ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF RESEARCH IN PHARMACEUTICAL SCIENCES

Published by JK Welfare & Pharmascope Foundation Journal Home Page: www.ijrps.com

Identification of HIV virus in Najaf city, Iraq

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Article History:

Received on: 14 May 2020
Revised on: 06 Jun 2020
Accepted on: 15 Jun 2020

Keywords:

ADIS,
HIV,
CD4,
Najaf,
Iraq

ABSTRACT

Acquired Immune Deficiency Syndrome (ADIS) is a disease of the human immune system that results in a decline in the efficiency of the human immune system step by step to leave people exposed to many infections and tumours. It caused by the Human Immunodeficiency Virus (HIV). The first appeared of HIV in West Central Africa in the late 19th or early 20th century. The direct contact from personal mucus membrane or bloodstream and physical fluid (blood, vaginal semen fluid and breastfeeding milk) containing the virus is the unique viral transmission route. Out of 80 blood samples were taken from different areas of Najaf city, Iraq, for ages from 20 to 60 years (males and females) to the period from 1/1/2019 to 19/12/2019. The surface antigen of the HIV was detected by the ELISA technique and mini VIDAS by a virus-specific kit. Out of 80 different patients by physical examination infected with ADIS: HIV viruses were the most incidences with 12 isolates (15%) while, there were 66 isolates (82.5%) were belonged to other infections and two strains (2.5%) were negative to any viral infection.

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ISSN: 0975-7538

DOI: https://doi.org/10.26452/ijrps.v11i3.2783

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INTRODUCTION

Acquired Immune Deficiency Syndrome (ADIS) is a disease of the human immune system that results in a decline in the efficiency of the human immune system step by step to leave people exposed to many infections and tumours. It caused by the Human Immunodeficiency Virus (HIV) (Youssef *et al.*, 2019; Hamzah and Aljanaby, 2020). The first appeared of HIV in West Central Africa in the late 19th or early 20th century (Sharp and Hahn, 1552; Mohammed and Aljanaby, 2020). The direct contact from personal mucus membrane or bloodstream and physical fluid (blood, vaginal semen fluid and breastfeeding milk) containing the virus is the unique viral transmission route (Valero *et al.*, 2018). This virus can then be transmitted through unsafe sexual intercourse, whether anal, vaginal or oral, through blood transfusion, through injection needles contaminated with the virus, or it can be transmitted from the mother to fetus during pregnancy or childbirth (Patel *et al.*, 2014). Human Immunodeficiency Virus is affecting the immune system components such as helper T cells, phagocytes and dendritic cells, this virus directly or indirectly destroys CD4+ T lymphocytes, which number less than 200 per millilitre of blood, cellular immunity is absent (Woodham *et al.*, 2016). Severe HIV infection progresses over time, and the disease progresses to the underlying clinical infection of HIV (Okoye and Picker, 2013). The ADIS divided into three stages as follows

The first stage

Rarely shows any signs or signs of the disease, but

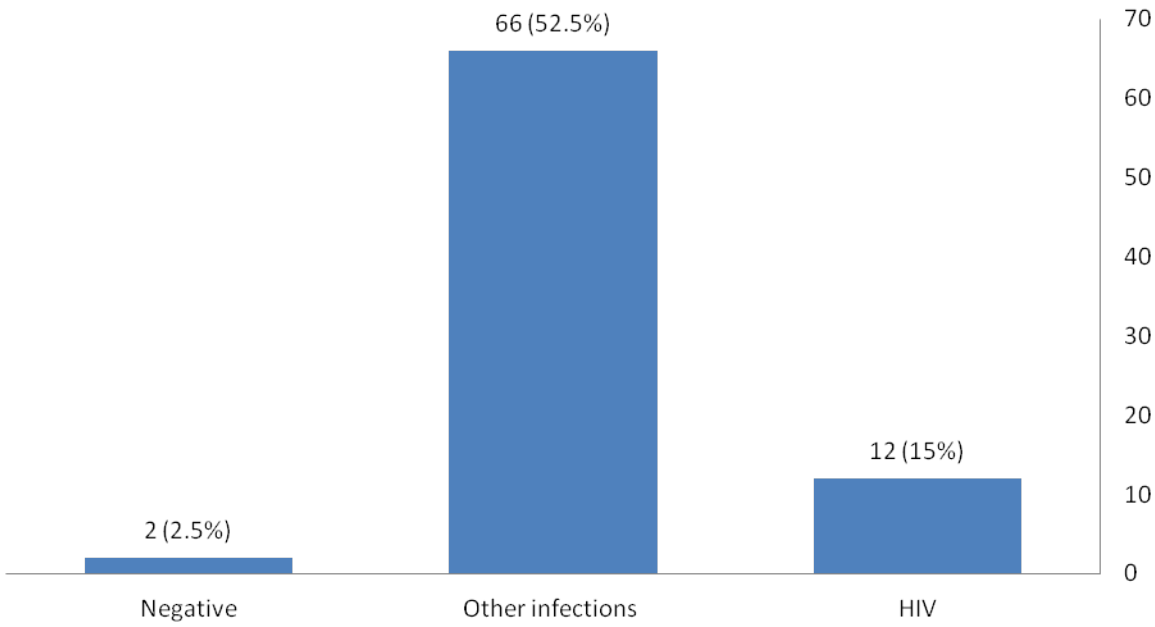

Figure 1: Positive viral isolates of HIV virus

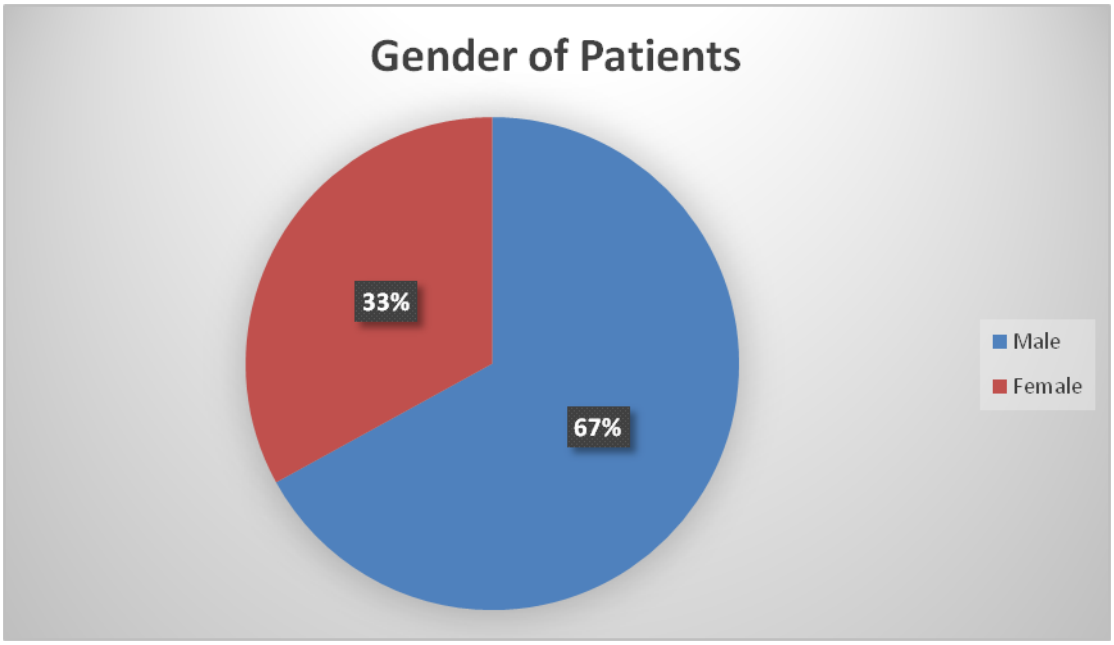

Figure 2: Gender Distribution of HIV virus

the patient may develop flu-like symptoms, that depends on a trigger of the disease, after two weeks this symptom disappeared in most cases, then, lymph nodes swelling and rash may occur (Hightow-Weidman *et al.*, 2009).

The second stage

This period is not limited to a definite time; it varies from patient to patient and ranges from a year to less than ten years. Still, in this period the virus has been able to destroy the free physical significantly, at this stage, some symptoms like severe diarrhoea, the rapid loss of weight, high body temperature, and shortness of breath (Burton *et al.*, 2002).

The third stage

The last stage of this virus infection, the most severe symptoms begin to manifest in the human body, are susceptible to various cancers and acute pneumonia. Still, the long-term symptoms that accompany the disease can be eliminated, strange lesions in the tongue and oral cavity, permanent cold or permanent fever and excessive night sweat (Zhang *et al.*, 2019).

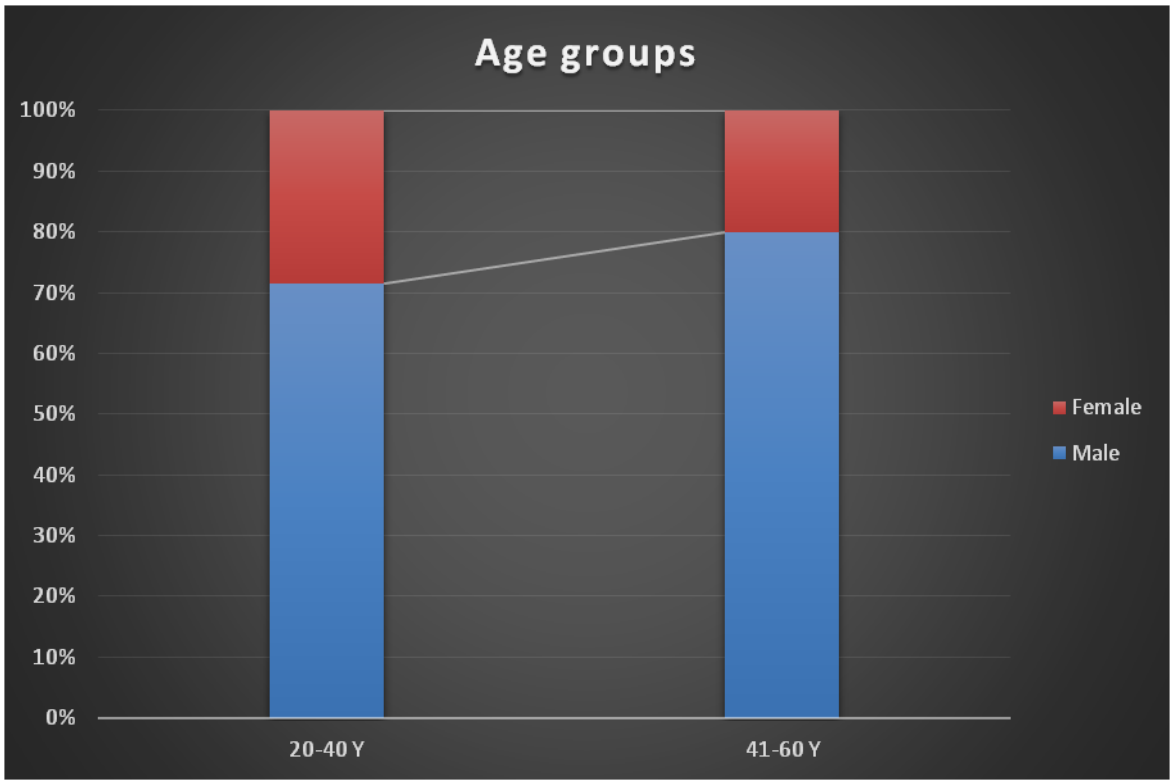

Figure 3: Age groups of HIV infections

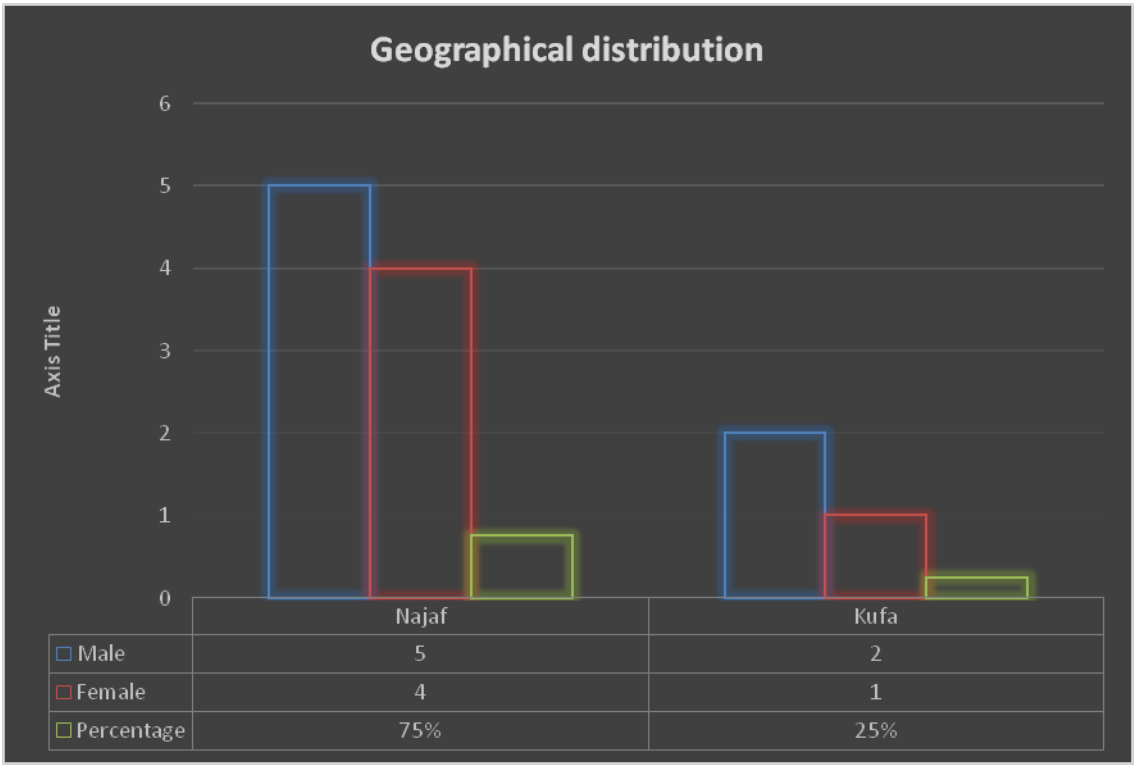

Figure 4: Geographical Distribution of HIV infections

MATERIALS AND METHODS

Collecting samples

Out of 80 blood samples were taken from different areas of Najaf city, Iraq, for ages from 20 to 60 years (males and females) to the period from 1/1/2019 to 19/12/2019. Up to 5 ml of venous blood was taken from each person, and a test tube was placed, then the serum was separated from the blood by a centrifuge 3000 rpm for 3 minutes and then placed in a marked Eppendorf test tube and stored at -20 ° C.

Detection and Confirmation of viral HIV

The surface antigen of the HIV was detected by the ELISA technique and mini VIDAS by a virus-specific kit. The ELISA test was accomplished in Public Health Laboratory, Najaf. The conformational analysis is depending on the western blot technique carried out in Central Public Health Laboratory, Baghdad.

Statically analysis

Statically analysis was done according to percentages to compare between all samples using graphpad prism computer software (Majeed and Aljanaby, 2019).

RESULTS AND DISCUSSION

Total viral isolates

Out of 80 different patients by physical examination infected with ADIS: HIV viruses were the most incidences with 12 isolates (15%) while, there were 66 isolates (82.5%) were belonged to other infections, and two strains (2.5%) were negative to any viral infection as shown in Figure 1.

Patients

The results of the present study proved that out of 12 patients infected with HIV, there were eight patients (67%) were males, and four patients (33%) were females as shown in Figure 2.

Age groups

According to age groups, the results demonstrated that the age group 20-40 years old was the most prevalent range among patients infected with HIV (7 patients 59%, five male and two females) followed by age group 41-60 years old (5 patients 41%, four males and one female) as shown in Figure 3.

Geographical Distribution

The HIV was a high incidence in Najaf city (9 patients 75%, five male and four female) followed by Kufa District (3 patients 25%, two males and one female) as shown in Figure 4.

Acquired Immunodeficiency Syndrome (AIDS) is a chronic condition that can result in the death from attacking by HIV. HIV attacks the immune system and influences the capacity of the skin to prevent pathogens.

HIV is a sexually transmitted infection. It may also be transmitted through communication with contaminated blood or mother-to-child during labour, breastfeeding or lactation. HIV may take years to weaken the immune system to the point where you have AIDS (Bertozzi *et al.*, 2006).

There is no solution for HIV / AIDS, but there are medications that can delay the progression of the disease dramatically. The study result proved that there are 15 % of tested samples were HIV positive, this result was in agreement with the study by (Jaspan *et al.*, 2008) in Cape Town, South Africa, the positive result was 15%, while, the current study result was different with a study by (McCormick *et al.*, 1987; van der Hoek *et al.*, 1995) the positive result in the study was 77% and 67% respectively.

Males and females are exposed to AIDS with certain conditions of lack of prevention or malpractice. The current study showed that the incidence of HIV for males (67%) was higher than females (33%), this result was incompatible with the study by (Landman *et al.*, 2008), in America that he showed (55%) of positive isolates were females. Also the European study,1992, proved that the female was more infected than male (Duriux-Smith *et al.*, 1992), this difference in result may be due to males in our locality has more exercise than females, like barber, gem, and tattoos, and extra while a female has less activity and are more conservative.

According to age groups, the results demonstrated that the age group 20-40 years old were the most prevalent range among patients infected with HIV (7 patients 59%, five males and two females) followed by age group 41-60 years old (5 patients 41%, four males and1 female), this result is in agreement with the study in Spain,2012, that proved the ages between 20-40 years were more infected with HIV (Blanco *et al.*, 2012), while the study by (Becker *et al.*, 2004) showed that the prevalence of HIV is higher in ages older than 50 years.

The HIV pandemic has seen an increase in cases in the past 30 years and the early 1980s, with 3.7 million new infections, new infections, and AIDS-related deaths in the 2000s (Marty *et al.*, 2018). In 2012, approximately 9.7 million patients were utilizing antiretroviral drugs (ART) in low and middle-income countries (ART) (Fettig *et al.*, 2014). The present study result demonstrates that the incidence of HIV positive cases was inside the city more

than the outsides, this result agreed with a study in Paris, 2018, that proved the rate of HIV positive results was inside of city (Volmink and Marais, 2008; Hayder and Aljanaby, 2019) this is maybe due to the needs of some patients like dentists clinics, dialysis and blood transfusion.

CONCLUSIONS

The higher prevalence of HIV was in Najaf city in male with age groups between 20-40 years old. The present study result proved that the incidence of HIV positive cases was in the urban area more than a rural area; this is maybe due to that there were more visitors from other countries and may be due to needs of some patients like dentist's clinics, dialysis and blood transfusion.

ACKNOWLEDGEMENT

Authors thanks to all how introduced the help in this work.

Author's contributions

The authors have accepted responsibility for the entire content of this submitted manuscript and approved its submission.

Manuscript funding

None.

Competing Interest

There was no any competing interest in this work.

REFERENCES

Becker, J. T., Lopez, O. L., Dew, M. A., Aizenstein, H. J. 2004. Prevalence of cognitive disorders differs as a function of age in HIV virus infection. *AIDS*, 18(Supplement 1):11–18.

Bertozzi, S., Padian, N. S., Wegbreit, J., DeMaria, L. M., Feldman, B., Gayle, H., Gold, J., Grant, R., Isbell, M. T. 2006. HIV/AIDS prevention and treatment. *Disease control priorities in developing countries*, 2:331–370.

Blanco, J. R., Jarrín, I., Vallejo, M., Berenguer, J., Solera, C., Rubio, R., Pulido, F., Asensi, V., del Amo, J., Moreno, S., CoRIS 2012. Definition of Advanced Age in HIV Infection: Looking for an Age Cut-Off. *AIDS Research and Human Retroviruses*, 28(9):1000–1006.

Burton, G. F., Keele, B. F., Estes, J. D., Thacker, T. C., Gartner, S. 2002. Follicular dendritic cell contributions to HIV pathogenesis. *Seminars in immunology*, 14:275–284.

Duriux-Smith, A., Tw, E., Goodman, J. T. 1992. Comparison of female to male and male to female transmission of HIV in 563 stable couples. *Bmj*, 304:809–809.

Fettig, J., Swaminathan, M., Murrill, C. S., Kaplan, J. E. 2014. Global Epidemiology of HIV. *Infectious Disease Clinics of North America*, 28(3):323–337.

Hamzah, D. N., Aljanaby, A. A. J. 2020. Immune response in patients infected with helicobacter pylori in Al-Najaf City. *Iraq. International Journal of Pharmaceutical Research*, 12(3).

Hayder, T., Aljanaby, A. A. J. 2019. Antibiotics susceptibility patterns of Citrobacter freundii isolated from pa-tients with urinary tract infection in Al-Najaf governorate – Iraq. *International Journal of Research in Pharmaceutical Sciences*, 10(2):1481–1488.

Hightow-Weidman, L. B., Golin, C. E., Green, K., Shaw, E. N. P., MacDonald, P. D. M., Leone, P. A. 2009. Identifying People with Acute HIV Infection: Demographic Features, Risk Factors, and Use of Health Care among Individuals with AHI in North Carolina. *AIDS and Behavior*, 13(6):1075–1083.

Jaspan, H. B., Huang, L. C., Cotton, M. F., Whitelaw, A., Myer, L. 2008. Bacterial Disease and Antimicrobial Susceptibility Patterns in HIV-Infected, Hospitalized Children: A Retrospective Cohort Study. *PLoS ONE*, 3(9):e3260–e3260.

Landman, K. Z., Ostermann, J., Crump, J. A., Mgonja, A., Mayhood, M. K., Itemba, D. K., Tribble, A. C., Ndosi, E. M., Chu, H. Y., Shao, J. F., Bartlett, J. A., Thielman, N. M. 2008. Gender Differences in the Risk of HIV Infection among Persons Reporting Abstinence, Monogamy, and Multiple Sexual Partners in Northern Tanzania. *PLoS ONE*, 3(8):e3075–e3075.

Majeed, H. T., Aljanaby, A. A. J. 2019. Antibiotic Susceptibility Patterns and Prevalence of Some Extended Spectrum Beta-Lactamases Genes in Gram-Negative Bacteria Isolated from Patients Infected with Urinary Tract Infections in Al-Najaf City. *Iraq. Avicenna journal of medical biotechnology*, 11(2):192–192.

Marty, L., Cazein, F., Panjo, H., Pillonel, J., Costagliola, D., Supervie, V. 2018. Revealing geographical and population heterogeneity in HIV incidence, undiagnosed HIV prevalence and time to diagnosis to improve prevention and care: estimates for France. *Journal of the International AIDS Society*, 21(3):e25100–e25100.

McCormick, J. B., Feorino, P. M., Krebs, J. W., Getchell, J. P., Quinn, T. C., Odio, W., Mitchell, S. W., Kapita, B., Piot, P. 1987. Isolation of Human Immune Defi-

ciency Virus from African Aids Patients and from Persons Without Aids or IgG Antibody to Human Immune Deficiency Virus.

Mohammed, E. A., Aljanaby, A. A. J. 2020. Immunological role of CD4 and CD154 in patients infected with S.typhi in Al-Najaf Governorate. *Iraq. International Journal of Pharmaceutical Research*, 12(3):912–921.

Okoye, A. A., Picker, L. J. 2013. CD 4+ T-cell depletion in HIV infection: mechanisms of immunological failure. *Immunological reviews*, 254(1):54–64.

Patel, P., Borkowf, C. B., Brooks, J. T., Lasry, A., Lansky, A., Mermin, J. 2014. Estimating per-act HIV transmission risk. *AIDS*, 28(10):1509–1519.

Sharp, P. M., Hahn, B. H. 1552. The evolution of HIV-1 and the origin of AIDS. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 365:2487–2494.

Valero, A., Roldán, M. L., Ruiz, M. F., Teijeiro, J. M., Marquez, S. B., Marini, P. E. 2018. Deleted in Malignant Brain Tumor 1 (DMBT1) Expression Pattern in Normal Cervix and at Different Stages of Squamous Intraepithelial Lesions. *The Open Biomarkers Journal*, 8(1):1–8.

van der Hoek, L., Boom, R., Goudsmit, J., Snijders, F., Sol, C. J. 1995. Isolation of human immunodeficiency virus type 1 (HIV-1) RNA from feces by a simple method and difference between HIV-1 subpopulations in feces and serum. *Journal of clinical microbiology*, 33(3):581–588.

Volmink, J. A., Marais, J. 2008. HIV: mother-to-child transmission. *BMJ clinical evidence*.

Woodham, A. W., Skeate, J. G., Sanna, A. M., Taylor, J. R., Silva, D. M. D., Cannon, P. M., Kast, W. M. 2016. Human Immunodeficiency Virus Immune Cell Receptors, Coreceptors, and Cofactors: Implications for Prevention and Treatment. *AIDS Patient Care and STDs*, 30(7):291–306.

Youssef, D., Marroush, T. S., Tanveer, F. 2019. A case report of eustachian valve endocarditis due to Salmonella typhimurium in an AIDS patient. *Germs*, 9(3):154–157.

Zhang, Z., Xu, L., Pang, X., Zeng, Y., Hao, Y., Wang, Y., Wu, L., Gao, G., Yang, D., Zhao, H., Xiao, J. 2019. A Clinical scoring model to predict mortality in HIV/TB co-infected patients at end stage of AIDS in China: An observational cohort study. *Bioscience trends*, 13(2):136–144.