1), Amyotrophic lateral sclerosis (ALS) and glaucoma; Genetically inheritable disease as Alzheimer's disease, will be the focus of this article.

II. THE STUDY OF SELECTED DISEASES

- *HIV Associated Neurocognitive Disease*

HIV, (Human Immunodeficiency Virus), is a transmissible retrovirus that targets CD4+ T-lymphocyte helper cells. In most cases, HIV-1 and CD4 receptors bind, HIV-1 gp120 (Glycoprotein 120) interacts with chemokine coreceptor (CCR5), which will activate membrane fusion, receptor mediated endocytosis; The virus has a matrix and capsid protein that are digested when they enter the cell; When they are digested, two HIV RNA (Ribonucleic acid) strands will enter

The cell along with two reverse transcriptase*, two integrase*, Trans-activator of transcription* (Tat) and protease* (German Advisory Committee Blood (Arbeitskreis Blut), Subgroup 'Assessment of Pathogens Transmissible by Blood,' 2016; Hussain et al., 2024; Rice, 2017); Each reverse transcriptase will translate one RNA into one strand of DNA (Deoxyribonucleic acid) using the host cell's free-floating nucleotides, during the transcription process, reverse transcriptase usually makes errors in placing the correct anti-RNA nucleotides for the DNA code. After the first transcription is complete, the single stranded DNA will once more, go through a reverse transcription process in reverse transcriptase, which again, will contain errors; The result is a double stranded DNA which contains coded errors. After this process, integrase will bring the resultant double stranded DNA to the nucleus, which will then bind the incorrectly created DNA to the Hosts DNA, this corrupted DNA will be translated into proteins through translation by ribosomes, such as the ones found in the rough endoplasmic reticulum, which will then be exported by bulk transport, exocytosis through vessels. (Goodsell, 2015).

The result of this process will cause CD4+ t-lymphocyte helper cells to go through apoptosis (commanded cell death) after the Lytic cycle (Virus replication cycle) has been complete, the virus will then spread throughout the body, infecting cells, which include neurons, leading to a decreased amount of White blood cells and immune strength. HIV can be transmitted; The disease is known as Acquired Immunodeficiency Syndrome or AIDS.

HAND is the general term for the 4%-15% of patients who have a Human immunodeficiency virus that resulted in a disease that damages nerves, nervous system and cognitive functions (National Library of Medicine). HIV can cause HIV induced dementia; Though dementia is recognized as an MND (Major Neurocognitive Disorder) which results in a gradual decrease of cognitive functions such as loss of memory,

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Alzheimer's disease is an example of dementia.(Hussain et al., 2024); Dementia can be transmitted by AIDS dementia (Kopstein, 2022) .

➢ *Herpes Simplex Virus Type 1 (HSV-1)*

Herpes simplex virus (HSV), also known as herpes, Is a virus that contains a double-stranded DNA encapsulated in an icosahedral capsid, HSV will use nectin-1 and nectin-2 as receptors on the host cell's membrane, then by receptor mediated endocytosis, the viral DNA enters the host and the virus will take control of the host cell, forcing the cell to create more viruses, resulting in the death of the host cell by necrosis; This cycle is known as the Lytic cycle. HSV is a STD (Sexually Transmissible Diseases) as well as an uncurable skin infection that can potentially give result to painful blisters or ulcers, its primary transmission route is by skin-to-skin contact (World Health Organisation, 2025). National sentinel surveillance data of street-involved youth in Canada estimates that HSV-1 is present in 57.4%-60.6% of street youth aged 15 to 24 years of age during the years 2001-2005, (Aslam et al., 2012); Herpes simplex virus type 1 can cause (HSE), Herpes simplex encephalitis also known as Herpes simplex neuroinvasion, approximately 90% of HSE cases are caused by HSV-1 (Encephalitis International, 2025).

➢ *Amyotrophic Lateral Sclerosis (ALS)*

Amyotrophic lateral sclerosis (ALS), also referred to as Lou Gehrig's disease or Motor Neuron Disease, is a disease that progressively worsens over time, the degeneration and death of upper and lower motor neurons are the result of the disease, the degeneration causes atrophic muscle weakness, which could lead to death by respiratory paralysis;(Alfahad & Nath, 2013; Satin & Bayat, 2021). Upper motor neurons extend from the cerebral cortex and carry messages through the spinal cord, while lower motor neurons extend from the spinal cord to muscles (Dudley, 2023). The true cause of ALS is still unknown, but some 19 cases of ALS or ALS-like disease have been reported in HIV-1 (HIV) seropositive individuals (Verma & Berger, 2006). 13 of the 19 clearly had a disorder that was unlike ALS in one major way, the rapidity of progression. From symptoms to severe handicap took only a couple of weeks, which is too rapid for conventional ALS. One patient died in three months after their symptoms began.(Rowland, 2011; Verma & Berger, 2006); 7 out of 8 patients with HIV-associated ALS syndrome receiving HAART (Highly Active Antiretroviral Therapy) demonstrated some recovery of their motor deficit. (Verma & Berger, 2006). Other research has linked over 25 genes with ALS, in which the genes responsible for 70% of all familial ALS have been identified, though there is also a significant genetic role for patients without family history.(Martin et al., 2017).

➢ *Glaucoma*

Glaucoma is a disease that causes blindness, It is known to be caused by a build up of aqueous Humour fluid in the cornea and high pressure that damages the optic nerve, some sources such as (Samples, 2010) hypothesize that Glaucoma (specifically High Pressure Open Angle Glaucoma) can be caused by 16 reasons, such as stretch theory, loss of oscillations or even abnormal proteins.(Samples, 2010); Glaucoma can also be cause by HSV-1 (view figure #2), the herpes virus enters through the eyes of an individual, leading to gD glycoprotein and nectin-1 bonding on cornea nerves, starting virus replication, then neuronal death, causing blindness since the CNS (Central Nervous System) cannot receive any signals after the death of the neurons. (Hull et al., 2025; Valerio & Lin, 2019)

III. EFFECTS OF SELECTED DISEASES

➢ *HIV Associated Neurocognitive Disease*

Because HIV lowers the amount of White blood cells (specifically CD4+ T-lymphocyte helper cells) the individual's immune system's strength is distorted, even though the body will continue to produce White blood cells to try to eradicate HIV-1, the amount of White blood cells will be under the norms: 500 to 1,200 $\frac{T\ cells}{mm^3}$ (Cleveland Clinic), therefore, if a common virus, such as, *Epstein-Barr Virus (EBV)*,(*also known as human herpes virus 4*, which is the most common cause of infectious mononucleosis or "mono", EBV can become latent (inactive) and then active (reactivate), (CDC, 2024); The signs and symptoms of EBV are the following:

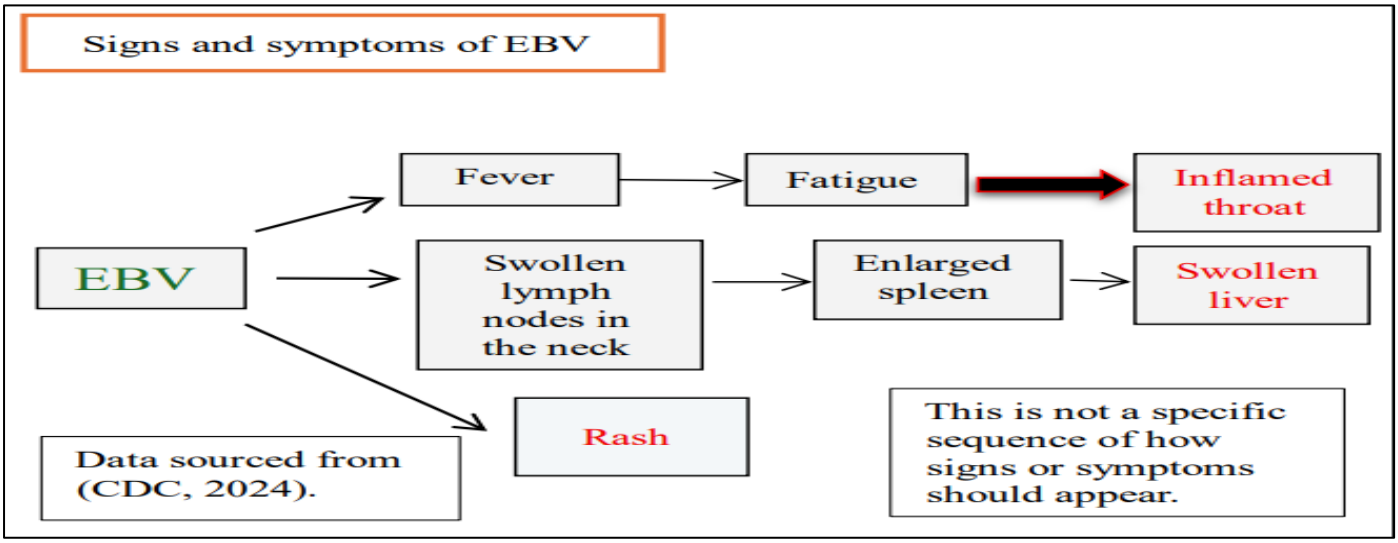

Fig 1 HIV Associated Neurocognitive Disease

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), is to infect the individual or reactivate itself, the individual might suffer fever, fatigue and an inflamed throat. And since this individual's immune system is oppressed by HIV, he or she would have less than 500 $\frac{T\ cells}{mm^3}$, and might not be able to combat EBV, this can result in severe consequences or even death; Other than death, because the individual might constantly have an Inflamed throat, they might not be able to communicate their suffering nor have any verbal communications with hospital staff; Other than medically, if they reside in a learning environment, they might not be able to communicate their thoughts or learn properly due to the viral infection.

➢ *Herpes Simplex Virus Type 1 (HSV-1)*

HSV-1 may become HSE, which causes brain inflammation and can result in brain impairments or even death. Because Herpes is transmissible through skin-to-skin contact, sexually active teenagers in Canada could transmit the disease and infect their sexual partners, the following figure will explain the possible transmission routes for HSV-1 (Agelidis & Shukla, 2015):

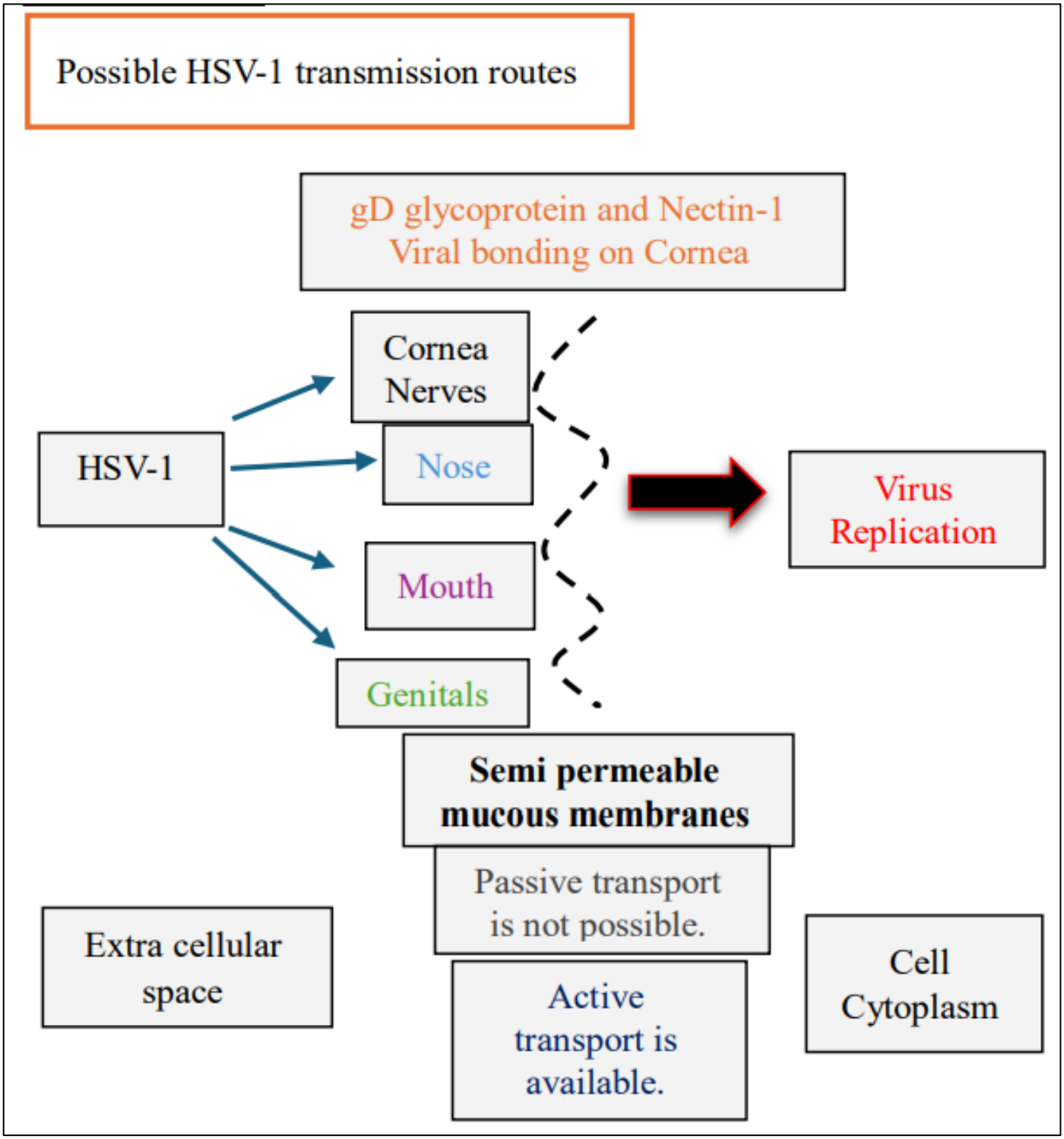

Fig 2 Herpes Simplex Virus Type 1 (HSV-1)

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Therefore, teenagers who have sex may transmit HSV-1; HSV-1 potentially resulting in HSE or Glaucoma, an overall cognitive decline, HSE and Glaucoma may impact the individual's speech as well as motor functions; Decreased consciousness and partial paralysis are possible for HSE, while Herpes Keratitis (inflammation of the cornea) can cause blindness; (Myupchar; (de Blauw et al., 2020; Valerio & Lin, 2019b), meaning that the individual may not be able to communicate with medical professionals if they require any assistance, and if in a school environment, the individual may not be able to reach school, or even learn properly due to specific muscle paralysis such as, Bilateral vocal cord abductor paralysis or general blindness in the case of Glaucoma.

➢ *Amyotrophic Lateral Sclerosis (ALS)*

ALS may cause motor neurons to die which results in the inability to move muscles, leading to paralysis, if it reaches heart nerves, specifically the Sympathetic nerve. the patient may die. The 7 out of 8 patients with HIV-associated ALS receiving HAART who demonstrated some recovery of their motor deficit are proof that ALS is potentially related with the HIV-1,(Verma & Berger, 2006), meaning that an immunodeficiency virus could potentially cause paralysis, speech paralysis, heart paralysis and death.

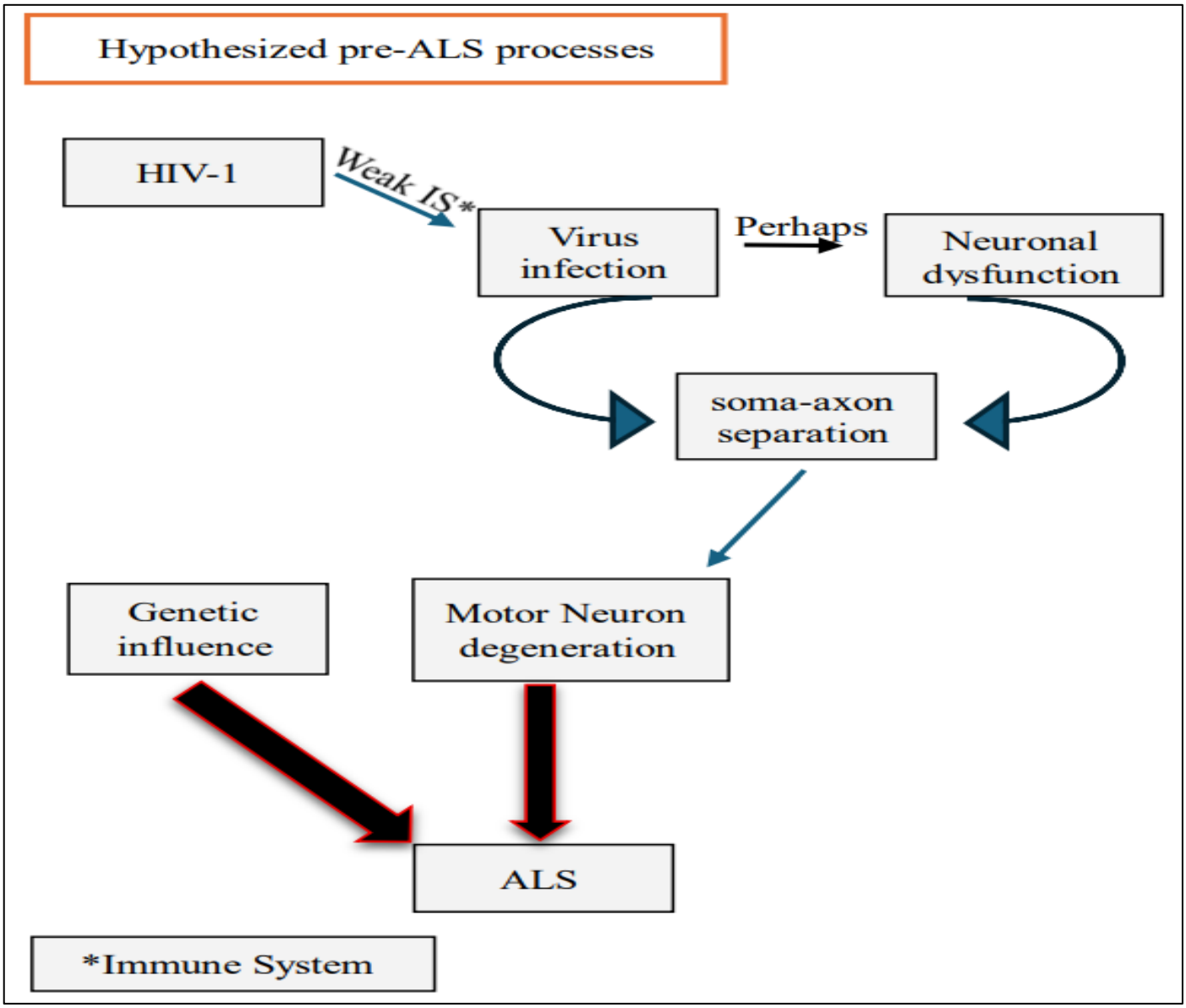

Fig 3 Amyotrophic Lateral Sclerosis (ALS)

- *Here are the Proposed Hypotheses:*

Based on these hypotheses, Canadian teenagers may have sexual intercourse, spread HIV as AIDS, then gain ALS; Because 70% of familial ALS are involved with genes, we can therefore extract another hypothesis; Canadian Teenagers that have sexual intercourse and Gain HIV, gain ALS, and accidentally impregnating their sexual partner or getting impregnated, may give birth to an ALS offspring. The Teenager will suffer loss of muscle control, meaning that they might lose the ability to speak, communicate, walk, breath and much more; This will negatively impact the Teenager's learning potential and communication skills, leading to an overall decline in mental processing and learning skills.

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IV. DISCUSSION

Canadian Teenagers, mainly males, will want to have sex, the 0% decrease is proof of male human nature; Even though there was an 8% decrease for females, both males and females are susceptible to diseases, and these diseases can be spread, leading to more complex complications; Though sex is time consuming, it may also cause neurological imprints and negative effects, such as the degeneration of specific neurons, such as upper and lower motor neurons, which can cause paralysis, speech paralysis and an overall negative patient experience; A cognitive decline, say in a learning environment such as a school, could be seen as a deficit in speaking, which may cut the basic need of vocal communication between student-teacher or student-student; The most commonly spread virus that was discussed, herpes simplex virus type 1, which can be gained orally or even sexually, though HIV-1 is responsible for causing HAND such as Human immunodeficiency virus type 1 induced dementia, in which AD (Alzheimer's Disease) is the most common type of dementia, HIV-1 could be spread through oral sex, sperm, saliva, and other bodily fluids; HIV-1 seroprevalence detection in genital herpes appears to be increasing over time in Canada,(AlMukdad et al., 2023); A mathematical model prediction developed to modelize HSV-1 transmission by oral and sexual modes of transmission using National Health and Nutrition Examination Surveys from the years 1976-2016 data series; Studying the model in depth showed that most genital acquisitions >85% where due to oral-to-genital transmission through oral sex, as opposed to genital-to-genital transmission through sexual intercourse.(Ayoub et al., 2019).

High school students want to have sex by nature, but the impact is too vast, students are wasting more time on sex than study, they walk without knowing the biological consequences, students impact their own lives and destroy their future potentials. Patients that have been diagnosed with HSV, HIV-1, HAND or other mental diseases, must accept their fate, while science is still trying to find a solid cure, such as ART (Antiretroviral therapy) which also has led to a 60%-70% decline in rates of AIDS, hospitalisation, and mortality (Kemnic et Gulick, 2022), there is no guarantee that they will survive.

Students that had sex, wanting to learn, are going to find it very difficult to focus, the amount of dopamine released during sexual pleasure is significantly greater than average dopamine levels*.

Students might find it difficult to enjoy normal activities, such as communicating to women, after having sex with them, or even learning biological topics like the human reproduction systems; In addition, if the student instantly restrains himself from having sex, he or she will most likely develop a sex withdrawal syndrome, which could lead to depression, mental pain, lack of hunger and much more (Kingston, 2018).

In regard to vocal communication, students might feel shy speaking to women, about their disease or even to their peers; HIV-1 can cause more complicated neurological problems such as HIV-1 induced dementia which will affect the learning capabilities of students; ALS could cause speech paralysis which would result in a complete silence from the patient, if the patient disease becomes more complex, it could lead to death.

V. CONCLUSION

High school students will keep having sex, explaining the neurological aspects and neurocognitive decline may help decrease the risk of spreading certain diseases such as ALS, HIV-1, HAND or even HSV-1; Students can transmit certain diseases, and if they get infected by a virus, such as EBV, may die, specifically if the patient has HIV-1; Neurons such as motor neurons can degenerate by specific diseases such as ALS, which can cause muscle paralysis as well.

Teenagers who commit to constant sex might eventually gain or transmit a STD which can infect others, gain neurocognitive diseases, and transmit it to their children, increasing the probability of more patients gaining these diseases; If the future generations continue to walk in the same ways of their ancestors, maybe these diseases will become the next global pandemic.

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