

INCIDENCE, PREVALENCE AND MODES OF TRANSMISSION OF HIV/AIDS IN SHEIKHUPURA***¹Dr. Faizan Ahmad, ²Dr. Amna Asad and ³Imran Ali**¹FCPS (Medicine), MRCP UK Senior Registrar, Lahore General Hospital Primary School Street, Mohallah Gurunanik Pura, Farooq Abad, District Sheikhupura, Pakistan.²MBBS Mayo Hospital, Lahore (Pakistan).³Data Entry Operator DHQ Hospital Sheikhupura (Pakistan).***Corresponding Author: Dr. Faizan Ahmad**

FCPS (Medicine), MRCP UK Senior Registrar, Lahore General Hospital Primary School Street, Mohallah Gurunanik Pura, Farooq Abad, District Sheikhupura, Pakistan.

Article Received on 20/11/2018

Article Revised on 10/12/2018

Article Accepted on 01/01/2019

ABSTRACT

Back ground and objectives: HIV prevalence and incidence is documented in Pakistan as per WHO and annually updated but there is no specific record available on prevalence and incidence in Sheikhupura and surrounding reign which includes Gujranwala, Nankana sahib and Hafizabad Districts. So we thought of estimating the patient burden and incidence. We also proposed risk factor profile to assess sources of HIV among these patients. **Methods:** We designed a cross sectional study and taken retrospective data for patients who presented to and found HIV positive on rapids diagnostic tests screening with SD bioline, Alere detemine, and UniGold screening kits followed by confirmation of HIV viral load on quantitative PCR. Data was collected in PACP (Punjab AIDS control program) center, DHQ hospital Sheikhupura between 1st April 2017 to 30th June 2018. Patients were selected by consecutive sampling. **Results:** There were 371 patients who were tested for HIV in this period and 102 were found positive. There were 88 males and 13 females and 01 transgender. Risk factors were IDU in 55 patients, sexual in 17, blood transfusion and contaminated needles in 02 each and unknown in 26. Average incidence rate was 6.25 per month in initial eight months which increased to 6.50 per month in next eight months. **Conclusion:** HIV, in Sheikhupura reign, is male predominant disease. Incidence and prevalence is increasing gradually. Most common mode of transmission is IDU followed by unknown and sexual. A large number of patients had unknown source. This indicates need for stopping IDU, sharing needles and risky behaviors should be avoided and safe sex practices should be promoted. Furthermore, we need to look out of the box to find out other modes of transmission.

KEYWORDS: HIV, PACP, Sheikhupura, IDU, prevalence, Incidence, mode of transmission.**INTRODUCTION**

Human immune deficiency virus (HIV) is a retro virus which has two types HIV-1 and HIV-2. HIV attacks helper T-cells of immune system, which are a type of white blood cell. Helper T-cells also known as CD4 cells fight off infections. HIV makes copies in CD4 cells and destroy them. Human beings get this infection through contact with body secretions other patients having HIV.^[1,2] HIV destroys increasing number of CD4 cells and continue making more copies of itself, ultimately it breaks down one's immune system. Person living with HIV and not receiving treatment, will find it harder and harder to fight off infections and diseases.

Acquired immune deficiency syndrome (AIDS) is a syndrome which is caused by HIV when human immune system is too weak because of activity of HIV that it develops certain opportunistic infections or cancers related to HIV. There are 20 opportunistic infections and

HIV-related cancers, presence of anyone of those defines AIDS. AIDS if left untreated can culminate into death, in about three years.^[3]

HIV transmission

HIV can be transmitted through contact with body fluids, secretions and blood. This contact can be unprotected sexual intercourse (vaginal or anal), and oral sex with an HIV positive person; transfusion of contaminated blood; and the sharing of contaminated needles, syringes, surgical and other sharp instruments. It may also be transmitted vertically between a mother and her infant during pregnancy, childbirth and breastfeeding.^[3] There are no reports on HIV incidence and prevalence among residents of Sheikhupura, Pakistan. We aimed to determine incidence and prevalence of HIV and related modes of transmission in Sheikhupura, Pakistan. HIV in Pakistan is currently a disease of those Pakistanis (and their sexual partners) who have travelled abroad,

Overseas worker and those who, prior to 1989, were transfused abroad or received imported blood products.^[4]

HIV Incidence and Prevalence

According to global health observatory data since the beginning of the epidemic, an estimated 0.8% [0.7-0.9%] of adults aged 15–49 years worldwide are living with HIV, although the burden of the epidemic continues to vary considerably between countries and regions. Sub-

Saharan Africa remains most severely affected, with nearly 1 in every 25 adults (4.2%) living with HIV and accounting for nearly two-thirds of the people living with HIV worldwide. Eastern and southern Africa prevalence is 19.4 million and incidence is 790000 whereas in central Asia and pacific its 5.1 million and 270000 respectively. HIV demographics are given below in table 1.1.

Table 1: Demographics of HIV in the world.

| Categories of patients | Number of patients |
|--|--------------------|
| People infected with HIV | 70 Million |
| People living with HIV | 36.7Million |
| People died of HIV | 35 Million |
| Adults living with HIV (15+ years) | 34.5 million |
| Adult Males with HIV | 17.8 Million |
| Adult females with HIV | 16.7 Million |
| Children living with HIV | 2.1 Million |
| People having access to antiretroviral therapy | 20.9 Million |
| Overall incidence | 0.3 |
| Incidence in young adults (15-49 years) | 0.8% |
| People got new infection in 2016 | 1.8 Million |

Global HIV statistics

- 1 million people died from AIDS-related illnesses in 2016.
- Worldwide, 1.8 million people became newly infected with HIV in 2016.
- Since 2010, new HIV infections among adults declined by an estimated 11%, from 1.9 million to 1.7 million in 2016.
- New HIV infections among children declined by 47% since 2010, from 300 000 in 2010 to 160 000 in 2016.
- 1 million people died from AIDS-related illnesses in 2016.

Incidence and prevalence in Pakistan

Table 2: demographics of HIV in Pakistan.

| Categories of patients | Number of patients |
|---------------------------------------|--------------------|
| People living with HIV | 0.13 Million |
| Adults living with HIV (15+ years) | 0.13 million |
| Adult Males with HIV | 91000 |
| Adult females with HIV | 40000 |
| Children living with HIV | 3300 |
| People having access to ART | 8900 |
| Overall incidence | 0.1% |
| Incidence in young adults | 0.18% |
| New infection in 2016 | 19000 |
| Prevalence in young adults | 0.1 |
| Prevalence in young women 15-49 years | < 0.1 |
| Prevalence in young men 15-49 years | 0.2 |

Incidence is increasing day by day due to better diagnostic facilities and nationwide for campaign and communication service and wide spread set up of aids centre at district level and NGO facilities, we decide to run a research program to quantify prevalence and incidence of HIV/AIDS.

HIV manifestations

As primary infection it is manifested as fever fever, headache, sore throat, myalgias, arthralgias, rash and lymphadenopathy 4-12 weeks after getting HIV infection. Acute infection is often ignored and can become latent, presents after a variable period of time as chronic infection can present with constitutional symptoms and aids related illnesses. It can take 10-15 years for HIV to convert into AIDs.

Diagnosis

HIV is diagnosed with fourth generation Elisa testing which is immunoblot assay tests for HIV-1 and HIV-2 antibodies and HIV-1 P24 antigen which test for established HIV-1 HIV-2 and acute HIV infection. Then It is tested to found out specific type by west blot and confirmed with PCR.^[5,6]

Research work in Pakistan

By 2010, total number of registered patients reached to 6000 and this figure was on the rise gradually. A large proportion (78%) of the patients were IVD abusers.^[7] Globally, there is a positive trend emerging as new infections among adults are estimated to have declined by 11% and 16% for the general population between 2010 and 2016.^[8] The number of annual HIV infections in the United States fell 18 percent between 2008 and 2014.^[9]

In Pakistan, there is an Increasing trend of incidence and prevalence is highest, at present, 0.13million. In Pakistan, there were 15000 new HIV cases registered in 2014 and 19000 in 2016. According to a study, sexual transmission was the commonest mode of transmission of HIV in Pakistan. Male are affected more than female due to risky sexual behaviors.^[10] In 2010, another study found out IDU was most prevalent risk factor 78% among HIV patients. In Pakistan, overall IDU prevalence is 110000 and 21 percent has HIV. It is estimated that there are 11.7 million people who inject drugs worldwide, and 14% of them are thought to be living with HIV. Three countries, China, Russia and USA account for nearly half of all people who inject drugs globally. In Eastern Europe and Central Asia, which saw a 57% increase in new HIV infections between 2010 and 2015, the burden is particularly high among people who inject drugs. In 2015, over half of new HIV cases in the region were among this group.^[11]

In Pakistan, HIV prevalence among different high risk groups, according to WHO, are given below in table 1.3.

High risk groups

| Risk group | Prevalence |
|---------------------|------------|
| Idu | 21% |
| Female sex workers | 3.8 |
| Male sex with males | 3.7 |
| Transgender | 5.5 |

MATERIAL AND METHODS**Setting**

PACP center, DHQ hospital Sheikhpura.

Duration of study

1st March 2017 to 30th June 2018

Sampling technique

Consecutive sampling

Sample size

102

Sample selection

Sample was selected consecutively.

Inclusion criteria

All patients above 12 year and 65 years or below.

All patients who have HIV positive on screening method or PCR.

Exclusion criteria

All patients less than 12 years age and more than 65 years of age.

All patients who have undetectable HIV PCR Quantitative.

Objectives

To find out prevalence and incidence of HIV in Sheikhpura reign.

To find out prevalence of different sources of transmission in HIV patients of Sheikhpura reign.

RESULTS

There were 371 patients who were tested in PACP Sheikhpura in last 16 months, starting from 1st March 2017. 102 patients were found positive for HIV by screening methods like Alere, SD Biotline and UniGold screening stick methods and later on confirmed with HIV qualitative PCR test.

Table 1.4:

| HIV testing | Positives | Negatives |
|-----------------|-----------|-----------|
| No. of patients | 102 | 269 |

There were 88 males and 12 females and 01 transgender.

Table 1.5:

| Gender | Male | Female | Transgender |
|-----------------|-----------|-----------|-------------|
| No. of patients | 88(86.2%) | 13(12.7%) | 01(0.98%) |

Incidence rate was 6.25 in initial seven months then in increased to 6.50 in later eight months. Average incidence was 6.37 per month. Data pertaining to demographic characteristics and risk factors is summarized in Tables I and II.

Modes of transmission are shown in table 1.6 given below:

Table 1.6:

| Mode of transmission | No. of patients |
|----------------------|-----------------|
| IDU | 55(53.92%) |
| Sexual | 19(18.6%) |
| Blood transfusion | 02 (1.96%) |
| Contaminated needles | 02 (1.96%) |
| Unknown | 26(25.4%) |

DISCUSSION

According to UNAIDS, HIV prevalence in the world is 0.26% and 0.43% among young adults (15-49 years). 36.7 million people globally were living with HIV in 2016. Incidence rate, in 2016, was 1.8 million. In Pakistan, HIV prevalence is 0.13 million which is 0.1% of population. In 2016, 19000 new cases were registered and incidence rate was 0.18%.^[13]

In this study, we tested only high risk group and among high risk population our prevalence was 27.49 percent. Male to female ratio was 6.76:1 as compared to national ratio 2.27:1. Previous studies looking into demographic characteristics in past has seen similar male predominance.^[3] And transgender prevalence was 0.98 which is not mentioned previously which can't be generalized because of small samples size in our study population.

Incidence rate was 6.37 which is more than national one. Incidence rate is slightly increasing in our unit because we have more diagnostic and therapeutic resources and more patients already taking medicine from other centers are switching to their own nearest center. Secondly, its increasing screening and diagnostic facilities and tendency to screen by clinicians, that is surfacing more cases.

According to our study, the modes of transmission, in the decreasing order of frequency, were IDU, unknown sources, unsafe sexual practices. Infrequently contaminated needles and blood transfusion. Similar risk factors had been identified in previous studies in the past.^[7] Currently, in Pakistan there are 110000 people who are HIV and IDU abusers. Whereas, our study found out 54.3% people had been IDU which is lower than national incidence rate. Similar study in past has shown IDU and sexual practices a risk factor but on a lower frequency in Karachi.^[14] whereas, a large new group of unknown source is identified as well which need further research to identify other possible sources so that this disease could be prevented in future generations.

Limitations of the study

This is the first study of HIV prevalence in Sheikhpura and it provides insight on certain factors that may be contributing to the HIV epidemic. However, it had several limitations. First, only high-risk groups were included. Secondly, the study sample may be biased in that only those who visited PACP centre were involved. Thirdly, drug abuse and sexual behaviours are sensitive issues. The odds of their miscommunication must not be ignored.

CONCLUSION

Prevalence has increased over the period of time certainly but incidence has increased as well in initial quarter incidence was 5.5 per month on average but now it has increased to 6.8 per month. Underlying cause of

this increased incidence rate could be multiple. possible causes could be increased infection rate, increased awareness among masses and increased diagnostic facilities and free medication provision.

The modes of transmission, in the decreasing order of frequency, were IDU, unsafe sexual practices and unknown sources. Infrequently contaminated needles and blood transfusion. There is dire need of further research regarding unknown sources so that can be identified and rectified. As in Pakistan there is common practice to use injectables without compelling indications in GP practices and quack practices so that can be probable source and probably few persons might have never told us truth regarding source as its stigma due to cultural values. People need more encouragement as well as not to confide the sources for the sake of welfare of rest of community.

ACKNOWLEDGEMENTS

I dedicate this research work to my dear Holy Prophet Hazrat Mohammad PBUH, who was a city of knowledge and Hazrat Ali R.A who was the gateway to the city of knowledge. I want to thank my dear wife and colleague who was there in all steps of this study. I would like to pay my regards to Mr Mohammad Imran who was man behind this data collection.

REFERENCES

1. May 15 CSCHB last updated: 2017. What Are HIV and AIDS? [Internet]. HIV.gov, 2017. [cited 2018 May 6]. Available from: <https://www.hiv.gov/hiv-basics/overview/about-hiv-and-aids/what-are-hiv-and-aids>.
2. What are HIV and AIDS? [Internet]. AVERT., 2015. [cited 2018 May 3]. Available from: <https://www.avert.org/about-hiv-aids/what-hiv-aids>.
3. WHO | HIV/AIDS [Internet]. WHO. [cited 2018 May 6]. Available from: <http://www.who.int/features/qa/71/en/>.
4. Baqi S, Kayani N, Khan JA. Epidemiology and Clinical Profile of HIV/AIDS in Pakistan. *Trop Doct*, 1999 Jul 1; 29(3): 144–8.
5. Diagnosis of HIV Infection [Internet]. [cited 2018 May 23]. Available from: <https://www.aids.gov.hk/pdf/g190htm/03.htm>.
6. Welcome to CDC stacks | 2018 Quick reference guide: Recommended laboratory HIV testing algorithm for serum or plasma specimens - 50872 | Guidelines and Recommendations [Internet]. [cited 2018 May 23]. Available from: <https://stacks.cdc.gov/view/cdc/50872>.
7. Maan MA, Hussain F, Jamil M. Prevalence and risk factors of HIV in Faisalabad, Pakistan –A retrospective study. *Pak J Med Sci.*, 2014; 30(1): 32–5.
8. Global HIV and AIDS statistics [Internet]. AVERT, 2015. [cited 2018 May 10]. Available from: <https://www.avert.org/global-hiv-and-aids-statistics>.

9. CROI Press Release: HIV Incidence | 2017 | Newsroom | NCHHSTP | CDC [Internet]. 2018 [cited 2018 May 13]. Available from: <https://www.cdc.gov/nchhstp/newsroom/2017/croi-hiv-incidence-press-release.html>.
10. Ilyas M, Asad S, Ali L, Shah M, Badar S, Sarwar MT, et al. A situational analysis of HIV and AIDS in Pakistan. *Virology*. 2011 Apr 25; 8: 191.
11. People who inject drugs, HIV and AIDS [Internet]. AVERT. 2015 [cited 2018 May 13]. Available from: <https://www.avert.org/professionals/hiv-social-issues/key-affected-populations/people-inject-drugs>.
12. Tan WS, Chow EPF, Fairley CK, Chen MY, Bradshaw CS, Read TRH. Sensitivity of HIV rapid tests compared with fourth-generation enzyme immunoassays or HIV RNA tests [Internet], 2016. [cited 2018 Jun 29]. Available from: <http://www.ingentaconnect.com/content/wk/aids/2016/00000030/00000012/art00012>.
13. Global HIV Statistics [Internet] [cited 2018 Apr 24]. Available from: <http://www.unaids.org/en/resources/fact-sheet>.
14. Al BA et. HIV risk in Karachi and Lahore, Pakistan: an emerging epidemic in injecting and commercial sex networks. - PubMed - NCBI [Internet]. [cited 2018 May 6]. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/17623508>.