



PREVALENCE OF HUMAN IMMUNODEFICIENCY VIRUS INFECTION AMONG TEA GARDEN WORKERS IN WEST BENGAL, INDIA; A CROSS SECTIONAL STUDY.

Suman Ganguly	State Consultant (PPTCT), West Bengal State AIDS Prevention & Control Society, Kolkata, India.
Debjit Chakraborty*	Scientist- D, Division of Epidemiology, ICMR- National institute of Cholera and Enteric Disease, Kolkata, West Bengal. India. *Corresponding Author
Falguni Debnath	Scientist- C, Division of Epidemiology, ICMR- National institute of Cholera and Enteric Disease, Kolkata, West Bengal. India.
Dipendra Narayan Goswami	Professor, Dept. of Community Medicine, Calcutta National Medical College, Kolkata, India.

ABSTRACT HIV is known to affect population in conflict such as Tea Garden Workers (TGW) which is relatively less explored till date. This study aimed at estimating HIV prevalence among TGWs and comparing with that in pregnant woman and high risk non pregnant individuals of same region and same period. HIV screening following standard protocol was carried out for 4402 TGWs from randomly sampled 40 tea gardens in six blocks of Alipurduar District of West Bengal, India during July to November 2017. HIV prevalence for TGWs was significantly higher (0.114 %) compared to pregnant women (0.01 %) [OR= 10.95(1.28 -93.78)], a surrogate for HIV infection in general population in the same district. In male TGWs, HIV positivity (0.16 %) was significantly higher than at risk males tested at ICTCs. (0.035%). [OR= 4.68(1.32-16.6)]. In conclusion, high HIV prevalence among TGWs calls for strengthening HIV surveillance and prevention services at tea garden level, with special focus on males.

KEYWORDS : HIV, Prevalence, Tea garden workers, West Bengal

INTRODUCTION:

The tea industry in India is one of the largest in the world with 13000 gardens and more than two million workers. India accounts for 12-13% global tea exports. This tea production in India was started in the 18th century by the Colonial Government to meet the supply of growing demand for tea in the world market. It is observed that the tea gardens are facing the problem of sickness and abandonment which adversely created socio economic hazard among the tea garden workers. As per studies, most of the tea gardens workers suffer from the rampant hunger, poverty and unemployment, problems like illiteracy, drop-out, malnutrition, and various incurable diseases, combined with the effect of gender discrimination at workplace, trafficking of children and women rendering the Tea Garden Workers (TGWs) a vulnerable population. [1].

Since economic globalization, tea plantation industry in West Bengal also witnessed similar conflicts and vulnerabilities. These findings were published in a study done in 12 sick and closed tea gardens in Jalpaiguri district demonstrating close link between vulnerabilities, migration, and trafficking in children and women [2]. Alipurduar is the 20th district of West Bengal after getting bifurcated from parent Jalpaiguri district on 25th June 2014. The districts shared boundaries with three countries and has 65 organized tea gardens served by mostly local tribes such as Oraon, Munda, kharia, Lohra etc and descendant of migrant workers from Nepal, Jharkhand. More than 52% of the tea garden workers are women. Socio economically these TGWs lag behind the non tea workers residing in the same district. From 2002, the district regularly witnessed closure and reopening of tea gardens [3]. This uncertainty has put the tea garden workers in crisis and conflicts and increased the vulnerability to risk behavior such as illicit sex, substance abuse etc conducive of acquiring HIV infection. In the dearth of evidence about this population group, we conducted this study to estimate HIV prevalence among the Tea Garden Workers (TGWs) of Alipurduar district of West Bengal and compare with that among general population (pregnant women) and at risk non pregnant individual of the same district for same period.

MATERIALS AND METHOD:

This was a cross sectional study carried out through analysis of secondary data of TGWs from Alipurduar district, West Bengal between July 2017 to November 2017. West Bengal is an eastern state of India sharing border with Bangladesh, Nepal, Bhutan, Assam, Sikkim, Bihar, Orissa and Jharkhand. Out of 23 districts of West Bengal, tea plantation and cultivation is a major source of income in the five districts of northern hilly region, Alipurduar District being one

of the major contributor. This district has a total population of 1.5 lakh approx. with a population density of 539/sq km. We randomly selected 40 tea gardens (out of total 65) representing all six blocks of Alipurduar district of West Bengal. All tea garden workers from these tea gardens, irrespective of age and sex, who attended the HIV screening camp during the study period comprised the sample size of 4402. The sample size was not pre calculated as universal coverage was exercised. However, considering a 0.2 % prevalence of adult HIV in West Bengal [4], approx.10,000 population of tea garden workers in the district, 0.1% precision, 95% confidence level, the sample size amounted to 4341. We excluded the TGW with already known HIV status (negative result in last six months or positive result in any time), though no such participant was found.

We data collected the data of TGWs from tea garden intervention database. HIV positivity data of pregnant women and at risk non pregnant population tested at Integrated Counseling and Testing Centres (ICTCs) of same district in same period was curated from Annual report of West Bengal State AIDS Prevention and Control Society. We compared the HIV positivity among TGWs with that of at risk non pregnant population and of pregnant women (as surrogate indicator of HIV in general population) of same district for same period. HIV testing was conducted following standard protocol of National AIDS Control Organization (NACO) maintaining confidentiality, privacy and informed consent for HIV testing. Anonymized data were considered for analysis. Confidentiality of the data was maintained throughout the study. The study was approved by Institutional Ethics Committee of Calcutta National Medical College, Kolkata. The data was computed in MS excel 2007 and presented as tables. HIV prevalence was expressed as percentage. The data was further analyzed in Statistical Package for Social Science Software (version 17) to determine statistical significance in terms of Odd ratios and 95% Confidence Interval. P value < 0.01 was considered significant.

RESULTS:

A total number of 4402 (1855 males and 2547 females) TGWs were tested at HIV screening camp in randomly selected tea gardens of Alipurduar during the study period and among them 5 (Prevalence: 0.114%) were found to be HIV reactive (3 males and 2 females). During the same period, 9633 pregnant women were tested for HIV in Alipurduar and 1 (0.01%) was reactive. HIV prevalence among the tea garden workers was significantly higher (around 11 times) than that of pregnant women i.e. general population [OR = 10.95 (95% CI: 1.28 - 93.78)] [Table-1].

Table 1: Comparison between positivity of HIV infection among tea garden workers and pregnant women.

Population group	Tested	HIV reactive	Positivity Rate (%) (95%CI)	OR(95% CI)	p value
Tea Garden worker	4402	5	0.11 (0.05-0.26)	10.95(1.28-93.78)	0.006
Pregnant women	9633	1	0.01 (0.00-0.06)		

Similarly, 62160 number of non pregnant at risk individuals assessed to be at risk or vulnerable during counseling session at ICTC, were tested for HIV during the same period across the district and 54 (positivity: 0.047%) were reactive. HIV positivity of male tea garden workers (0.16%) was also significantly higher (around 5 times) than that of at risk male population (tested 34691 and positive 12 and positivity 0.035%). [OR= 4.68(95% CI: 1.32, 16.6)]. However, in case of HIV positivity of female tea garden workers (0.08%), no significant difference was observed with that of at risk female population (tested 27469 and positive 17 and positivity 0.06%) [OR= 1.27(95% CI: 0.29,5.49)]. [Table 2]

Table 2: Comparison between HIV positivity among tea garden workers and non pregnant at risk population overall and in different sex group.

Population group	Tested	HIV reactive	Positivity Rate (%) (95%CI)	OR (95%CI)	p value
Total					
Tea Garden worker	4402	5	0.11 (0.05-0.26)	2.44(0.94-6.29)	0.057
Non pregnant at risk population	62160	29	0.05 (0.04-0.07)		
Male					
Tea Garden worker	1855	3	0.16 (0.05-0.47)	4.68(1.32-16.6)	0.008
Non pregnant at risk population	34691	12	0.03 (0.02-0.05)		
Female					
Tea Garden worker	2547	2	0.08 (0.02-0.29)	1.27 (0.29-5.49)	0.75
Non pregnant at risk population	27469	17	0.06 (0.04-0.1)		

DISCUSSION:

In the present study, HIV prevalence among the TGWs were found to be significantly higher i.e. 0.114% than the general population i.e. 0.01% considering HIV positivity among the pregnant women as surrogate indicator for general population. Male TGWs were observed to be at more risk to develop HIV than female counterparts. There is dearth of study in this particular area. Most of the studies conducted in the tea plantation areas of Assam. In one correspondence, it was reported that there was rise in number of HIV infected cases in tea gardens of Assam especially in two districts i.e. Tinsukia and Dibrugarh during 2016-17. Six out of ten HIV infected pregnant women in these two districts belonged to tea garden areas. [5]. Higher incidence of Tuberculosis among TGWs was reported in Assam emphasizing association of lower socio economic status with risk of development of pulmonary Tuberculosis among TGWs [6]. Since Tuberculosis is the commonest opportunistic infection in HIV infected individual, this finding also call for exploring the magnitude of HIV infection in different tea garden residents. Another study highlighted an increasing trend of HIV infection in high risk population groups in some districts of Assam especially in the border areas, along the National Highway where populations were mainly migrants, truckers and other categories of daily wage earners such as short term contractual workers in tea garden, oil fields, gas crackers project, short term highway laborers [7].

Identification of novel vulnerable groups is of utmost importance to strategize primary prevention measures aiming at minimizing HIV transmission. Since the already known high risk groups such as Female Sex Workers (FSW), Men having Sex with Men (MSM), Intravenous Drug Users (IDU) are currently under coverage of Targeted Intervention (TI) programs of National AIDS Control Organization (NACO), they are under continuous monitoring and services are being delivered to them. But these newer and unidentified groups, not under

coverage of TI and associated with similar risk behavior and vulnerabilities are the actual threat to the success of the HIV prevention programme in the country. In West Bengal, earlier we identified the prison inmates as a newer risk group for HIV.[8] This time we reported the tea garden workers with such high vulnerability for HIV. There is actually no study for this group of population in West Bengal though this state produces second highest amount of Tea in India and faces similar sickness and shutdown phenomenon in Tea Gardens.

CONCLUSION:

In the light of evidence generated from this study, HIV prevention services need to be reoriented for this population group involving various stakeholders such as NACO, ILO, State Authorities, Tea Boards. Further studies are also required to identify socio demographic attributes leading to vulnerability and thereby helping in developing specific intervention packages.

This study was limited to a single indicator i.e. HIV positivity and could not venture upon behavioural pattern and specific risk factors of the tea garden workers due to non availability of such data in programme database. There is definite need for reassessing the HIV preventive services but the impact of the ongoing intervention could not be ascertained from this study.

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