

Social Perceptions of People Living with HIV/AIDS using Multivariate Analysis for Public Health Planning

Jayarajan.K*

Assistant Professor of Geography, Department of Geography, Govt .College Chittur, Palakkad, Kerala

*Corresponding Author: Jayarajan.K, Assistant Professor of Geography, Department of Geography, Govt .College Chittur, Palakkad, Kerala, India

Abstract: HIV/AIDS-related stigma is “a term that refers to prejudice, discounting, discrediting, and inequity directed at people perceived to have AIDS or HIV, and the individuals, groups, and communities with which they are associated” Such stigmas have been recognized in varying forms throughout the world, ranging from personal attacks to loss of jobs or homes to discriminatory legislation. These stigmas even impact the behaviour of people who have HIV/AIDS themselves and those associated with them. When a virulent pandemic like HIV/AIDS emerges in a society or globally, drastic social action is needed to reduce the impact. Unlike other viruses or diseases, there is no vaccination or cure for HIV/AIDS, so a “simple” clarification of inoculations could not be administered on such a massive scale. When these limitations are recognized, the task of reducing the spread and impact of a pandemic like HIV/AIDS becomes much more challenging. The colossal task then becomes getting millions of people to change their everyday behaviour. This is not easy to do. The present study aims to analyze the spatial distribution of people living with HIV/AIDS and their relationship between social, cultural, psychological and health condition. The multivariate statistical technique of factor analysis is applied to study the multi dimensional inter related variables included in the research study .Based on analysis the Eigen value 6.49 is considered as a yardstick to extract 10 factors and the same are resolved owing to the fact that almost all the variables got loaded with these factors. The 10 factors explain altogether 89.58% of the total variance with each one of its value ranging from 6.49% to 12.31 %. Though the components selected as 10 factors, it is pertinent to note the fact the first 5 primary factors that have more than 8.93 Eigen values alone totally explain 53.84 % of total variance whereas the remaining 5 factors recorded with more than (6.49-7.61). The social ,cultural, psychological and health condition are considered for the present analysis and identified the problematic region in the block level i.e. Pattambi , Sreekrishnapuram and Attapadi block represented very high HIV/AIDS related problems whereas very low HIV/AIDS related problems are represented in the blocks of Chittur, Nenmara-, Thrithala, and Ottapalam- this will be ready to lend a hand for a sustainable planning to the future.

Keywords: Eigen Value, Multivariate Analysis, PLHA, Stigma, Spatial Distribution

1. INTRODUCTION

Kerala has often been singled out as a paradox in having achieved ‘good health at low cost’. The State is reported to have the lowest rural-urban inequalities in public health status. HIV/AIDS-related stigma is “a term that refers to prejudice, discounting, discrediting, and inequity directed at people perceived to have AIDS or HIV, and the individuals, groups, and communities with which they are associated” Such stigmas have been recognized in varying forms throughout the world, ranging from personal attacks to loss of jobs or homes to discriminatory legislation. Geographic variation in population, and population need for health care, provides the foundation for analysis and planning of health services. People are not spread evenly across the earth’s surface, and populations differ along many dimensions including age, gender, culture, and economic status that affect their need for health care, their ability to travel to obtain health care, and the types of services they are willing and able to utilize.

Health is vital for all of us and understanding the determinants of a disease, its spread from person to person and community to community has become increasingly global. There are various factors such as climate, environment, water quality and management, pollution, natural disasters, education, social and many others which are the reasons for the emergence of diseases. The characteristics of these

locations (including socio-demographic and environmental exposure) offer a valuable source for epidemiological research studies on health and the environment. Since health is a geographical phenomenon and various factors attributing to the health diagnostics and planning are geography dependent, as such GIS (Geographic Information System) for health studies serves as an important tool. Some of its applications in public health are: (1) geographical distribution and variation of diseases (2) analysis of spatial and temporal trends (3) identifying gaps in immunizations (4) mapping populations at risk and stratifying risk factors (5) documenting health care needs of a community and assessing resource allocations (6) forecasting epidemics (7) planning and targeting interventions (8) monitoring diseases and interventions over time (9) managing patient care environments, materials, supplies and human resources (10) monitoring the utilization of health centers (11) route health workers, equipments and supplies to service locations (12) publishing health information using maps, etc. Geographic Information System is not the complete solution to understanding the distribution of disease and the problems of public health but is an important way in which to better illuminate how humans interact with their environment to create or deter health. Geographic Information System provides excellent means for visualizing and analyzing epidemiological data, revealing trends, dependencies and inter-relationships. It can acquire, store, manage, and geographically integrate large amounts of information from different sources, programmes and sectors.

1.1. Location of the Study Area

Palakkad district is Situated at the foot of western ghats, this is the gateway of Kerala from north. Palakkad district is placed between 10°20' N to 11°14' N latitude and 76°20' E to 76°54' E longitude figure 1.1. The district shares borders with Malappuram district in the North and Northwest, Thrissur in the South and Southwest and Coimbatore district of Tamil Nadu in the East. Out of the 14 districts of Kerala, Palakkad is one of the five districts which does not have a coastline. Its geographical position, historical background, rural nature, educational status, tourist attractions and above all, the developmental activities are wide and varied. There are thirteen Development blocks and four Municipalities in the district. Ninety one Panchayats are grouped to form the thirteen blocks.

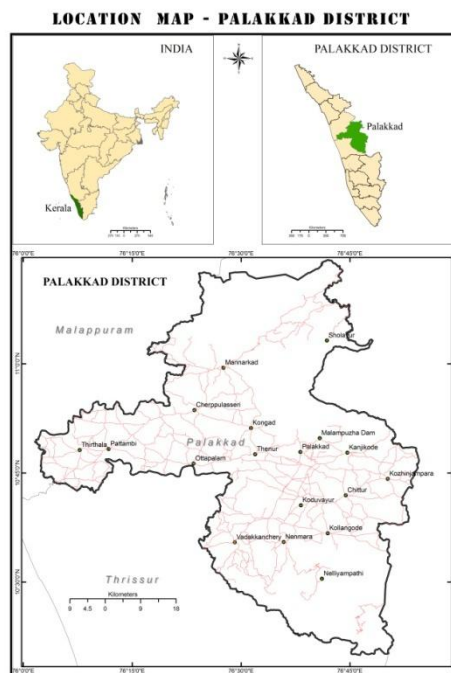


Figure 1.1

1.2. Aim and Objectives

- To make integrate the data with statistical analysis in order to identify major problems of the People living with HIV/AIDS and the Spatial disparity in the distribution to control the spread of HIV /AIDS and suggest suitable planning multivariate GIS based Planning strategy for improving the status of People Living with HIV/AIDS in Palakkad district in Kerala State.

2. METHODS

The present study based on both Primary and Secondary data. Secondary data is collected from Governmental and quasi Govt agencies. The secondary data includes the enrolment of the People Living with HIV/AIDS (casualty sheets) registers of Pratiyasa Centers, registers of NGOs i.e. Council of People Living With HIV/AIDS (CPK+) Published information collected from the Govt organization like National AIDS Control Organization (NACO), Kerala State AIDS Control Organization (KASACS) and various NGO ,ie National AIDS Control Organization (NACO) surveillance report and Kerala State Surveillance report, UNAIDS surveillance report also collected. Council of People Living with HIV/AIDS (CPK+) enrolment is collected from 2004 onwards.

Random sampling method is applied for primary data collection from the Pratyasa centers and Council of people living with HIV/AIDS in Palakkad district. In this intention total reported cases up to 2010-11 year are considered for the present study .In this random sampling 20 percent of the reported cases in Pratyasa Centres in Palakkad districts are well thought-out. Here 180 samples are collected for the investigation by using elaborate questionnaire. To collect the information required for the study a structured interview schedule was prepared. Before structuring the interview schedule discussions were held with a few People living with HIV/AIDS. In the preparation of the interview schedule, Health survey schedules used earlier were consulted.

This questionnaire consist of 45 questions, take account of ten (8) variables. The survey, along with participant observation and interviews with key informants, was carried out during the year 1st march ,2010 to 28th June 2011.During the survey special attention was given to establish good rapport with the AIDS patients by explaining to them the purpose of the study and assured them to protect their personal identity without dissimulation of the data .This step was very important to obtain reliable information because some AIDS patients might tend to provide incorrect information if they felt that the interviewers were not helpful. Simple statistical techniques are used to the data analysis Statistical Packages for Social Science (SPSS 16.0) are used to find out the problems of people living with HIV/AIDS. The multivariate statistical technique of factor analysis is applied to study the multi dimensional inter related variables included in the research study. Computer based cartographic technique is used to show the disparity in the spatial pattern and variation of HIV /AIDS infected people in the fourteen district of Kerala State. Arc GIS 9.3 is used to analyze and prepare maps for future planning to the Govt organizations.

3. RESULTS AND DISCUSSIONS

The present study analyzed the spatial distribution of people living with HIV/AIDS and their relationship between social, cultural, psychological and health condition. On the basis of the discussions there are 62variables selected in the statistical analysis. They are the information collected from the primary survey of the People Living with HIV/AIDS in the major 8 subdivisions consists of 62 variables such as the Personal status and Living environmental conditions, Awareness of HIV/AIDS and Source of infection, Knowledge about Sex, Practice and Behaviour, Usage of preventive tools, Social, Psychological and opportunistic disease related health problems. Availability, accessibility and affordability of health care facilities and Role of NGO and Government towards HIV/AIDS prevention.

The secondary base 10 variables of the health care facility includes service infrastructural indicators such as health care services such as number of health centres, health centre density index, number of doctors, number of beds, availability of beds in hospital as, number of welfare centre, family welfare centre, health centre density, health index literacy rate. The entire interrelated variable in the data matrix of 13 x 72 is used for statistical analysis.

Table1.1. Data set of Primary sample of People Living with HIV/AIDS and Secondary data

1	Male	11	High school level of education
2	Female	12	Higher secondary level of education
3	20-29 Age group	13	Unskilled worker
4	30-39 Age group	14	Truck and Auto drivers
5	Marital status –Single	15	Unemployed
6	Marital status –Married	16	House wife

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7	Hindu	17	Monthly income <2000 rupees
8	Muslim	18	Marital life span 5--10 years
9	Christian	19	Stay with family
10	4 to 6 members in the family	20	PLHA are out of station 7 -14 days
II Awareness of HIV/AIDS and Source of Infection			
21	HIV/AIDS as Treacherous disease	25	HIV/AIDS Transmitted through mother to child
22	HIV/AIDS transmitted through Sexual contact	26	Confirmation of HIV/AIDS 3-6 years
23	HIV/AIDS transmitted through drug abuse	27	personal disagreeable at the time of HIV/AIDS test
24	HIV/AIDS transmitted through unsterilized syringe	28	Reveal test result to the partner
III Knowledge about Sex and Practice			
29	Knowledge about sex from books	33	PLHA have Homosexuality
30	Knowledge about sex from friends	34	PLHA have habit of visit sex workers
31	PLHA have Sex before marriage	35	PLHA have Anal intercourse
32	PLHA Age of first sexual intercourse 15-25 age group	36	PLHA out of station
IV Usage of Preventive Tools			
37	Partner prevents Condom	40	Anal intercourse
38	Insisted condoms by partner	41	Due to unpleasant staff unable to purchase condom
39	yourself insisted condom	42	PLHA getting Condom freely
VI Social and Psychological Health Problems of HIV/AIDS Infected Persons			
43	PLHA bothered about family members getting HIV/AIDS	49	PLHA suffer loss of weight
44	Separated from the family	50	PLHA suffer Fever
45	PLHA Isolated due to HIV/AIDS	51	PLHA suffer Headache
46	PLHA Dejection due to HIV/AIDS	52	PLHA suffer Night sweat
47	PLHA suffer disease daily	53	PLHA suffer Oral thrush
48	PLHA suffer Fatigue	54	PLHA suffer Tuberculosis
IX Availability ,Accessibility and Affordability of Health Care Facilities to the Infected Persons			
55	ART treatment free	57	PLHA ART treatment access is difficult
56	PLHA Treatment receiving from Govt hospital	58	Getting nutritious food
59	PLHA Satisfied the work of NGO	61	PLHA not satisfied the GOVT agencies role to control HIV/AIDS
60	PLHA getting moral help from NGO	62	Medical practitioner visited PLHA home
X Demographic Characteristics (Secondary data base)			
63	Number of Health centres	68	No. of Welfare Centre
64	Health centre density index	69	Family Welfare Centre/000 population
65	No of doctors per 1000 population	70	Health centre density/10sq.km
66	No of Beds	71	Health Index
67	Availability of Beds in Hospitals	72	Literacy rate

3.1. HIV/AIDS Related Variables Relationship and Factor Solution:

The extraction of table 1.2 illustrate the total variance explained by the variables included in the analysis .The distribution of Eigen values and the total percentage and cumulative percentage variance of each one of the factor solution is presented in table1.2, it is pertinent to note that13 factors with6.43 rotated Eigen vector values explains100% of the variance in the data set. The factor loading of each one of all the 72 HIV/AIDS related variables are item wise listed in table1.2 .

The Eigen value 6.49 is considered as a yardstick to extract 10 factors and the same are resolved owing to the fact that almost all the variables got loaded with these factors. The 10 factors explain altogether 89.58% of the total variance with each one of its value ranging from 6.49% to 12.31 % . Though the components selected as 10 factors, it is pertinent to note the fact the first 5 primary factors that have more than 8.93 Eigen values alone totally explain 53.84 % of total variance whereas the remaining 5 factors recorded with more than (6.49-7.61). Eigen values altogether explain only 35.74 % of the total variance. In fact, among the first 3 primary factors the first component alone with its Eigen value 34.52 explain highest amount of total variance that is about 10.82% followed by the rest of 7 factors that explain the total variance of around 6.49 % viz the second component (11.39 %),

third (10.82 %) fourth(10.39%) and fifth 8.93%. These entire 5 variables explain 53.84% of the total variance of the data set.

Table1.2. Total variance explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	15.28	15.43	15.43	15.28	15.43	15.43	12.19	12.31	12.31
2	14.29	14.44	29.87	14.29	14.44	29.87	11.27	11.39	23.70
3	11.84	11.96	41.83	11.84	11.96	41.83	10.71	10.82	34.52
4	10.28	10.38	52.21	10.28	10.38	52.21	10.29	10.39	44.91
5	8.89	8.98	61.19	8.89	8.98	61.19	8.84	8.93	53.84
6	7.45	7.52	68.71	7.45	7.52	68.71	7.53	7.61	61.45
7	7.25	7.32	76.03	7.25	7.32	76.03	7.43	7.51	68.95
8	6.22	6.28	82.31	6.22	6.28	82.31	7.36	7.44	76.39
9	5.50	5.55	87.87	5.50	5.55	87.87	6.63	6.70	83.09
10	4.76	4.80	92.67	4.76	4.80	92.67	6.43	6.49	89.58
11	4.06	4.11	96.78	4.06	4.11	96.78	5.42	5.47	95.05
12	3.19	3.22	100.00	3.19	3.22	100.00	4.90	4.95	100.00

The remaining 5 factors, all of them have more than 4 Eigen values and they altogether explain little less than 35.74 % of total variance. However it is to be further noted that these factors are strongly loaded with the following group of highly related variables that are considered in the analysis.

3.2. Major Factors and their Variable Loadings

The **first** component which explains 12.31 % of the total variance is significantly loaded with 22 variables (see table 1.2).The factor loading positive values of 11 variables lies between (0.93 to 0.45) in both the directions. MLHA Partner prevent condom usage with sexual intercourse (0.93), MLHA got Moral support from NGO (0.76), HIV /AIDS transferred to Mother to Child (0.62), FLHA separated from family (0.59), MLHA Married (0.59), High school level of education (0.59) MLHA suffered fever (0.56) MLHA reveal test to partner (0.56) FLHA got HIV/AIDS through Sexual contact (0.48) MLHA suffered TB (0.45) FLHA age group of 30-39 (0.45)

The 11 variables with negative loadings are added with Partner prevents condom usage (-0.94) MLHA protect HIV themselves-0.93, MLHA receiving nutritious food-0.82, MLHA got HIV through Drug Abuse-0.68, FLHA isolated-0.61, FLHA have anal intercourse-0.55, MLHA have the age group of 30-39(-0.49), FLHA got HIV from Mother to Child transmission-0.48, No of Beds in the hospitals-0.45 MLHA collect the sex knowledge from Friends-0.45 MLHA living as single-0.44

Hence this Ist component is named as **Dimension of Variation of the PLHA and their awareness and Sexual practice, Preventive tools and Psychological Problems.**

The **second** component which accounts for 11.39% of the total variance includes 20 variables with strong loading values between 0.94 and 0.44 in both the directions. Among the 25 variables 16 show positive values of loading such as Health centre density index0.94, Health centre density/10sq.km0.94 No of doctors per 1000 population0.88 Health Index0.80 Number of Health centers0.73 FLHA receiving nutritious food(0.64) 5 to10 (0.60), MLHA suffered headache0.56, Yourself0.53, Mother to Child transmission of HIV/AIDS0.50 ,Literacy rate0.50, MLHA not satisfied the work of Govt0.48, MLHA have sexual intercourse in the period of 15—25(0.46) FLHA have anal intercourse0.46, MLHA satisfied the work of NGO0.42, FLHA taking ART0.41,

The negatively loaded factors are FLHA as Christian-0.71, Male sex before marriage-0.54, FLHA Partner prevents condom usage-0.53, MLHA High school level education-0.48, MLHA have sex in the age group of 15—25(-0.46) MLHA are Unemployed (-0.45) MLHA are Christian community-0.44.In total (5) variables are included under this dimension explained the characteristic of the general Health care facility and accessibility and sexual knowledge and practice. Hence this component is named as **Dimension of Health care facility and Availability of HIV/AIDS treatment**

The **IIIrd** component accounts 10.82% of total variance with positive loading values of 8 variables (0.85-0.43) and 13 variables with negative loadings (-0.69 to-0.44). The variable such as MLHA

belongs to Muslim community 0.85, Access is difficult 0.83, MLHA receiving treatment from Govt hospitals 0.76, MLHA taking ART 0.71, MLHA got HIV/AIDS through Sexual contact 0.6, Friends 0.63, FLHA have anal intercourse 0.56, Involvement 0.46, MLHA know that HIV is a Infectious disease 0.44, Involve 0.44, FLHA receiving nutritious food 0.44, FLHA have first sexual relationship at the age group of (15-25) 0.44, MLHA Partner prevents condom usage 0.43, are loaded with positive direction.

While negatively loaded variable is MLHA belongs to Hindu community -0.69, MLHA visited sex workers home -0.64, FLHA separated from the family -0.63, MLHA separated from family -0.59, HIV/AIDS is a Infectious disease -0.53, MLHA believes the support of NGO -0.53, 1--3 year -0.52, FLHA suffered headache -0.49, MLHA have Higher secondary level of education -0.47, MLHA have Dejection due to HIV -0.45, MLHA infected HIV through Drug Abuse -0.44.

All these 24 factors in variably cluster and explained Availability and accessibility of ART treatment and role of NGO and Govt. Therefore this component is rightly called as **Dimension of Availability and accessibility of ART treatment and role of NGO and Govt.**

In the IVth component exhibit the total variance of 10.39% is contributed by 19 variables. The positive loading 9 variable factors lying between 0.91 and 0.41 in both the directions. Among them, Availability of Beds in Hospitals 0.91, MLHA frustrated due to HIV/AIDS infection 0.73, Involvement 0.71, MLHA have anal inter course 0.68, FLHA infected HIV/AIDS through Sexual contact 0.64, FLHA have High school level of education 0.53, No of Beds 0.48, FLHA taking ART 0.41 MLHA have 4--6 members in the family 0.41.

Of the remaining 10 negative variables are namely people living with HIV/AIDS have Availability of Beds in Hospitals 0.91 MLHA frustrated due to HIV/AIDS infection 0.73 Involvement 0.71, MLHA have anal inter course 0.68, FLHA infected HIV/AIDS through Sexual contact 0.64, FLHA have High school level of education 0.53, No of Beds 0.48, FLHA taking ART 0.41, MLHA have 4--6 family members 0.41. This component is conveniently stated as **Psychological problems of the HIV/AIDS infected people's personal status and awareness about HIV/AIDS.**

The Vth component explains (8.93%) the total variance with 13 variable factors. Of the total number of the 7 positive variable expressed as PLHA presently using MLHA collect sexual knowledge from Books 0.91 MLHA out of station <7,0.84 FLHA suffering fever 0.73, FLHA 20-30 age group 0.67, MLHA have sex before marriage 0.64 MLHA are engaged as Unskilled truck auto drivers 0.63 MLHA engaged first sex work 15--25 age group 0.43.

The negatively loaded 3 variables are MLHA suffered HIV/AIDS in 1--3 year -0.90 MLHA not interest in life -0.73, MLHA bothered about family -0.62, FLHA 30-39 age group -0.56, MLHA reveal test to partner -0.43, MLHA believes HIV/AIDS is Infectious disease -0.41. As this component explain the multidimensional determinant factors of People Living with HIV/AIDS and the sexual knowledge here this dimension is named as **Dimension of Variation of sexual knowledge and practice among the PLHA.**

The VIth component account for only 7.61 % of the total variance and loaded with 11 variables in the dimension of sexually transmitted disease and rural population. The dimension of FLHA believes Access is difficult to treatment 0.81, Family Welfare Centre/000 population 0.77, FLHA suffered HIV/AIDS 0.68, FLHA got Moral support 0.68, No. of Welfare Centre 0.62, FLHA Sexual contact 0.50, MLHA have 4--6 family members 0.45 are positively loaded. While the negative variable considered as FLHA lived 2--4 years -0.80, FLHA <2000 rupees -0.67, MLHA Partner prevents condom use -0.60, FLHA transferred HIV through Mother to Child -0.50. All the positive loading variables cluster around accessibility of treatment than the negatively loaded variables. Hence this component explains **the Dimension of treatment difficulty and the role of Govt welfare centres and NGO in the prevention activities.**

The VIIth component explains (7.51%) of total variance together with 11 variables ranging from (0.43 to 0.91) The variable such as FLHA got sex knowledge from friends 0.91, MLHA bothered about family 0.56, MLHA in the age group (30-39) 0.54, No of Beds 0.52, FLHA believes the HIV/AIDS are Infectious 0.52, FLHA in the age group 30-39 (0.49). Whereas the negative factors FLHA got sex knowledge from Books -0.91, MLHA in the age group of (20-30) -0.77, Use of unsterilized syringe -0.46, Family Welfare Centre/000 population -0.45, FLHA in the age group of 20-30 -0.43. These factors simply associated with the living condition of PLHA, botheration about family

and the comprehensive knowledge about HIV/AIDS so that it is aptly called as the Dimension of **sexual knowledge and personal status of PLHA**.

The VIIIth components explains (7.44%) of the total variance with loading of 0.44 to 0.90 in both direction. This positively loaded variables are the FLHA belongs to Muslim community 0.90, FLHA isolated from the society 0.58, MLHA believes HIV is a Infectious 0.45, MLHA suffered TB 0.45, FLHA Moral 0.45, MLHA Sexual contact 0.42, MLHA got sex knowledge from Friends 0.42. The negatively loaded factors are business FLHA Hindu community -0.92, FLHA bothered family -0.74, MLHA have first sex in the age group of 15--25 -0.62, MLHA High school level education -0.51, FLHA Frustrated due to HIV/AIDS -0.44. These 11 factors strongly associated with the HIV/AIDS infected population, their level of literacy, awareness, disease so that it is aptly named as the **FLHA isolation from the society and the role of NGO**.

The IXth component explains (6.70%) of the variations in the data matrix with a 11 factor loading in both direction (0.41 to 0.80). The positive variables such as FLHA Frustrated due to the HIV infection 0.80, MLHA isolated from society 0.71, MLHA under ART 0.67, MLHA are Unemployed 0.58, MLHA engaged as Unskilled truck auto drivers 0.54, MLHA Higher secondary level of education 0.50, MLHA Married 0.49, FLHA suffered TB 0.42, No. of Welfare Centre 0.41. The remaining 3 negatively loaded factors are FLHA Not interest in life -0.78, FLHA 1--3 year -0.55, FLHA reveal the test result to the partner -0.41. On the basis of cluster and association it is treated as the **Dimension of MLHA isolated from the society and treatment seeking behaviour**.

The Xth component explains (6.49%) of the variations in the data matrix with an 11 factor loading in both direction (0.41 to 0.89). The positive variables such as FLHA Married 0.89, FLHA reveal test result to partner 0.65, MLHA Christian community, 0.56, FLHA getting nutritious food 0.44; FLHA believed HIV/AIDS is an Infectious disease 0.42. The remaining 6 negatively loaded factors are FLHA lived as Single -0.89, FLHA out of station <7 days -0.57, MLHA suffered fever -0.49, MLHA belongs to Hindu community -0.48, MLHA have 4—6 family members -0.48, MLHA getting nutritious food -0.41. On the basis of the cluster and association it is treated as the **Dimension of the religious background**, marital status and diagnosis of HIV/AIDS test result to the partner.

The input data of 72 variables both primary and secondary information of People Living with HIV/AIDS in Palakkad district is summarised into ten factors. The factor loading explains with ten dimensions of the People living with HIV/AIDS in Palakkad and their associated problems. But in the spatial context it shows variation in the magnitude of the problem. Hence the best related well explained shows the 10 dimensions.

3.3. PLHA an Integrated Approach for the Public Health Planning

The component scores derived for each observation areal unit of the Palakkad districts in the Kerala State shows the spatial variation in the respective factor score. The positive and negative scores pertaining to each component shows the problems related to **People Living with HIV/AIDS** in the blocks of Palakkad district. In the present analysis all the components are selected based on the dimension related to People Living with HIV/AIDS in Palakkad district.

Table 1.3. Palakkad: Block wise distribution of the Composite Index values

Blocks	Factor I	Factor II	Factor III	Factor IV	Factor V	Factor VI	Factor VII	Factor VIII	Factor IX	Factor X	Composite index
Alathur	-1.96	0.19	2.26	0.29	0.51	-0.50	-0.18	0.60	0.20	-0.33	1.08
Attapadi	0.60	-1.38	0.05	2.11	0.06	1.51	-0.53	-0.21	0.07	0.41	2.69
Chittur	0.05	0.32	-0.40	1.58	-0.35	-2.01	0.85	-0.59	-1.64	-0.28	-2.48
Kollamgode	0.07	1.27	-0.17	-0.36	1.45	0.26	-2.25	-0.56	-0.82	0.41	-0.71
Kuzhalmannam	0.22	-0.70	-0.04	0.20	0.06	0.36	-0.21	-0.89	0.10	-0.28	-1.19
Malampuzha	0.87	-1.24	1.31	-1.22	0.51	0.59	1.08	0.33	-0.92	-0.49	0.83
Mannarkkad	-1.72	0.03	-1.16	-0.48	-0.29	0.93	1.03	0.40	-0.63	1.98	0.08
Nenmara	-0.08	-1.66	-1.18	-0.55	0.09	-1.54	-1.10	1.55	0.78	-0.08	-3.09
Ottapalam	0.64	0.04	-0.33	-1.57	-0.50	-0.06	-0.01	-0.78	-1.04	-0.38	-3.99
Palakkad	0.69	0.37	1.06	-0.36	-1.85	-0.63	-0.36	-0.92	1.36	1.44	0.81
Pattambi	0.86	0.84	-0.41	0.10	2.00	-0.39	1.50	-0.16	1.63	0.36	6.33
Sreekrishnapuram	0.96	1.63	-0.07	0.41	-1.02	0.77	0.03	2.24	-0.16	-0.64	4.15
Thrithala	-1.20	0.28	-0.92	-0.15	-0.66	0.71	0.16	-1.01	1.06	-2.11	-3.85

Source: Compiled by researcher

3.3.1. Factor I Dimension of Variation of the PLHA and their awareness and Sexual practice, Preventive tools and Psychological Problems

Table 1.3 and shows High factor score represented in Sreekrishnapuram 0.96 , Malampuzha 0.87 Pattambi 0.86 , Palakkad 0.69 , Ottapalam 0.64 , Attapadi 0.60 , Kuzhalmannam 0.22 , Kollamgode 0.07 , Chittur 0.05 next with medium positive factor score (Zero to +1) in this dimension. Low negative score identified from Nenmara blocks -0.08 ranks third order with low negative score (less than 1). The blocks of Thrithala -1.20, Mannarkkad -1.72, Alathur -1.96 register high negative factor score.

3.3.2. Factor II Dimension of Health care facility and Availability of HIV/AIDS treatment

The table 1.3 and demonstrates the Dimension of Health care facility and Availability of HIV/AIDS treatment highlight Sreekrishnapuram 1.63 Kollamgode 1.27 in Palakkad district have very high positive score value .Table 1.3 and figure 1.2. In seven blocks has low positive score (0 to +1) i.e. Pattambi 0.84 Palakkad 0.37 Chittur 0.32, Thrithala 0.28, Alathur 0.19, Ottapalam 0.04 and Mannarkkad 0.03. Low negative score observed (0- -1) only in Kuzhalmannam block -0.70 .While high negative (>-1) factor score represented in Malampuzha -1.24, Attapadi -1.38 and Nenmara -1.66.

3.3.3. Factor III Dimension of Availability and accessibility of ART treatment and role of NGO and Govt.

Dimension of Availability and accessibility of ART treatment and role of NGO and Govt draw attention to Alathur 2.26, Malampuzha 1.31 and Palakkad 1.06 blocks in Palakkad district have very high positive score value. Table 1.3 and figure 1.2. low positive (0 to +1) score represented only in Attapadi block 0.05. Low negative score observed only in seven blocks (0- -1) Kuzhalmannam -0.04, Sreekrishnapuram -0.07, Kollamgode -0.17 Ottapalam -0.33 ,Chittur -0.40 ,Pattambi -0.41 ,Thrithala -0.92 .While high negative (>-1) score represented in two blocks Mannarkkad -1.16 and Nenmara -1.18.

3.3.4. Factor IV Dimension of Psychological problems of the PLHA, personal status and awareness about HIV/AIDS

Dimension of Psychological problems of the PLHA, personal status and awareness about HIV/AIDS bring to light Attapadi 2.11 and Chittur 1.58 blocks in Palakkad have very high positive score value .Table 1.3 and figure 1.2. In four blocks has low positive (0 to +1) i.e. Sreekrishnapuram 0.41, Alathur 0.29, Kuzhalmannam 0.20 and Pattambi 0.10. Low negative score observed in (0- -1) represented in Thrithala -0.15, Palakkad -0.36, Kollamgode -0.36, Mannarkkad -0.48 and Nenmara -0.55. While high negative (>-1) score represented in Malampuzha -1.22 and Ottapalam -1.57.

3.3.5. Factor V Dimension of Variation of sexual knowledge and practice among the PLHA.

Dimension of Variation of sexual knowledge and practice among the PLHA highlight Pattambi 2.00 and Kollamgode 1.45 blocks in Palakkad district having very high positive score value .Table 1.3 and figure 1.2 In five blocks has low positive (0 to +1) i.e. Malampuzha 0.51, Alathur 0.51, Nenmara 0.09, Attapadi 0.06 and Kuzhalmannam 0.06 . Low negative score observed in (0- -1) in the blocks of Mannarkkad -0.29 and Chittur -0.35 Ottapalam -0.50 and Thrithala -0.66. While high negative (>-1) represented in Sreekrishnapuram -1.02 and Palakkad -1.85.

3.3.6. Factor VI Dimension of treatment difficulty and the role of Govt welfare centers and NGO in the prevention activities.

Dimension of treatment difficulty and the role of Govt welfare centres and NGO in the prevention activities highlight Attapadi blocks 1.51 in Palakkad having very high positive score value .Table 1.3 In six blocks has low positive (0 to +1) i.e. Mannarkkad 0.93 ,Sreekrishnapuram 0.77, Thrithala 0.71, Malampuzha 0.59 ,Kuzhalmannam 0.36 ,Kollamgode 0.26. Low negative score observed in (0- -1) Ottapalam -0.06, Pattambi -0.39, Alathur -0.50 and Palakkad -0.63. While high negative score represented (>-1) in Nenmara -1.54 and Chittur -2.01 .

3.3.7. VII Dimension of sexual knowledge and personal status of PLHA.

The table 1.3 lay emphasis on the Dimension of sexual knowledge and personal status of PLHA. Pattambi 1.50, Malampuzha 1.08 and Mannarkkad 1.03 in Palakkad having very high positive score

value. In three district has low positive (0 to +1) i.e. Chittur0.85, Thrithala0.16 and Sreekrishnapuram 0.03. Low negative score observed in five blocks i.e. (0- -1) Ottapalam-0.01, Alathur-0.18, Kuzhalmannam-0.21 ,Palakkad-0.36, Attapadi-0.53.While high negative (>-1) score represented in Nenmara-1.10 and Kollamgode-2.25.

3.3.8. VIII Dimension FLHA isolation from the society and the role of NGO.

It is seen from the table 1.3 Dimension of FLHA isolation from the society and the role of NGO lay emphasis on Sreekrishnapuram2.24 and Nenmara1.55 in Palakkad district having very high positive score value .Table 1.3 and figure 1.2. In three district has low positive (0 to +1) i.e. Alathur0.60, Mannarkkad0.40 and Malampuzha0.33. Low negative score observed in seven blocks (0- -1) Pattambi-0.16, Attapadi-0.21, Kollamgode-0.56, Chittur-0.59, Ottapalam-0.78, Kuzhalmannam-0.89 and Palakkad-0.92. While high negative score (>-1) represented in Thrithala-1.01.

3.3.9. IX Dimension of MLHA isolated from the society and treatment seeking behaviour

It is make obvious from the table 1.3 the Dimension of MLHA isolated from the society and treatment seeking behaviour very high positive score value in the blocks of Pattambi1.63, Palakkad1.36 and Thrithala1.06 in Palakkad district. In four district has low positive (0 to +1) i.e. Nenmara0.78, Alathur0.20 Kuzhalmannam0.10 and Attapadi0.07. Low negative score observed in (0- -1) Sreekrishnapuram-0.16, Mannarkkad-0.63, Kollamgode-0.82 and Malampuzha-0.92.While high negative (>-1) score represented in Ottapalam-1.04 and Chittur-1.64.

3.3.10. Factor X Dimension of the religious background, marital status and diagnosis of HIV/AIDS test result to the partner.

Table 1.3 shed light on the Dimension of the religious background, marital status and diagnosis of HIV/AIDS test result to the partner .Mannarkkad1.98 and Palakkad1.44. having very high positive score value. In three blocks has low positive (0 to +1) i.e. Kollamgode0.41, Attapadi0.41 and Pattambi0.36 .Low negative score observed in (0- -1). Nenmara-0.08, Chittur-0.28, Kuzhalmannam-0.28, Alathur-0.33, Ottapalam-0.38 Malampuzha-0.49 and Sreekrishnapuram-0.64. While high negative score (>-1) represented in Thrithala-2.11.

3.4. A GIS Approach to Public Health Planning for the People Living with HIV/AIDS

The spatial variation people living with HIV/AIDS and health care facility is in complex nature to the pattern of multidimensional character and identify the specific strategy for planning health services. Hence a composite multi score is computed and GIS Maps is being used to explore the problem area identification. Blocks with Very High HIV/AIDS related problems composite index value (+>2) registered in Pattambi 6.33, Sreekrishnapuram 4.15 and Attapadi block 2.69 score value. High HIV /AIDS related problems 4 blocks in Palakkad district be a sign of medium index+2 to 0 of HIV/AIDS related problems ie Alathur1.08, Malampuzha0.83, Palakkad0.81 and Mannarkkad 0.08.

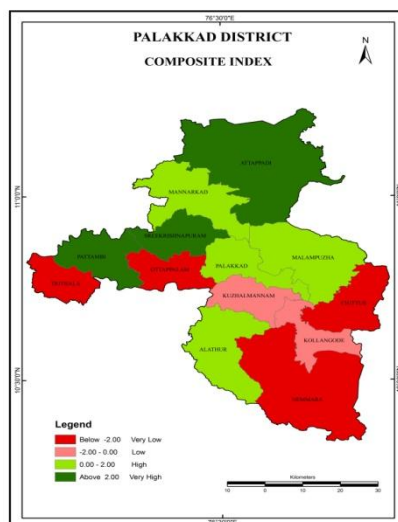


Figure 1.2

Blocks with low HIV/AIDS related problems Only 2 blocks in Palakkad districts stand for low index value **0 to - 2** i.e. Kollamgode-0.71 and Kuzhalmannam-1.19. **Blocks with very low HIV/AIDS related problems** only 4 blocks in Palakkad district with very low index value **-2 to - 4**. It is represented in the blocks of Chittur-2.48, Nenmara-3.09, Thrithala-3.85 and Ottapalam-3.99.

4. CONCLUSION

The availability of micro level health data related to the people living with HIV/AIDS, the expansion of software solutions, advancement in computer capabilities, and a growing interest in health disparities have promoted the rising profile of health mapping. Spatial distribution people living with HIV/AIDS and their relationship between social, cultural, psychological and health condition are considered for the present analysis and identified the problematic region in the block level i.e. Pattambi, Sreekrishnapuram and Attapadi block moderate of HIV/AIDS related problems identified from Alathur, Malampuzha, Palakkad and Mannarkkad. blocks with low HIV/AIDS related problems i.e. Kollamgode and Kuzhalmannam. blocks with very low HIV/AIDS related problems are represented in the blocks of Chittur, Nenmara-, Thrithala, and Ottapalam- this will be ready to lend a hand for a sustainable planning to the future.

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