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A Geographical Distribution of Aids Cases in Tamilnadu District Wise (2008 – 2014)

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ABSTRACT
The present study was undertaken to characterize the various opportunistic pathogens (fungi and bacteria) which are responsible for high morbidity and mortality in 25 HIV seropositive patients, either hospitalized (5 Nos) (or) coming to antiretroviral therapy centre in Government hospital, TamilNadu, were included in the study for finding the spectrum of opportunistic pathogens. Blood serum, urine, sputum, and oral swabs were collected and processed. A total of eight pathogens were detected.
Keywords: Opportunistic pathogens; HIV; Blood; Urine; Sputum.

I. INTRODUCTION

The application of geographical concept and the technique to health related problem is called as medical geography. The object of medical geography is the systematic study of geographical distribution of disease and of related environment phenomena. Medical geography deals with the different disease diffusion. It also studies about location and efficiency of health care centers. Medical geography also studies about, mortality, morbidity and nutritional status. Park (1983) has defined that "medical geography is a scientific discipline joining with geography". Pyle (1979) has denoted that "The medical geography is a multi dimensional body of knowledge but at the same time a multifaceted approach geared towards understanding spatial of aspects of human health problem".

II. MEDICAL GEOGRAPHY IN INDIA

In India period extending from about 600 BC to 400 AD is considered to be creative period of Indian Medicine. During the period Taxila and Varanasi as great centers of medical research. Several books and monographs were written to elaborate add and modify the medical knowledge contained in the Vedas. It was during this period that susrutha the surgeon wrote this salyantra. Taxila had Atreya as professor of Medicine whose contribution to medicine as great as that susruta to surgery. Atreya, the father of Indian Medicine says "All suffering whether of the bodyor mind has for its basis ignorance all happiness has its foundation in pure scientific knowledge". This indicates well the scientific basis of medical science in ancient India. Susruta recognized three causes of disease. Physical (hereditary congential or due to dearrangement of doses or humour) environmental and natural. The modern medical geography in India laid in the 1930's. it is still one of the most under developed branches of geography in the country.

2.1 **AIDS:** AIDS, the acquired immuno deficiency syndrome(sometimes called "Slim disease" is a newly described usually fatal illness caused by a retrovirus known as the Human Immuno – deficiency Virus (HIV) which breaks down the body's immune system. The term AIDS refers only to the last state of the HIV infection. AIDS was first recognized in USA in 1981.

A) EPIDEMIOLOGICAL FEATURES:

2.2.1 A) AGENT: When the virus was first identified it was called Lymphadenopathy associated virus" (LAV) by the French scientists. Researchers in U.S.A called it "human T.CellLymphotrophic virus III (HTLV – III)" In May 1986 the international committee on the Taxonomy gave it a new name Human Immuno-Deficiency virus (HIV). The virus is I/10000th of a millimeter in diameter. It is a protein capsule containing two short stands of genetic material (RNA) and few enzymes. The virus uses the human cells to perpetuate itself. The virus replicates in actively dividing 14 lymphocytes. There are two types of HIV. The most common is HIV I and a more recently recognized virus called HIV2 (in West Africa).

B) RESERVOIR OF INFECTION: Once a person is infected by HIV, the virus remains in the body life-long. Since HIV infection take years to manifest itself, the symptomless carrier can infect other people for years

C) SOURCE OF INFECTION: The virus has been found in greatest concentration in blood, semen, and CSF. Lower concentrations have been detected in tears, saliva, best milk, and urine, cervical and vaginal secretions.

2.2.2 A) AGE: Most case has occurred among sexually active persons 20-49 years. This group represents the most productive members of society and those responsible for child bearing and child rearing.

B) SEX: About 70 Percent of cases are homosexual or bisexual. Certain sexual practices increase the risk of infection more than others. Eg: multiple sexual partners, anal intercourse and homosexuality. Higher rate of infection is found in prostitutes.

C) HIGH RISK GROUPS: Male Homosexuals and bisexuals, heterosexual partners (including prostitutes). Intravenous drug abusers, transfusion recipients of blood and blood products hemophiliacs and client of STD.

D) IMMUNOLOGY: The immune system disorders associated with HIV infection/AIDS are considered to occur primarily from the gradual depletion in a specialized group of white blood cells (Lyphocytes) called T-helper or T- 4 cells. HIV selectively infects T-helper cells. When the virus reproduces, the infected T-helper cells are destroyed. Consequently people with AIDS tend to have low WBC count.

III. CAUSES OF AIDS:

A Global Epidemic more than 30 million people around the world are currently infected with the human immunodeficiency virus (HIV), the virus that causes acquired immune deficiency syndrome (AIDS). New HIV infection have leveled off or even declined in most developed countries, but the virus is spreading rapidly through much of the developing world.

3.1 WORLD PROBLEM STATEMENT OF AIDES: AIDS was first recognized in USA in 1981, earlier cases were found to have occurred in 1978 in USA and 1970's in Africa, from estimated 1 million people infected with HIV worldwide in 1981, in its second decade its magnitude has increase at over 100 fold. In 1993, 15 million people around the world were estimated to be infected.

3.2 PROBLEM STATEMENT OF AIDES IN INDIA: The evidence of HIV was first documented in Chennai in southern India in 1986. Based on sentinel surveillance the HIV prevalence can be broadly classified into three groups of states/UT's of the country.

A.HIGH PREVALENCE STATES: 45 Districts in the high prevalence states of Maharastra, Tanil Nadu, Manipur, Andhra Pradesh, Karnataka and Nagaland have been identified as high prevalence districts.

B.**MODERATE PREVALENCE STATES:** The state of Gujarat, Goa and Pondicherry which share geographical borders with the moderate prevalence states report HIV prevalence exceeding 5 percent among high risk groups.

C.**LOW PREVALENCE STATES:** Apart from the six high prevalence states and three moderate prevalence states the remaining states and union territories fall into the low prevalence.

3.3 PROBLEM STATEMENT OF AIDS IN TAMILNADU:

TamilNadu is a state with 62.2 Million Population from 29 districts. It is estimated that there are 5, 00,000 cases of HIV Positives in TamilNadu, up the end of 2002.

The number of AIDS cases reported from TamilNadu has increased enormously from 1092 in 1998 to 24667 in November 2003.As for the mode of transmission of HIV, heterosexual transmission is the predominant mode of transmission of HIV, and heterosexual transmission is the Predominant mode of transmission of HIV in the state. Commercial sex workers, truckers, helper, men who have sex with men, intravenous injecting drug users are the targeted high risk groups in the state, while the group such as migrant population workers of unorganized sectors slum dwellers, street children, youth adolescent has been identified as the most vulnerable groups.

Chennai is leading with 9148 AIDS cases followed by Madurai 2043, Namakkal 1884, Salem 1810, Dindugal 1709, Vellore 1656, Tiruchirappalli 1561, Erode 1842, Cuddalore 1194, Villupuram 1105, Dharmapuri 1105, and Thiruvallur with 1079 Aids cases have been identified as high risk districts in the state.

3.4 THE PROBLEM

Population considerably in here future in TamilNadu, The syndrome has wide spread prevalence and most affected region is Chennai, Namakkal, and Salem region, followed by Madurai, Thanjavur also. The reason is that the majority of the truck drivers are who travel widely to the North and acqurice the syndrome. The present study is confined to trace Geographical distribution of AIDS and what is the trend over the a time period from 2008-2014.

IV. AIMS AND OBJECTIVES:

The aim of the study is to analysis of AIDS in TamilNadu. In order to achieve the above mentioned

aim, the following objectives are taken to consideration.

A. To finds the Geographical Distribution of AIDS in TamilNadu during 2008-2014. And to analyze, the Age group wise, place of Residence, and occupational wise affected patients.

B. Moniter the trends of HIV epidemic.

C. Provide the impact of preventive and control activities of HIV epidemic.

V. METHODOLOGY

To study of Geographical Distribution of AIDS in TamilNadu 2008-2014 using GIS technique. Land use and population are identified in bar diagram, Pie chart. The relation between population and AIDS prevailing patients using Time series Three years moving Average Techniques, Pie chart are using of Identified by to analysis of AIDS in TamilNadu.

VI. STUDY AREA

The study area state covers an area of 130058 sq.km equivalent of 4% of the total area of India. It extends latitudinal between 8º5' North and 13º35' North longitudinally between 70º15' East and 80º20'East.The TamilNadu has a long coastline on the east, stretching for nearly 1000kms from Pulicat lake in the North to Kanyakumari in the South and South West. The folded ranges of the Western Ghats and the connecting broken lines of hills of the Eastrenghats, namely Javadhu, Shervaroys, Kalayan, Pachamalai,Kollimalai etc., The state is bordered on the North by Karnataka and AndraPredesh, on the East by the bay of Bengal, on the South by the Indian Ocean and on the West by Kerala State. Figure 1.1

LOCATION MAPS OF THE STUDY AREA

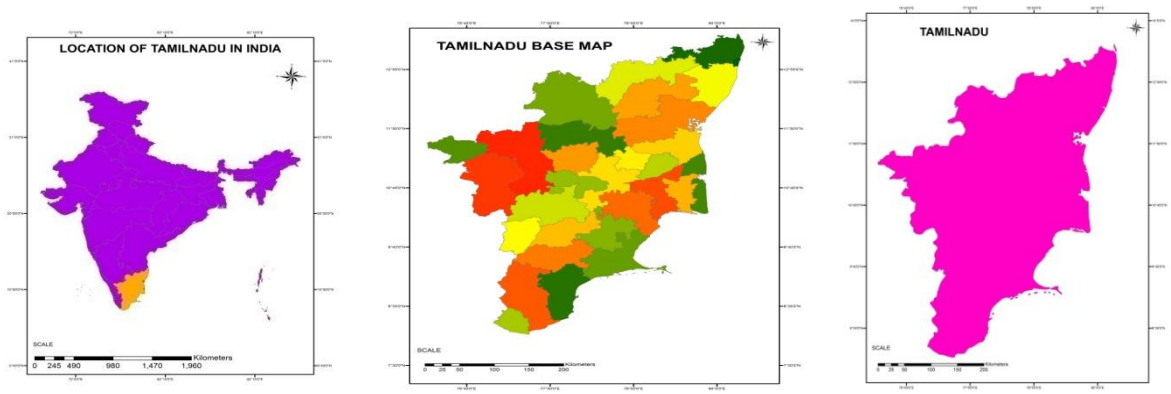

FIG 1.1

VII. GEOGRAPHICAL DISTRIBUTION OF AIDS CASES IN TAMILNADU DISTRICT WISE

7.1 GEOGRAPHICAL DISTRIBUTION OF AIDS CASES IN TAMILNADU DISTRICT WISE – 2008

The following table 1.1 and figure 1.2 we looked in the geographical distribution of AIDS cases in TamilNadu in the year of 2008; the prevalence of AIDS is very high in Chennai (24.78%) Karur (4.92%) Namakkal (5.88%) Salem (5.74%) and Vellore (5.60%) Madurai (5.07%) is also the high percentage rate region in the year of 2008. The low HIV/ AIDS prevalent in Coimbatore (1.75%) Kanchipuram (2.23%) Kannyakumari (0.14%) Nagapattinam (0.49%) Nilgiris 0.08 Pudukkottai (1.07%) and soon. In this Chennai has 7581 HIV/AIDS Patients followed by Karur 1433. Madurai 1522 and Namakkal 1801 Male AIDS Patients in the year of 2008. The TamilNadu during the 2008 the total HIV/AIDS patients were in 29731. In this Male Patients was 101899 and Female was in 41630.

TABLE 1.1 GOGRAPHICAL DISTRIBUTIONS OF AIDS CASES IN TAMILNADU- 2008

S.NO	DISTRICT	MALE	%	FEMALE	%	TOTAL	%
1	ARIYALUR	572	1.17	464	0.18	1136	1.98
2	CHENNAI	7581	18.21	2737	6.57	10318	24.78
3	COIMBATORE	553	1.32	178	0.42	731	1.75
4	CUDDALORE	332	0.79	99	0.43	431	1.03
5	DHARMAPURI	1035	2.48	397	0.95	1432	3.43
6	DINDUGAL	681	1.63	364	0.87	1045	2.51
7	ERODE	1249	3.00	580	1.39	2141	5.14
8	KANCHIPURAM	695	1.66	236	0.56	931	2.23
9	KANNIYAKUMARI	48	0.11	13	0.03	61	0.14
10	KARUR	1433	3.44	618	1.48	2051	4.92
11	KRISHNAGIRI	65	0.15	47	0.11	112	0.26
12	MADURAI	1522	3.65	68	1.65	2111	5.07
13	NAGAPATTINAM	151	0.36	55	0.13	206	0.49
14	NAMAKKAL	1801	4.32	650	1.56	2451	5.88
15	NILAGIRI	22	0.05	12	0.02	34	0.08
16	PERAMBALUR	691	1.65	338	0.81	1029	2.47
17	PUDUKOTTAI	304	0.73	142	0.34	446	1.07
18	RAMANATHAPURAM	80	0.19	41	0.09	121	0.29
19	SALEM	1715	4.11	677	1.62	2392	5.74
20	SIVAGANGAI	1497	3.59	671	1.64	2168	5.20
21	THANJAVUR	681	1.63	364	0.89	1029	2.47
22	THENI	1277	3.06	540	1.29	1817	4.36
23	THIRUNELVELI	345	0.82	105	0.25	450	1.08
24	THIRUVALLUR	964	2.31	397	0.95	1361	3.26
25	THIRUVANNAMALAI	913	2.19	361	0.86	1274	3.06
26	THIRUVARUR	148	0.35	50	0.12	198	0.47
27	TUTICORIN	294	0.70	103	0.24	397	0.95
28	TRICHY	1561	3.74	580	1.39	2141	5.14
29	TIRUPPUR	1542	0.94	876	0.65	3918	1.60
30	VELLORE	1616	3.88	716	1.71	2332	5.60
31	VILLUPURAM	332	0.79	99	0.23	431	1.03
32	VIRUDHUNAGAR	145	0.34	40	0.09	185	0.44
	TOTAL	29731		11899		41630	

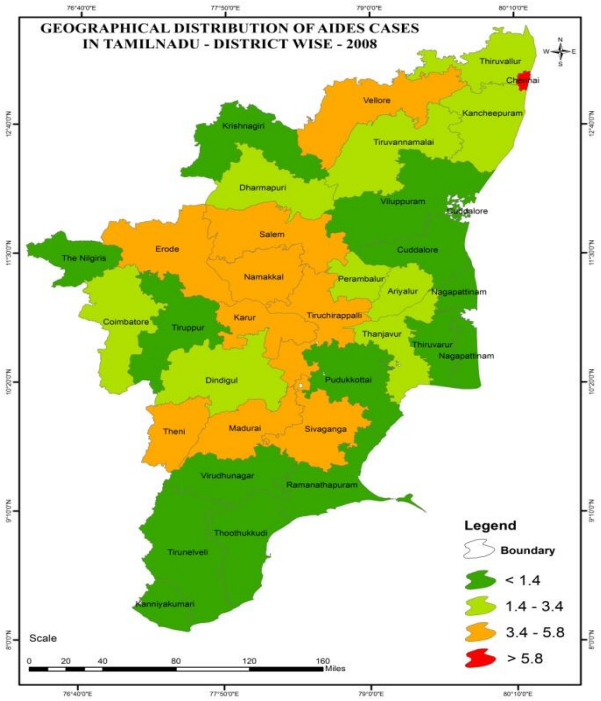

FIG 1.2

7.2 **GEOGRAPHICAL DISTRIBUTION OF AIDS CASES IN TAMILNADU DISTRICT WISE – 2014**

The map shows that the geographical distribution of arts in Tamilnadu in the year of 2014. The Aids Prevalence as highly in Chennai (15.51%) Karur (11.96%) Madurai (8.56%) Namakkal (8.39%). Salem (10.49%) and Vellore (7.18%). The second category of (3.50% to 4.50%) is in the Trichy (4.37%) Tirunelveli (3.59%). The third category of (2.50% to 3.50%) Prevalence in Perambalur (2.30%) Villupuram (2.29%) Krishnagiri (2.86%) was in Ariyalur (1.45%) Coimbatore (1.81%) Dindugal (0.43%) Kanniyakumari (0.18%) Sivagangai (1.97%) Tuticorin (0.49%) and soon. In this we looked in to the geographical distribution of AIDS cases in TamilNadu the central place of TamilNadu concentrated high in HIV/AIDS affected patients. The southern district of TamilNadu is very low level. Table 1.2 and Figure 1.3

TABLE 1.2
GOGRAPHICAL DISTRIBUTION OF AIDS CASES IN TAMILNDU DISTRICT WISE – 2014

S.NO	DISTRICT	MALE	%	FEMALE	%	TOTAL	%
1	ARIYALUR	734	0.77	644	0.68	1378	1.45
2	CHENNAI	9781	10.34	4882	5.16	14663	15.51
3	COIMBATORE	974	1.03	742	0.78	1716	1.81
4	CUDDALORE	234	0.24	194	0.20	428	0.45
5	DHARMAPURI	1835	1.94	863	0.91	2698	2.85
6	DINDUGAL	249	0.26	160	0.16	409	0.43
7	ERODE	1729	1.82	643	0.68	2372	2.50
8	KANCHIPURAM	192	0.20	112	0.11	304	0.32
9	KANNIYAKUMARI	102	0.10	71	0.07	173	0.18
10	KARUR	7434	7.86	3876	4.10	11310	11.96
11	KRISHNAGIRI	1964	2.07	740	0.78	2704	2.86
12	MADURAI	5043	5.33	3050	3.22	8093	8.56
13	NAGAPATTINAM	216	0.33	134	0.14	450	0.47

14	**NAMAKKAL**	**6892**	**74.29**	**3910**	**1.09**	**7931**	**8.39**
15	**NILAGIRI**	**142**	**0.15**	**92**	**0.09**	**234**	**0.24**
16	**PERAMBALUR**	**1472**	**1.55**	**702**	**0.74**	**2174**	**2.30**
17	**PUDUKOTTAI**	**127**	**0.13**	**112**	**0.11**	**239**	**0.25**
18	**RAMANATHAPURAM**	**307**	**0.32**	**172**	**0.18**	**479**	**0.50**
19	**SALEM**	**6573**	**6.95**	**3343**	**3.53**	**9916**	**10.49**
20	**SIVAGANGAI**	**1172**	**1.23**	**697**	**0.73**	**1869**	**3.97**
21	**THANJAVUR**	**934**	**0.98**	**764**	**0.80**	**1698**	**1.79**
22	**THENI**	**2210**	**2.33**	**932**	**0.98**	**3142**	**3.32**
23	**THIRUNELVELI**	**1531**	**1.61**	**922**	**0.97**	**2453**	**2.59**
24	**THIRUVALLUR**	**363**	**0.38**	**206**	**0.21**	**569**	**0.60**
25	**THIRUVANNAMALAI**	**294**	**0.31**	**194**	**0.20**	**488**	**0.51**
26	**THIRUVARUR**	**296**	**0.31**	**106**	**0.11**	**402**	**0.42**
27	**TUTICORIN**	**294**	**0.30**	**175**	**0.18**	**467**	**0.49**
28	**TRICHY**	**2606**	**2.75**	**1532**	**1.62**	**4138**	**4.37**
29	**TIRUPPUR**	**903**	**0.63**	**685**	**0.51**	**1588**	**3.15**
30	**VELLORE**	**4035**	**4.26**	**2760**	**0.29**	**6795**	**7.18**
31	**VILLUPURAM**	**1202**	**1.27**	**964**	**1.01**	**2166**	**2.29**
32	**VIRUDHUNAGAR**	**932**	**0.98**	**642**	**0.67**	**1574**	**1.66**
	TOTAL	**62570**		**31950**		**94520**	

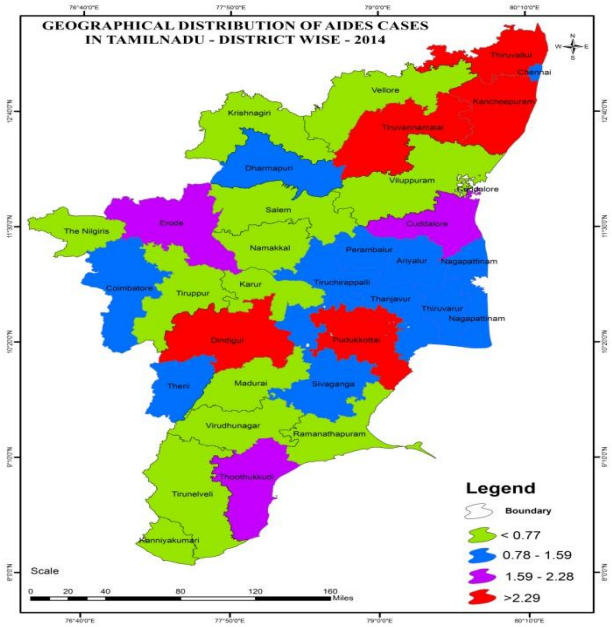

FIG 1.3

7.3 AGE GROUP WISE CLASSIFICATION 2008-2014

In the year 2008 the proportion of AIDS prevalence high in 15-29 year age Group followed by 30-49 years age group. The prevalence rate among the Male in 5-49 age group in 33.18% was considerably high compared the Female. The following table 1.3 and 1.4.

In 2014 the proportion of AIDS prevalence high in 30-49 years age Group 37.82 followed by 15-29 years age group 32.45, 10.67% AIDS prevalence in 0-14 category of age group. The proportion of AIDS prevailing high in the year to year in 2008-2014 the 30-49 years age Group was very highly affected in HIV infection. The following table 1.4 and 1.5.

TABLE 1.3 AGE GROUP CLASSIFICATION IN AIDS – 2008

Age Group	Male	%	Female	%	Total	%
0-14	3645	8.75	2375	5.70	6020	1.44
15-29	10334	24.82	3482	8.36	13816	33.18
30-49	12422	29.83	3350	8.04	15776	37.88
Above 50	3330	7.99	2692	6.46	6022	14.46
Total	29731		11899		41630	

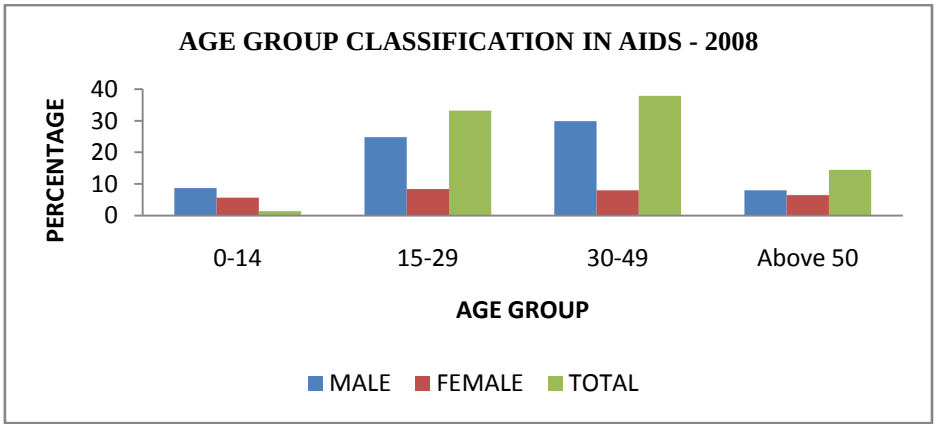

FIG 1.4

TABLE 1.4 AGE GROUP CLASSIFICATION IN AIDS – 2014

Age Group	Male	%	Female	%	Total	%
0-14	2775	2.93	5747	6.08	8522	9.01
15-29	25367	26.83	9575	9.38	34942	36.92
30-49	26883	28.44	8873	9.38	35756	37.82
Above 50	7545	7.89	7755	8.20	15300	16.18
Total	62570		31950		94520	

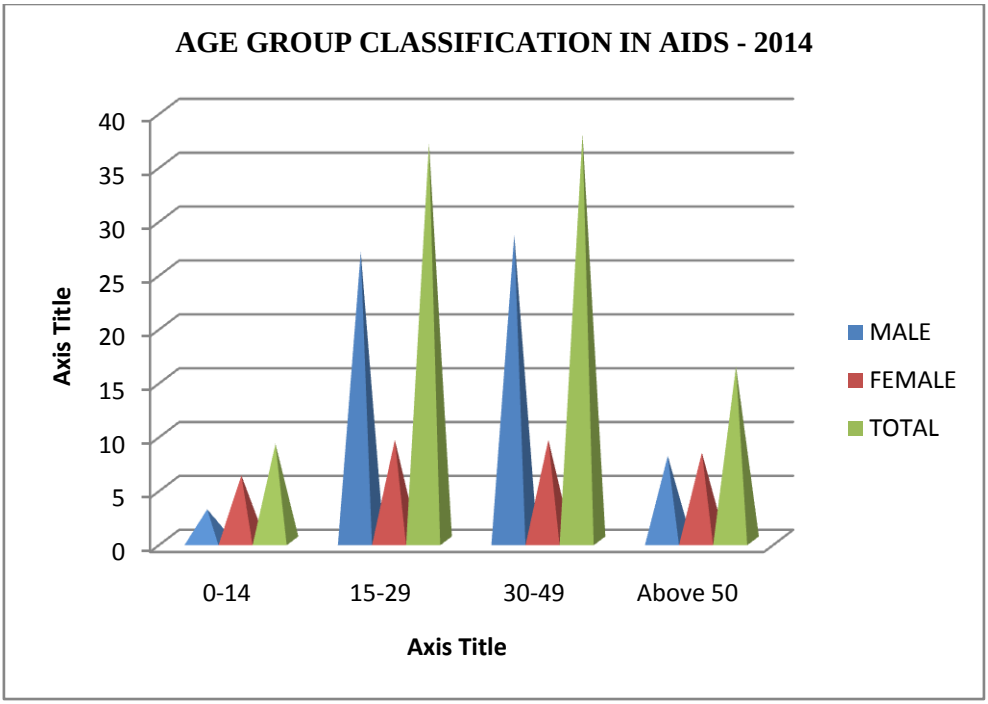

FIG 1.5

7.4 PLACE OF RESIDENCE

The proportion of positive STD clients was high among rural population compared to urban population. People residing in rural areas (57%) has higher positivity compared with urban population (43%) for the year 2014.table 1.5 and Figure 1.6.

TABLE 1.5
PLACE OF RESIDENCE

Place of Residence	%
Urban	43%
Rural	57%

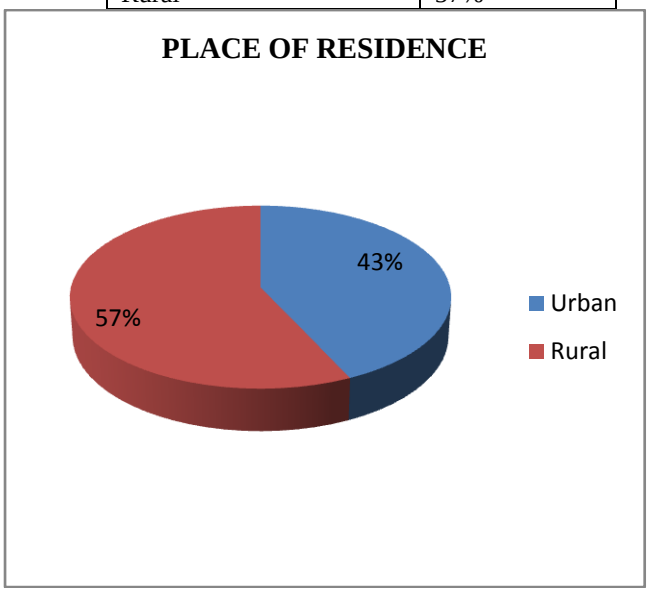

FIG 1.6

7.5 EDUCATIONAL STATUS WISE AIDS PATIENTS

The HIV prevalence was high among illiterate population i.e.37.21 percent of the illiterate23.26% was in 5th standard. Table (1.6) and figure (1.7). The Graduates and above percentage level is 8.89%. In this observed to illiterate mostly affected the AIDS. The HIV infection is more among illiterate compared with educated people. So the difference is not statistically significant monitoring the trend over the years provide important clue regarding influence of education in prevention of transmission of HIV infection.

TABLE 1.6 EDUCATIONAL STATUS WISE AIDS PATIENTS

Education	Prevalence %
Illiterate	37.21
5th std	23.26
12th	15.34
Graduate & Above	8.89

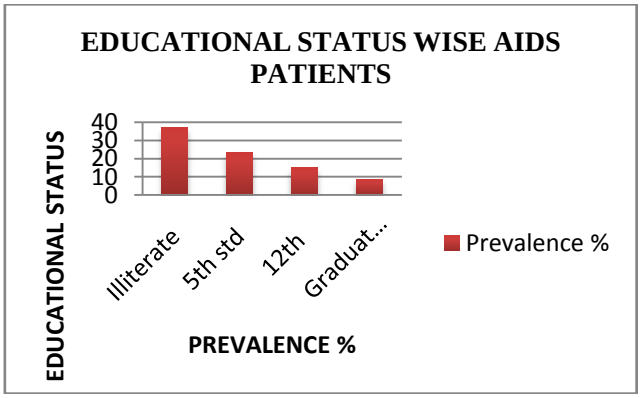

FIG 1.7

7.6 OCCUPATIONAL WISE AIDS PATIENTS

In this below diagram that the occupational distribution of Hiv prevalence in the year 2014. Unskilled workers, Drivers and unemployed groups had higher prevalence of HIV infection compared with other groups. 48.72% has observe that the drivers concentrated is highly in industrial oriented level of 47.06% Hotel staff and people inbred in business also having positivity rate. Table 1.7 and figure 1.8.

TABLE 1.7 OCCUPATIONAL WISE AIDS PATIENTS

Occupational of spouse	% Positive
Agriculture	48.72
Driver	44.68
Industrial worker	17.39
Hotel staff	20
Services	7.14
Un employed	47.06

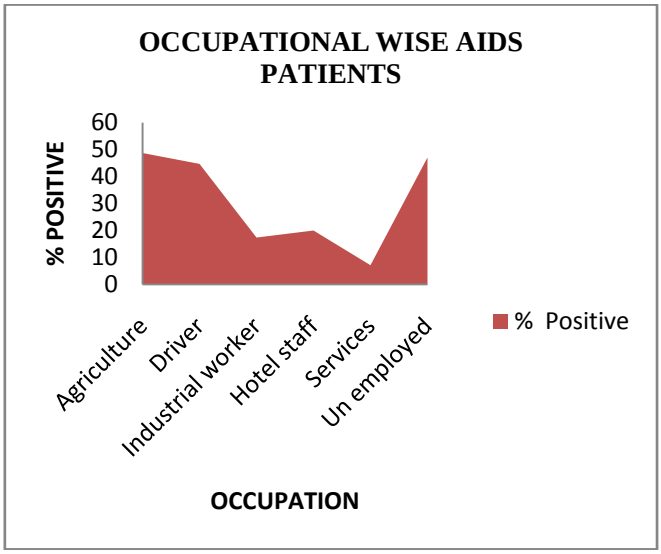

FIG 1.8

7.7 TIME SERIES ANALYSIS: Three yearly moving Average Trend With the help of Analysis 3 yearly moving average curve we have to concluded that AIDS patients in Tamil Nadu during the period of 2008- 2014. The maximum patients are shown in 48307 in 2005. Gradually, AIDS patients are increasing year by year. Table 1.8 and figure 1.9.

TIME SERIES ANALYSIS: Three yearly moving Average Trend

TABLE 1.8

s.no	years	AIDS Patient in Tamil Nadu	3 Yearly total	3Yearly moving average
1	2008	41081	-	-
2	2009	57151	148391	49463.66
3	2010	50160	181671	60557
4	2011	74360	219040	73013.33
5	2014	94520	-	

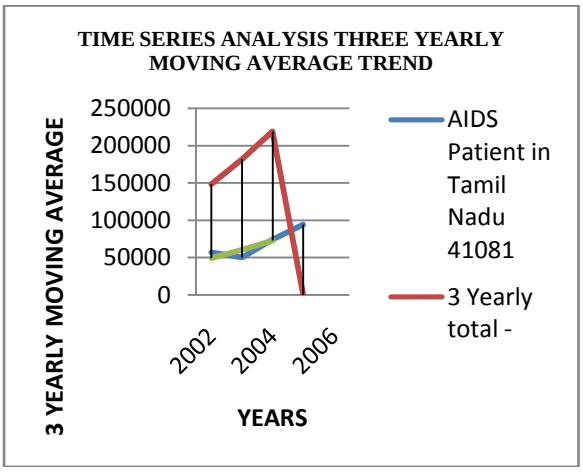

FIG 1.9

CHANGING PATTERN TAMILNADU AIDS PATIENTS 2008- 2014

Changing pattern like increase or decrease in the year 2008- 2014 also be discussed. .Here, changing pattern weather increase or decrease also calculated in between the year of 2008-2014. The increasing pattern is very high compare than the other criteria like decrease, showing the table 1.9.

TABLE 1.9

S.NO	DISTRICT	2008 TOTAL	2014 TOTAL
1	ARIYALUR	1136	1378
2	CHENNAI	10318	14663
3	COIMBATORE	731	1716
4	CUDDALORE	431	428
5	DHARMAPURI	1432	2698
6	DINDUGAL	1045	409
7	ERODE	2141	2372
8	KANCHIPURAM	931	304
9	KANNIYAKUMARI	61	173
10	KARUR	2051	11310
11	KRISHNAGIRI	112	2704
12	MADURAI	2111	8093
13	NAGAPATTINAM	206	450
14	NAMAKKAL	2451	7931
15	NILAGIRI	34	234
16	PERAMBALUR	1029	2174
17	PUDUKOTTAI	446	239
18	RAMANATHAPURAM	121	479
19	SALEM	2392	9916
20	SIVAGANGAI	2168	1869
21	THANJAVUR	1029	1698
22	THENI	1817	3142
23	THIRUNELVELI	450	2453
24	THIRUVALLUR	1361	569
25	THIRUVANNAMALAI	1274	488
26	THIRUVARUR	198	402
27	TUTICORIN	397	467
28	TRICHY	2141	4138
29	TIRUPPUR	3918	1588
30	VELLORE	2332	6795
31	VILLUPURAM	431	2166
32	VIRUDHUNAGAR	185	1574
	TOTAL	41630	94520

VIII. CONCLUSION

Until a vaccine or curve for AIDS is found the only means at present available is health education to enable people to make life saving choices. Awareness creation of all levels is the key to the prevention and control of HIV/AIDS. The predominant objectives of mass awareness campaigns are to inform the public above the epidemic and its implications to create awareness about mode of transmission of the epidemic, and the ways to protect oneself, to mobilize support to intervention programmers and to

create an enabling environment to enhance the efficiency of intervention program. People in High risk groups should be urged to refrain from donating blood, body organs, sperm or other tissues. The instruments used by the HIV positive persons, for injections, ear piercing, acupuncture or scarification should not be by others. Not all the children born to HIV/AIDS infected mothers develop the infection. The rate of vertical transmission is in the range of 20-30% without treatment. With antiretroviral treatment, the risk of transmission lowers to around3% . Mother to child transmission of HIV/AIDS infection can be prevented during antenatal period and during child birth. Breast feeding should be avoided.

At the present there is no vaccine or cure for treatment of HIV/AIDS infection. The development of drugs that suppress that suppress the HIV infection itself rather than its complication has been important development. This antiviral chemotherapy, while not curves have proved to be useful in prolonging the life of severely ill patients. Post exposure prophylactic (PEP) for HIV refers to antiretroviral drug treatment started within hours following accidental exposure to the virus. Four weeks of treatment after accidental needle stick exposure to HIV among health care workers decreases the chance of their becoming infected. By 79% according to a recent study done by US government. It is important to know and tell others how HIV infection not spread through social contact, so that those who are HIV Positive or not discriminated.

MANAGEMENT OF HIV/ AIDS PATIENTS:

1. Counseling forms a very essential part of care and support for ST/HIV/AIDS Patients.
2. We should respect and accept the patient in whatever situation he or she may be.
3. We should create an atmosphere for sharing
4. We should listen attentively to patients problems and situations
5. Care and Psychological support for the patients should be given by their family and society

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