

1 Title: Clinico-epidemiological and Socio-demographic profile of HIV/AIDS

2 patients diagnosed at a tertiary care centre in Kashmir

3 (The increase prevalence of HIV among Kashmir population a cross sectional  
4 institutional study) OR the need for an increase in HIV preventive measure among  
5 Kashmir Population

6  
7 Abstract

8 Objectives: To study the Clinico-epidemiological and Socio-demographic profile of HIV/AIDS  
9 patients diagnosed at a tertiary care centre.

Comment [SO1]: Please the name of the institution

10 Methods: A total of 50220 individuals who visited the said clinic and were enrolled into for the  
11 study. The Screening was done using different Elisa's as advised by NACO and those confirmed  
12 as HIV positive were studied for their clinical spectrum and different demographic parameters.

13 Results: Out of a total of 50220 patients tested for HIV 1 and/or HIV 2 infection, 173 were  
14 detected seropositive for HIV 1. The mean age of presentation of the participants was 30.04 ±  
15 7.1 years. Among the seropositive patients, 138 (79.7 %) were married, 70(40.4%) were security  
16 personnel's, 123 (71.09%) were from non-local population and 150 (86.7%) belonged to rural  
17 areas. The commonest mode of transmission was heterosexual route 126 (72.8%). Majority of  
18 the participants 91(52.6%) who were detected positive for HIV/AIDS were having CD4 count at  
19 presentation between 150-250/μl. The commonest symptoms among HIV/AIDS seropositive  
20 patients was fever. Furthermore, sero-positive patients also had secondary opportunistic  
21 infections among which pulmonary tuberculosis was most common.

22 Conclusion: Kashmir no longer stands as a low risk area because of the inflow of thousands of  
23 armed forces and labourers coming from different regions. Kashmir is likely to witness an  
24 alarming rise in HIV/AIDS in the near future as our study represents just the tip of an iceberg.  
25 Masses need to be aware, clinicians more suspicious and authorities more determined if  
26 HIV/AIDS spread is to be effectively controlled

27 Keyword: HIV/AIDS, Clinico-epidemiological, Socio-demographic, CD4

## 28 Introduction

29 The disease caused by HIV (human immunodeficiency virus) was first ever reported in the  
30 summers of 1981 from the United States when the U.S. Centers for Disease Control and  
31 Prevention reported an unusual and unexplained occurrence of pneumonia caused by  
32 *Pneumocystis jiroveci* and Kaposi's sarcoma among homosexual men in New York and Los  
33 Angeles. Within some months, the disease was also found among injecting drug users (IDUs),  
34 among recipients of blood transfusions more commonly among hemophiliacs. As with research  
35 and time, the epidemiologic pattern of the disease unfolded and it became clear that this disease  
36 is caused by an infectious agent which is most likely transmissible by either sexual (homosexual  
37 and heterosexual) contact or through blood or blood products. Finally, in 1983, human  
38 immunodeficiency virus (HIV) was isolated from a patient with lymphadenopathy, and by 1984  
39 it was demonstrated clearly to be the causative agent of acquired immune deficiency syndrome  
40 (AIDS).<sup>1</sup>

41 HIV infection/AIDS is a recognized global pandemic, with millions of cases reported from  
42 virtually every inhabitant continents of the world. At the end of 2017, it was estimated that 36.9  
43 million individuals were living with HIV infection according to the joint United Nations

**Comment [SO2]:** Not related to objective of the research work and not part of the objective. Was anything done in the research relating to the nature of population of Kashmir (emigration and the immigration nature of the population how then did you come into this conclusion

44 Programme on HIV/AIDS (UNAIDS). It was also acknowledged that greater than 95% of people  
45 living with HIV/AIDS belong to low and middle-income countries, 50% are women, and 2.5  
46 million are children < 15 years.<sup>2</sup>

47 In India, HIV was first detected among commercial sex workers (CSW's) in Tamil Nadu in 1986  
48 and since then, the infection is growing quite fast. According to the 2017 UNAIDS data, India  
49 has an estimated 2.1 million people living with HIV. In 2016, India had 80,000 new HIV  
50 infections compared to 1,50,000 in 2005, and 62,000 AIDS-related deaths compared to 1,50,000  
51 in 2005. With an HIV prevalence of 0.26% (0.22-0.32%) in 2017, adult HIV prevalence was  
52 estimated at 30% among males and at 22% among females. Among Injecting Drug Users (IDUs),  
53 it is as high as 9.9 %, among transgender (7.2%), men who have sex with men (MSM) 4.3% and  
54 female sex workers (FSWs) 2.2% respectively.<sup>3</sup> Presently, HIV/acquired immunodeficiency  
55 syndrome (AIDS) epidemic represents the most serious public health problem in India.

56 As the clinical and demographic profile of HIV/AIDS patients differs considerably through  
57 different regions of the world depending upon sexual practices, injection drug use, customs  
58 /beliefs, quality of health services and a host of other factors. Though numerous  
59 clinical/demographic studies have been carried out from across India, there is scarcity of  
60 literature on the data for Kashmir valley which is unique in its own place, as it reflects the  
61 scenario of a region that is quite different from the other parts of the country with regard to  
62 topography, social and cultural values, customs, beliefs, and rich Islamic culture. The present  
63 work aimed to study the clinical and socio-demographic profile of HIV/AIDS patients in  
64 Kashmir valley. The findings of our study will be useful for the policy makers and health care  
65 professionals for effective case management and the implementation of national programmes.

## 66 MATERIALS AND METHODS

**Comment [SO3]:** The author spoke about the world HIV status , India HIV status but very little about the population distribution of Kashmir , the present clinico epidemiology state of the study setting in question . How do we then compare it with the finding on the research study.

**Comment [SO4]:** What is the HIV status /state in Kashmir???

67 This study is based on the secondary data of HIV/AIDS patients available at one of the clinics of  
68 a major tertiary care centers of Kashmir valley catering to almost 4 million people. ~~This review~~  
69 study was carried out from April 2018-November 2018 at HIV clinic of Government Medical  
70 College and associated hospitals, Srinagar . The data for the last 16 years [2002-2018] was  
71 available at the clinic. A total of 50220 individuals visited the said clinic and were enrolled for  
72 the study. This included those who sought voluntary HIV testing with or without symptoms, who  
73 were suspected of having HIV/AIDS on clinical ground such as unexplained fever, weight loss,  
74 persistent diarrhea and/or an AIDS defining illness and those involved in high risk behavior like  
75 extramarital sex, multiple sexual partners, truck drivers and injection drug users. ~~Those with~~  
76 ~~missing data was~~ Those with missing data were excluded from the study but no such case was  
77 found. All the enrolled participants were initially screened for differential detection of HIV 1 and  
78 HIV 2 antibodies using a highly sensitive, visual and rapid immunoassay (HIV TRISPOT  
79 manufactured by J. MITRA and Co. Ltd. New Delhi, India). Patients testing positive in the initial  
80 screening test for either HIV 1 or HIV 2 were subjected to two different confirmatory ELISA  
81 tests using two different types of antigens, as recommended by the National AIDS Control  
82 Organization (t (Enzaid's HIV 1 and 2 ELISA test kits manufactured by Span Diagnostics, Surat,  
83 India). Patients testing positive in the screening test as well as the two different Elisa's were  
84 ~~labelled~~ labeled as HIV infected individuals. This group of confirmed HIV positive patients was  
85 studied for their demographic profile including age, sex, background, education level,  
86 occupation, religion, marital status, sexual history and history of travel outside Kashmir. Clinical  
87 spectrum including symptoms and signs, opportunistic infections and CD4 count at initial  
88 presentation was also studied. All patient information was kept anonymous and confidential.  
89 CD4 counts were done by FACS generated report using B.D Tri test antibodies and True count,

**Comment [S05]:** It means that this study is a review of an existing data in the institution.

**Comment [S06]:** This was the data that was the data that was collected for a particular study , but hope a clearance was obtained before this data was used????

**Comment [S07]:** This participant were already enrolled not by the researcher /author

**Comment [S08]:** This was not done by the author??This was done by these who carried ou the initial research work

90 tubes (CD3, CD4, CD8) with three color staining procedure following lyse no wash protocol.  
91 Opportunistic infections like Tuberculosis were diagnosed by using a combination of imaging,  
92 Ziehl-Neelsen staining and conventional Mycobacterial cultures. Cryptococcal meningitis was  
93 ruled out by using CSF for India ink and fungal culture. All sera were screened for Syphilis,  
94 Hepatitis B and toxoplasmosis. Other relevant investigations including CT head, CSF  
95 examination, complete blood counts, kidney function and liver function tests were done as and  
96 when dictated by clinical presentation of the patient. Symptomatic and asymptomatic HIV  
97 infected patients with a CD4 count < 350/ $\mu$ l were put on HAART as recommended.

## 98 Results

99 Out of a total of 50220 patients tested for HIV 1 and/or HIV 2 infection, 173 were detected sero-  
100 positive for HIV 1. The mean age of presentation of the participants was  $30.04 \pm 7.1$  years.  
101 Socio-demographic characteristics of the study participants is shown in table 1 which shows that  
102 the main age group affected with HIV/AIDS was 21-30 years ( 39.8%) followed by 31-40 years  
103 (35.8%). The overall male: female ratio in the current study is 2.9:1. Among the sero-positive  
104 patients, 138 (79.7 %) were married, 70(40.4%) were security personnel's, 123 (71.09%) were  
105 from non-local population and 150 (86.7%) belonged to rural areas. Table 1  
106 Table 2 shows the commonest mode of transmission and high risk behaviors among the study  
107 population who were detected sero-positive after test results. The commonest mode of  
108 transmission was heterosexual route 126 (72.8%); patients who had spouse infected accounted  
109 for 32(18.4%) of cases while blood transfusion accounted for 7(0.04%).

**Comment [SO9]:** For how many patients was this investigation carried out ? and how many of them tested positive and how many were negative

**Comment [SO10]:** How many of this patients was this test carried out

**Comment [SO11]:** Please provide the statistical for all these investigation carried out please it is very important

**Comment [SO12]:** Was these for the 173 who were positive or the total 50 thousand .

110 Majority of the participants 91(52.6%) who were detected positive for HIV/AIDS were having  
 111 CD4 count at presentation between 150-250/ $\mu$ l. Eight (0.04%) were having CD4 count <50/ $\mu$ l  
 112 and 26 (15.02%) had CD4 count >300/ $\mu$ l (Table 3).

**Comment [SO13]:** What is the importance of the CD4 in this study ??

113 Table 4 shows the common symptoms among HIV/AIDS sero-positive patients on detection of  
 114 positive test results and included fever, weight loss and lymphadenopathy which accounted for  
 115 75.1%, 69.3% and 63.5% respectively. Furthermore, sero-positive patients also reported to have  
 116 secondary opportunistic infections among which pulmonary tuberculosis and oropharyngeal  
 117 candidiasis were more predominant accounting for 34.6% and 28.9% respectively (Table-4).

**Comment [SO14]:** Nothing new here it is the common symptom of HIV positive individual

118 **Table 1: Socio-Demographic profile of participants tested positive for HIV**

**Comment [SO15]:** Need to be presented scientifically

Variable	Gender of Participants			(n) Total
	Male	Female	Transgender	
<b>Age in years</b>				
< 20	6	1	0	7
21-30	38	29	2	69
31-40	54	8	0	62
41-50	25	4	0	29
>50	5	1	0	6
<b>Occupation</b>				
Farmer	2	0	0	2
Laborer	11	0	0	11
Businessman	20	0	0	20
Housewife	25	0	0	25
Driver	4	0	0	4
Student	4	0	0	4
Govt. Employee	3	0	0	3
Security personnel	70	0	0	70
Unemployed	4	30	0	34
<b>Marital status</b>				
Married	102	36	0	138
Unmarried	28	5	0	33
Widow	0	2	0	2
<b>Location</b>				
Non Locals	80	41	2	123
Locals	45	5	0	50
<b>Dwelling</b>				
Urban	15	8	0	23

Rural	120	30	0	150
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120 **Table 2: High risk behavior among HIV Positive patients**

**Comment [SO16]:** Review table format

Characteristics	Male	Female	Transgender	Total
Heterosexual	119	7	0	126
Shaving(barber)	2	0	0	2
Homosexual men	2	0	2	4
Blood transfusion	3	4	0	7
Spouse infected	1	31	0	32
Intravenous drug abusers	1	1	0	2
<b>Total</b>	<b>128</b>	<b>43</b>	<b>2</b>	<b>173</b>

121

122 **Table 3: CD4 count at presentation among HIV positive patients**

**Comment [SO17]:** Need review

CD4 count	Male	Female	Transgender	Total
< 50	7	1	0	8
51-100	17	14	0	31
101-150	5	2	0	7
151-200	38	14	1	53
201-250	36	1	1	38
251-300	10	0	0	10
>300	15	11	0	26
<b>Total</b>	<b>128</b>	<b>43</b>	<b>2</b>	<b>173</b>

123

124

125

126 **Table 4: Clinical presentation and Opportunistic Infections among the HIV/AIDS**

127 **seropositive patients.**

**Comment [SO18]:** Review

Symptoms	n (%)	Opportunistic Infection	n (%)
Fever	130(75.1)	Tuberculosis	60(34.6)
Weight Loss	120(69.3)	Oropharyngeal	50(28.9)

		Candidiasis	
Cough	100(57.8)	Herpes zoster	20(11.5)
Blurring of vision	80(46.2)	Cryptococcal meningitis	10(5.7)
Lymphadenopathy	110(63.5)	CNS toxoplasmosis	4(2.3)
Diarrhea	70(40.4)	-	-
Altered sensorium	30(17.3)	-	-
Asymptomatic	12(6.9)	-	-

128

## 129 Discussion

130 HIV/AIDS generally affects the economically productive and younger age group, the present  
 131 study corroborates this. The mean age of patients was  $30 \pm 7$  years and 85.2% of the patients  
 132 were in the age group 25-44 years. These findings are similar to a study conducted in Jammu  
 133 where the highest incidence of HIV/AIDS was found in the age group of 31-40 years (48.58%).<sup>4</sup>

134 Another study in Aligarh reported the mean age of HIV/AIDS patients as  $29.68 \pm 11.92$  years  
 135 with 68.7% of the patients in the age group of 20-39 years.<sup>5</sup> A study in Nigeria reported the  
 136 mean age of patients as 35.6 years and 75% of the patients were in the age group of 20-49 years<sup>6</sup>

137 Majority (80%) of HIV/AIDS patients were residing in rural areas. These findings are consistent  
 138 with the settings of the state where the majority of the population is primarily rural.

139 Two studies in Jammu and Aligarh reported 74.59% and 77.1% of the patients as  
 140 married compared to 61% in our study.<sup>7,4</sup> Also, a study in North India reported  
 141 76.8% of the patients as married<sup>8</sup>

142 Also alarming in this study was that females comprising housewives (14.4%) belonged to age  
 143 group 20-29 yrs were among local population and this finding corroborated with report in study  
 144 on HIV in India, that this infection is no longer restricted to sex workers or intravenous drug  
 145 users (IVDU) or truck drivers.<sup>1</sup> However, the infection has spread into general population and

146 rates of infection are reported to be increasing among monogamous women through unprotected  
147 sex with infected partners.<sup>9,10</sup>

148 Heterosexual route is the most common mode of transmission worldwide. As such in this study  
149 58.9% of seropositive cases accounted for this commonest mode of transmission which is  
150 supported by various studies in India as well as other parts of world.<sup>1,6,11,12</sup> The homosexual  
151 mode of transmission of 1.73 % was of concern in our place of setting as it can highlight spread  
152 from high risk to general population via bridge population.

153 Khopkar et al reported 6.7% of seropositive for HIV/Aids in homosexuals while Reshmi et al  
154 reported 7.7% in MSM.<sup>10,13</sup> Blood transfusion and vertical transmission comprised of 2.3% each  
155 which was comparable to a perspective on the current status of HIV epidemic in India by  
156 Solomon et al.<sup>9</sup> Sircar et al and Singh S et al reported 12.1% and 5.7% seropositivity through  
157 blood transfusion which is almost (4.04%) equal to our study.<sup>14,15</sup> In our place of study, blood  
158 transfusion is given by kith and kin of a patient and no professional donors are used because of  
159 the awareness of HIV/Aids among general population. Also HIV testing of blood and blood  
160 products is done stringently to prevent spread through infected blood.

161 Fever, weight loss were the commonest symptoms seen in these patients and at least more than  
162 one of these symptoms were present in all the seropositive patients. These commonest symptoms  
163 finding matched with various studies done in India.<sup>4,14,16,,17,18,19</sup> Fever in 75.6% seropositive  
164 cases being as commonest presenting feature is consistent with studies by Kothari et al (70%),  
165 Chakarvorty et al (70.6%), and Sharma et al (71%).<sup>10,13,20</sup>

166 Tuberculosis (TB) has been reported as the most common (34%) opportunistic infection in  
167 patients of HIV/AIDS in our study. A study in North India reported 39.9% of the patients to be  
168 suffering from TB <sup>21</sup>

169 Majority of our patients (88.4%) presented with an initial CD4 count of less than 300/ $\mu$ l  
170 consistent with many studies reported from India and the rest of the world.<sup>21</sup> This could be  
171 attributed to late presentation primarily due to patient ignorance and lack of suspicion at primary  
172 health care level. While 18 patients died soon after being diagnosed, 43 were put on HAART.  
173 However 57 were lost to follow up who being security personnel got transferred to other parts of  
174 India. The remaining 55 patients on HAART who were on regular follow up during this period,  
175 not only improved their CD4 count but also showed marked clinical improvement.

**Comment [SO19]:** Who were these 57 participants from the main research study I suppose

176 Conclusion: The clinical and demographic profile of HIV/AIDS patients of Kashmir by and  
177 large matches other parts of India, however much larger studies are needed to find out newer  
178 dimensions. Kashmir no longer stands as a low risk area because of the inflow of thousands of  
179 armed forces and labourers coming from different regions and diverse backgrounds and  
180 increasing movement of Kashmiris to other high risk areas of India with indulgence in high risk  
181 behaviour. Kashmir, a geographically and socially isolated region a decade earlier, is rapidly  
182 joining the race of globalization with the rest of the world and as a consequence not only  
183 harvesting the benefits but unfortunately paying the price too. HIV/AIDS remains no longer an  
184 alien to this land with people being increasingly detected HIV positive. Kashmir is likely to  
185 witness an alarming rise in HIV/AIDS in the near future as our study represents just the tip of an  
186 iceberg. Masses need to be aware, clinicians more suspicious and authorities more determined if  
187 HIV/AIDS spread is to be effectively controlled.

**Comment [SO20]:** Please stop using this statement because no study was carried out in this respect and no mention was made even in the introduction

188 **References**

**Comment [SO21]:** Need to be review for consistence

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UNDER PEER REVIEW