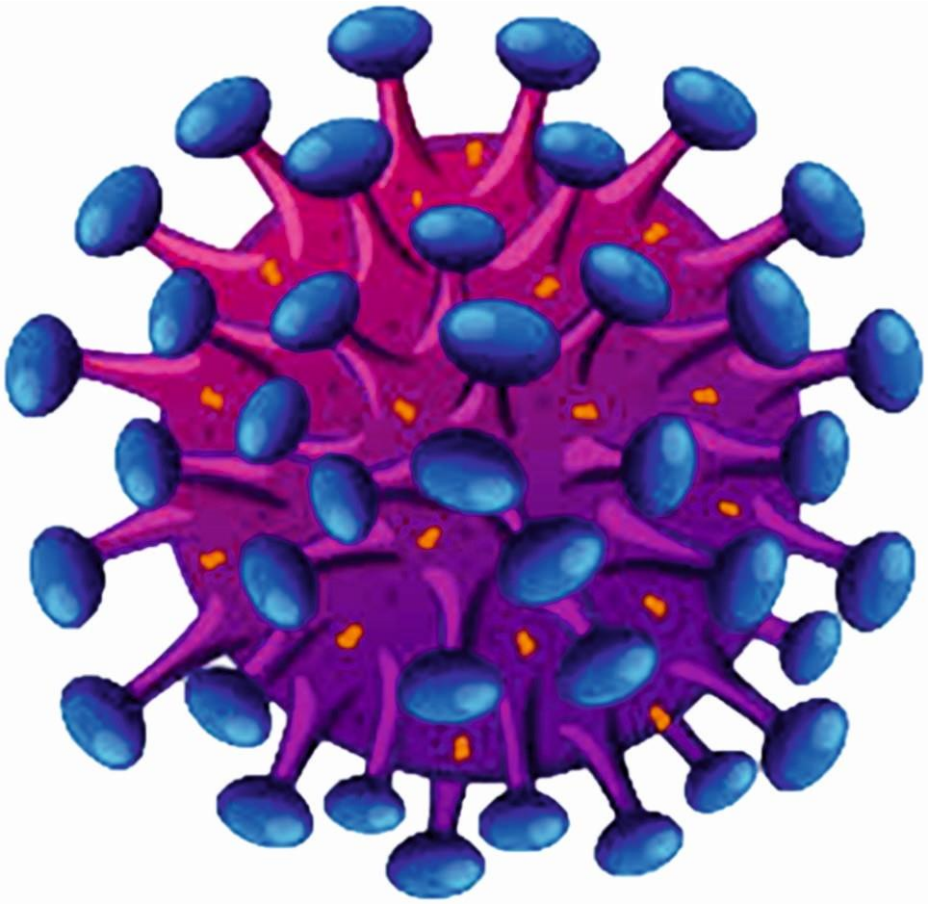
HIV SENTINEL SURVEILLANCE (ANC)

Kerala State Report



2018-19

KSACS

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HIV

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Kerala State Report

2018-19

ICMR-NATIONAL INSTITUTE OF EPIDEMIOLOGY
Chennai

NATIONAL AIDS CONTROL ORGANISATION
New Delhi

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Foreword

HIV Sentinel surveillance among ANC attendees is one of the most important national level activities, as it helps the programme managers in framing health policies towards controlling HIV infection in the state and the country as well. The objectives of HIV sentinel surveillance are to understand the trends, assess spread and distribution of HIV infection among geographical areas across the state. In order to have uniform geographical coverage, the number of sentinel sites in the state has been increased over a period of years by keeping at least one site in each district.

The National Institute of Epidemiology, Chennai, one of the Regional Institutes for 8 southern states, is involved in the HIV surveillance activities since 2006. This report is prepared based on the data collected during the 16th round of surveillance, in conjunction with the past years data to analyze the trend and to have an insight of epidemiological factors. I hope this report will serve as a very useful tool for the policy makers, scholars, researchers and other stakeholders in formulating guidelines in controlling HIV and enhancing their knowledge of HIV in their state.

I take this opportunity to thank Dr. Shobini Rajan, Assistant Director General, NACO and Dr. Pradeep Kumar, Consultant (surveillance) & his team for entrusting this activity to NIE and also for providing technical support in implementing the surveillance. I also wish to thank the Project Director and nodal officer of State AIDS Control Society for their help in completing the surveillance activities in a timely manner. I express my gratitude to all the State Referral Laboratories, National Referral Laboratories, State Surveillance Team members, Sentinel sites personnel and other National and International partners who helped us in completing the surveillance successfully.

Dr. Manoj V Murhekar

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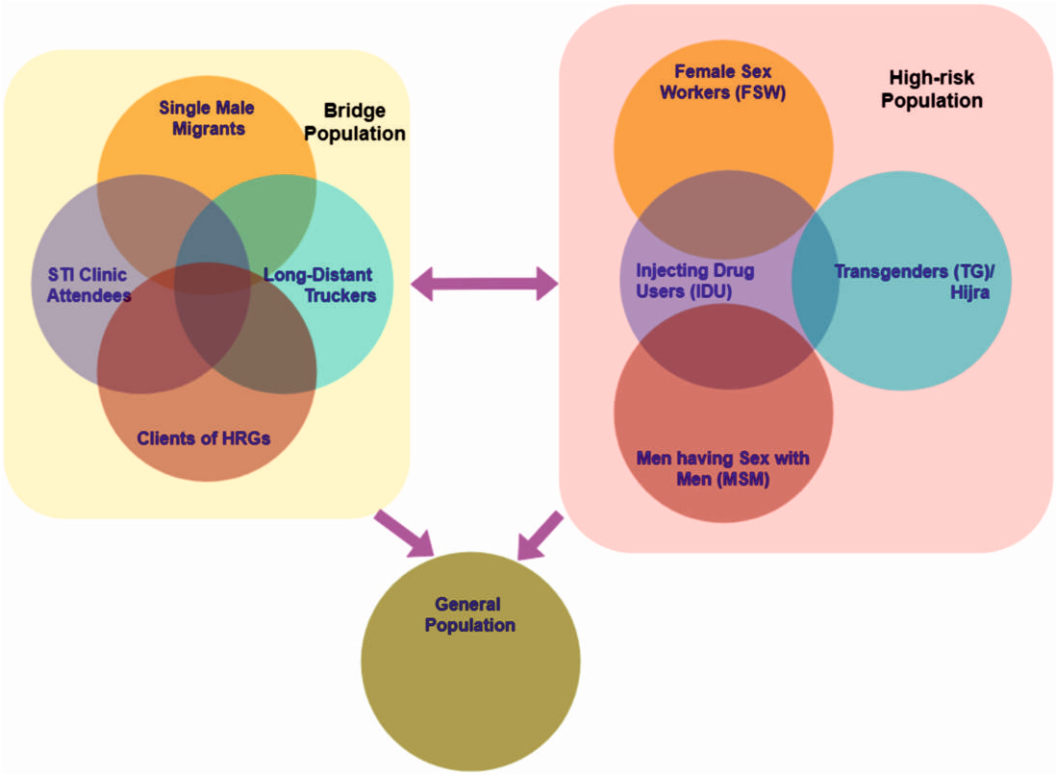
CHAPTER 1.

INTRODUCTION: HIV AND HSS

Acquired immune deficiency syndrome or acquired immunodeficiency syndrome (AIDS), caused by the human immunodeficiency virus (HIV), progressively reduces the effectiveness of the immune system, leaving the infected susceptible to opportunistic infections. HIV was first reported in USA in 1981, following which the infection spread globally. Three decades since its inception, the epidemic still continues to be a global public health threat and interventions at various levels are ongoing for HIV management. Unprotected sex, sharing used needles or syringes and transfusion of untested blood increases the risks of HIV infection.

The first HIV case in India was reported in 1986 in Chennai, followed by a rapid spread across the nation within a decade. Based on their risk of disease transmission and HIV prevalence levels, the population in India is divided into 3 categories high-risk groups with - high prevalence, bridge populations with moderate prevalence and general population low prevalence.

Figure 1: HIV Transmission Dynamics among HIV Sub-population groups

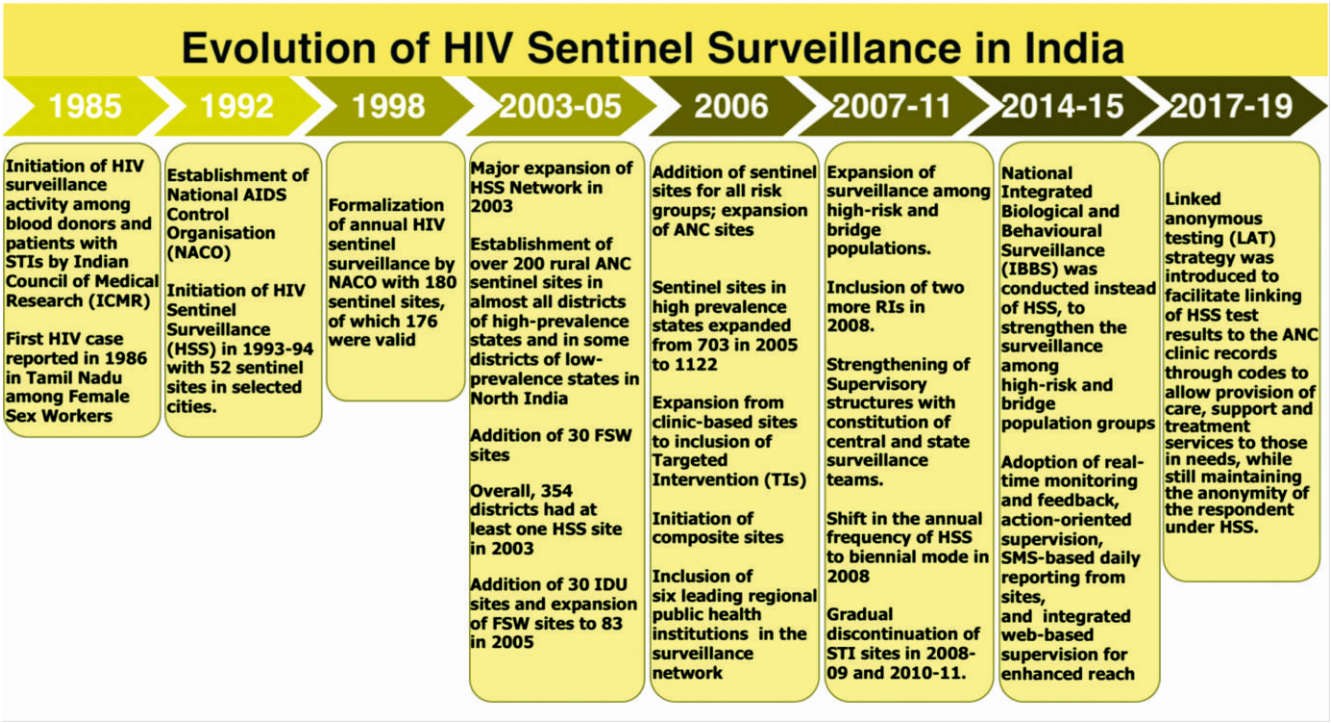


HIV in India is highly concentrated among the high-risk population groups. Unprotected sex with female sex workers (FSW), injecting drug users (IDU), and unprotected anal sex between men are the three primary routes of HIV transmission in India. The bridge population, generally the clients or partners of high-risk population, transmit the disease to the general population. Hence measures to reduce the HIV prevalence levels in high-risk population has been observed as an effective method to reduce the transmission risks.

1.1 HIV Sentinel Surveillance (HSS)

HIV sentinel surveillance is defined as a system of monitoring the HIV epidemic among the specified population groups by collecting information on HIV from designated sites (sentinel sites) over years, through a uniform and consistent methodology that allows comparison of findings across place and time, to guide programme response. A sentinel site is a designated service point/facility where blood specimens and relevant information are collected from a fixed number of eligible individuals from a specified population group over a fixed period of time, periodically, for the purpose of monitoring the HIV epidemic.

Figure 2: Evolution of HIV sentinel surveillance in India



The HIV sentinel surveillance (HSS) in India was initiated in 1985 among the blood donors and patients with STIs by the Indian Council of Medical Research (ICMR). It is one of the largest HSS systems in the world which helps to understand the dynamics of the HIV epidemic and monitor the trends among different population groups and geographical areas. It provides inputs to the programme for strengthening prevention and control activities. The sentinel sites have been scaled up in a phased manner from 176 in 1998 (including 92 ANC sites) to 1359 in 2010-11 (including 696 ANC sites). HSS 2019 was implemented at 776 ANC sites. In continuation, the 16th round of HIV Sentinel Surveillance (HSS) among antenatal care (ANC) clinic attendees was implemented during year 2019 at 833 sites across 35 States/UTs and 642 districts (out of total of 727 districts). This is highest in various rounds of HSS under NACP till now.

Figure 3: Objectives and Application of HIV Sentinel Surveillance

CHAPTER 2

HSS - METHODOLOGY AND IMPLEMENTATION

2.1 Implementation Structure of HIV Sentinel Surveillance in India

HIV sentinel surveillance has a robust structure for planning, implementation, and review. It follows a four-tier supervisory structure at national, regional, state, and district levels.

National level Organizations and Institutes act as Nodal Agencies while the 8 regional institutes provide technical support to the State AIDS Control Societies (SACS) for all HSS activities. SACS is primarily responsible for implementation of HSS in their respective states with the support of functional district AIDS Prevention and Control Units (DAPCUs), for coordination of HSS activities at the sentinel sites and the associated testing labs. The entire HSS structure is involved the assessment of HSS implementation plans and review of the outcomes of each round.

Figure 4: Implementation Structure of HSS

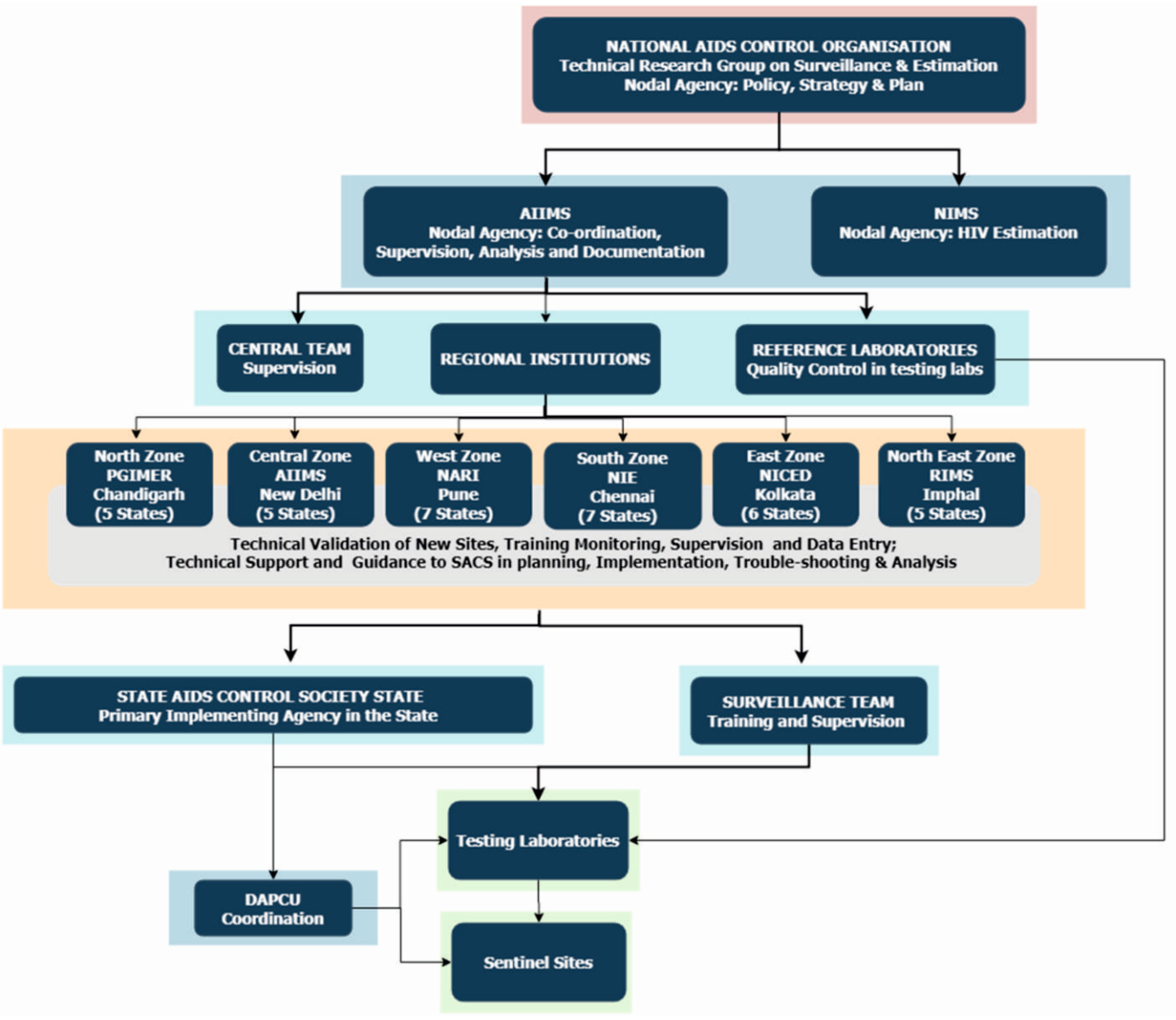


Table 1: Regional Institutes and their States Covered

Name of regional institution	Responsible states
Central: All India Institute of Medical Science, New Delhi	Uttar Pradesh, Bihar, Jharkhand, Uttaranchal, and Delhi.
North: PostgraduateInstitute of Medical Education and Research, Chandigarh	Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, and Chandigarh.
West: National AIDS Research Institute, Pune	Maharashtra, Gujarat, Goa, Madhya Pradesh, Rajasthan, Daman & Diu, and Dadra Nagar Haveli.
South: National Institute of Epidemiology, Chennai	Andhra Pradesh, Tamil Nadu, Karnataka, Kerala, Odisha, Puducherry, and Lakshadweep and Telangana.
East: National Institute of Cholera and Enteric Diseases, Kolkata	West Bengal, Chhattisgarh, Sikkim, Andaman & Nicobar Islands, Meghalaya, and Nagaland.
Northeast: Regional Institute of Medical Sciences, Imphal	Manipur, Mizoram, Tripura, Assam, and Arunachal Pradesh.

2.2 Initiatives during HSS 2018-19:

In response to key issues identified in the implementation of HSS during the previous rounds as well as to improve the quality and promptness of the surveillance, several new initiatives were implemented in the 16th round, as part of continuous quality improvement.

SACS checklist for preparatory activities:

- Developed to monitor the planning process for HSS in each state (Annex 3).
- All preparatory activities were broken into specific tasks with clear timelines and all SACS were required to submit the completion status for each task.
- A team of officers from NACO coordinated with state nodal persons to ensure that preparatory activities in all states adhered to the timelines.

Pre-surveillance sentinel site evaluation (SSE):

- A pre-surveillance evaluation of ANC and STD sentinel sites was conducted to identify and correct human resources and infrastructure-related issues at the sentinel sites before initiation of surveillance.
- The evaluation also provided site information such as type of facility, average OPD attendance, availability of HIV and AIDS services, and distance of facilities from HSS labs (Annex 4), which may have implications on adherence to methodology.

Standard operational manuals, wall charts, and bilingual data forms:

- Developed to simplify the HSS methodology for site-level personnel and to ensure uniform implementation of the guidelines in all the sentinel sites.
- These were printed centrally and distributed across the country.

Training during HSS 2018-19:

Steps to improve quality of training:

1. A well-structured training programme was adopted to ensure that all the personnel involved in HSS at different levels were adequately and uniformly trained in the respective areas of responsibility.

2. The training agenda, curriculum, and planning and reporting formats were standardized and used in all the states. Standard slide sets and training manuals for training of sentinel site personnel were developed centrally to ensure uniformity.

3. Trainings included group work and a "know your sentinel site" exercise, which helped participants to identify the routine practices that could affect the implementation of surveillance at their sites and recommended actions to address the same.

4. Pre and post-test assessments were given to each participant at the site-level trainings. Analysis of these scores helped state teams to identify the priority sites for supervisory visits.

5. Training reports for each batch were submitted in standard formats at the end of each training.

Details of trainings:

1. Trainings started with two batches of national pre-surveillance meetings with about 90 personnel from regional institutes and SACS to discuss the critical aspects of planning for HSS 2018-19 and to clearly understand the system for supportive supervision through the online Strategic Information Management System (SIMS) application.

2. This was followed by 2-day regional TOTs organised by the RIs for SACS officers and state surveillance teams, comprised of public health experts and microbiologists, to create state-level master trainers and to plan for the site-level trainings.

3. Site-level trainings (2 days per batch @ 8-10 sites per batch) were conducted in all the states. Representatives from the regional institutes and NACO observed the trainings to ensure that trainings were provided as per the protocol and that all the sessions were covered as per the session plan.

4. Separate trainings on surveillance testing protocols and lab reporting mechanisms through the SIMS application for HSS were organised for microbiologists and lab technicians from 117 ANC/STD testing labs and 13 NRLs.

5. Overall, 40 central team members; 30 officers from six RIs; 95 SACS officers including in-charge surveillance, Epidemiologists, and M&E officers; 280 state surveillance team members; 260 laboratory personnel including microbiologists and lab technicians from the designated testing labs; and more than 3,000 sentinel site personnel including medical officers, nurse/counsellors, and lab technicians were trained under HSS 2018-19.

Laboratory system:

- The laboratory system was strengthened by limiting the sample testing to designated SRLs.
- introduction of web based reporting through the SIMS application ensured real-time monitoring of the quality of blood specimens and laboratory processes
- Quality assurance aspects of sample testing under HSS were standardized
- Responses in case of discordant test results between testing lab and reference lab were streamlined through the SIMS application.

Supervisory mechanisms for HSS 2018-19:

- Supervision of all HSS activities was prioritized to ensure smooth implementation and high-quality data collection.
- Extensive mechanisms were developed to set up a comprehensive supervisory system for HSS and to ensure that 100 % of HSS sites were visited in the first 15 days of the start of sample collection.
- The principles adopted included action-oriented supervision, real-time monitoring and feedback, accountability for providing feedback and taking action, and an integrated web-based system to enhance the reach and effectiveness of supervision.

SIMS modules for web-based supervision:

- Specific modules were developed and made operational in the web-based SIMS for HSS to facilitate real-time monitoring of HSS 2018-19.
- Field supervision was conducted by trained supervisors who visited the sentinel sites to monitor the quality of recruitment of respondents and other site-level procedures. Real-time reporting of field supervision used the SIMS supervisor module via the field supervisory quick feedback and action taken report sub-modules. The module was used extensively by all the supervisors and helped in quick identification and resolution of challenges in the field.
- Data were supervised by data managers at RIs to monitor the quality of data collection and transportation using the SIMS module.
- Laboratory supervision was conducted by SRLs and NRLs to monitor the quality of blood specimens, progress in laboratory processing, and external quality assurance, using the SIMS lab module.
- Overall, 80 % of supervisors reported on the SIMS field supervisor quick feedback format, and 52 % of action taken report formats were submitted by HSS focal persons from SACS and RIs. Laboratory reporting through the lab module was completed by 87% of SRLs.

Integrated monitoring and supervision plan:

- An integrated supervision plan for each state was developed by RIs, SACS, and AIIMS to avoid duplication in monitoring coverage, thereby facilitating maximum coverage of surveillance sites.
- The first round of visits was conducted by RI, SACS, and SST members.
- Central team members (CTM) visited the top priority sites identified in feedback from the first round of visits.
- Subsequent visits were based on priority with a goal of making at least three visits to each identified site which require supervision.

2.3 Methodology of HSS at ANC Sentinel Sites:

The methodology for the 2019 round of HSS at ANC clinic attendees remained as same as the earlier round. The complete methodology may be found in the HIV Sentinel Surveillance Operational Guidelines available on the website of the National AIDS Control Organisation (NACO).

Figure 5: HSS Methodology

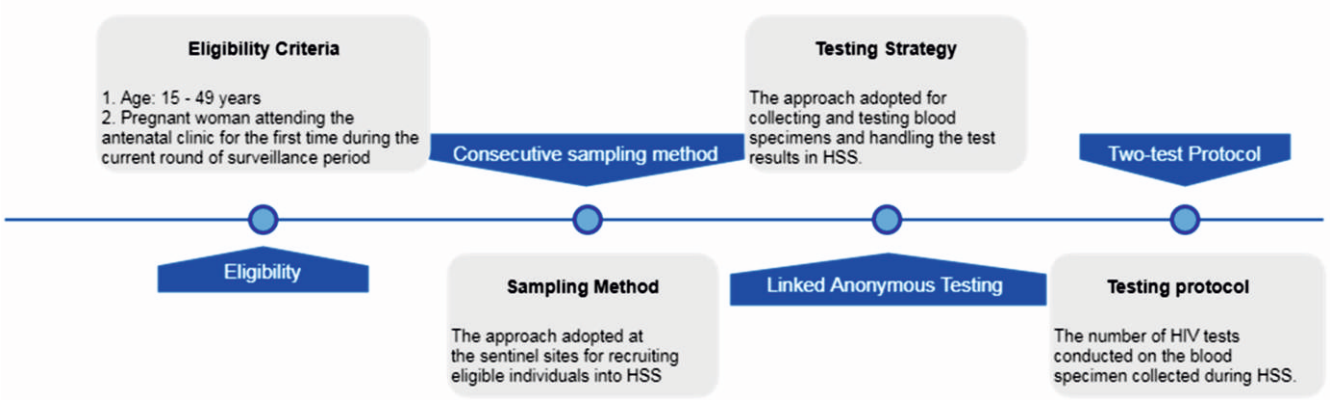


Table 2: Summary of HSS Methodology at ANC Sentinel Sites

Sentinel site	Antenatal clinic
Sample size	400
Duration	3 months
Frequency	Once in 2 years (biennial)
Sampling method	Consecutive sampling
Eligibility	Pregnant women ages 15-49 years attending ANC clinic for the first time during the current round
Testing strategy	Linked anonymous testing
Blood specimen	Serum collected through venous blood specimen
Testing protocol	Two-test

Key elements of the HSS methodology:

- In HSS among pregnant women, recruitment of respondents is conducted biennially for three months between January to March at selected ANC sentinel sites, across the nation.
- Because of the low HIV prevalence in India, the classical survey method of sample size calculation gives a large sample size. Owing to the practical difficulty in data and sample collection from such a large sample size through facility-based surveillance on regular basis, a sample size of 400 for surveillance among ANC attendees has been fixed.
- All eligible respondents are enrolled until the sample size of 400 in each sentinel site is reached or until the end of the surveillance period, whichever is earlier.
- Eligibility: All pregnant women eligible under the above inclusion criteria are included in the survey irrespective of the date of antenatal registration, known HIV positivity status, testing status under PPTCT programme or participation in the previous rounds of HSS.
- Inclusion Criteria: i. Age 15-49 years; ii. Pregnant woman attending the antenatal clinic for the first time during the current round of surveillance period
- Exclusion Criteria: i. Pregnant women not in the age group of 15-49 years; ii. Pregnant woman attending the antenatal clinic for the second or more time during the current round of surveillance period
- Sampling method, testing strategy and test protocol are standard components of any surveillance. Consecutive sampling method, linked anonymous testing strategy and two-test protocol are followed in HSS among pregnant women.

2.4 Information Collected under HSS at ANC Sentinel Sites

Information on 15 variables pertaining to the respondents' socio-demographic characteristics, HIV testing and management was collected. The data collected during the surveillance is robust and gives an insight on the socio-demographics and vulnerabilities of the respondents. The data helps the program managers and policy makers to identify of specific characteristics associated with higher risk of acquiring HIV infection. Thus the data has guided the HIV intervention program in responding to the epidemic effectively.

Figure 6: Recruitment process of ANC attendees at ANC Sentinel Sites for HSS

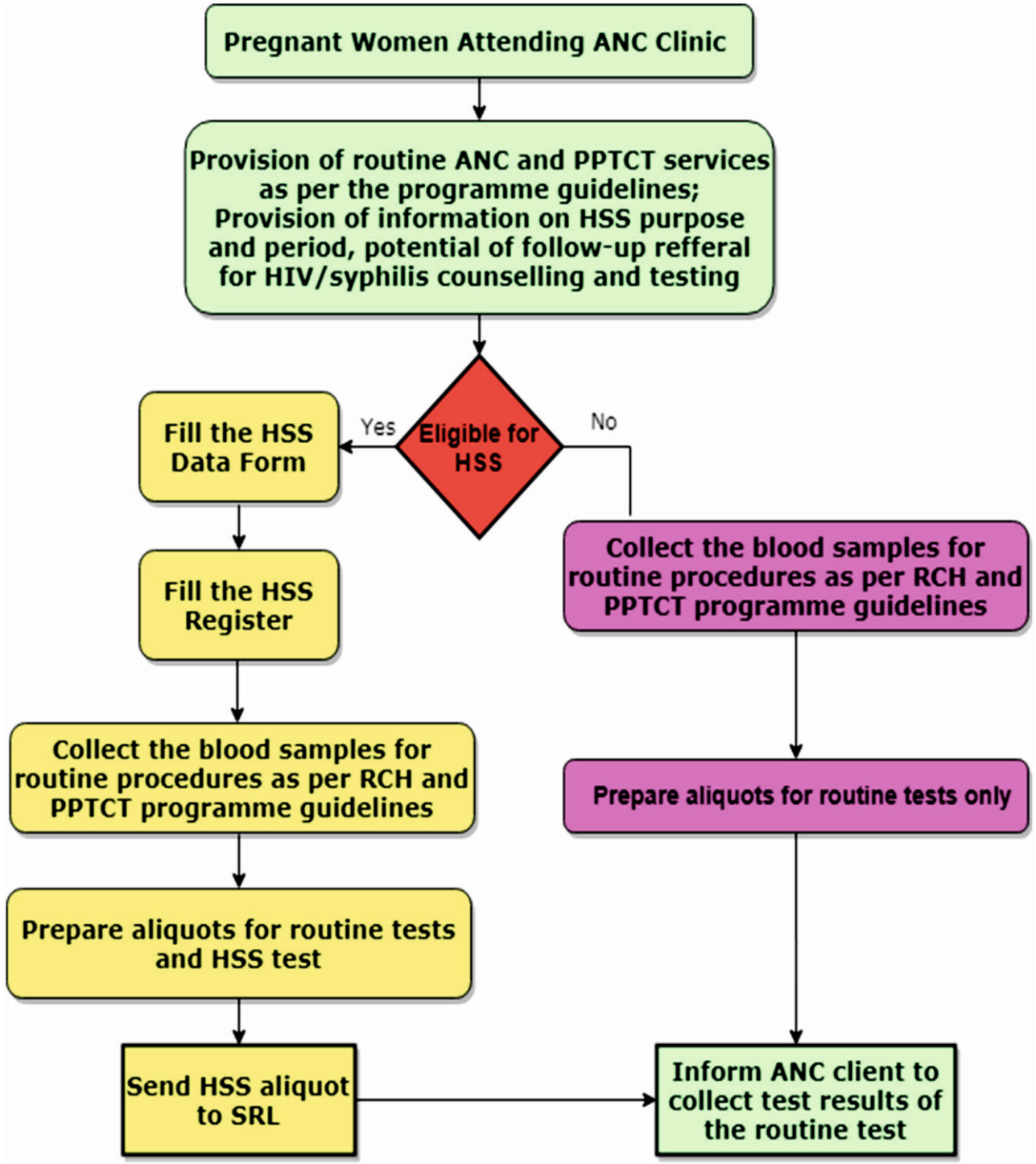
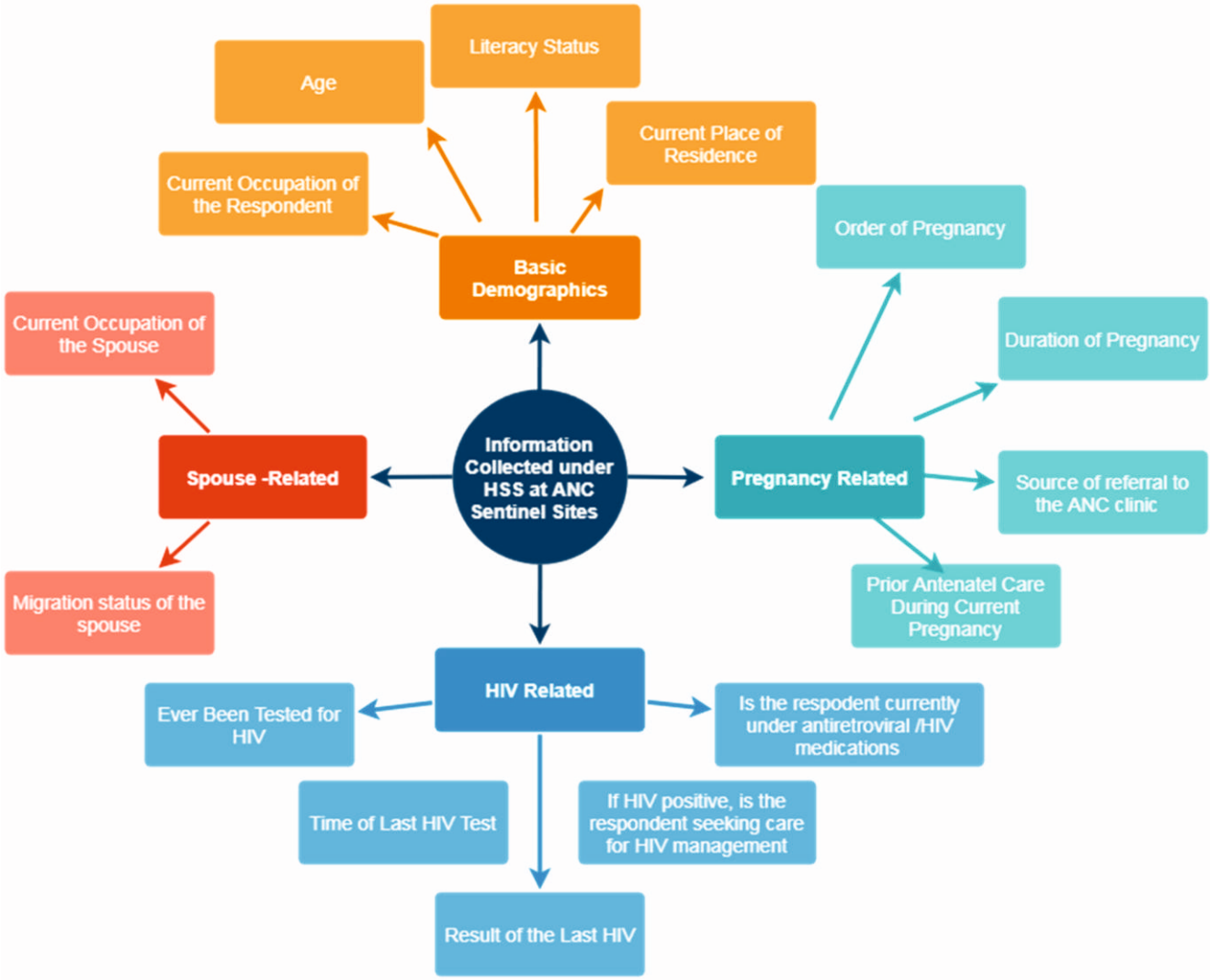


Figure 7: Information Collected under HSS at ANC Sentinel Sites

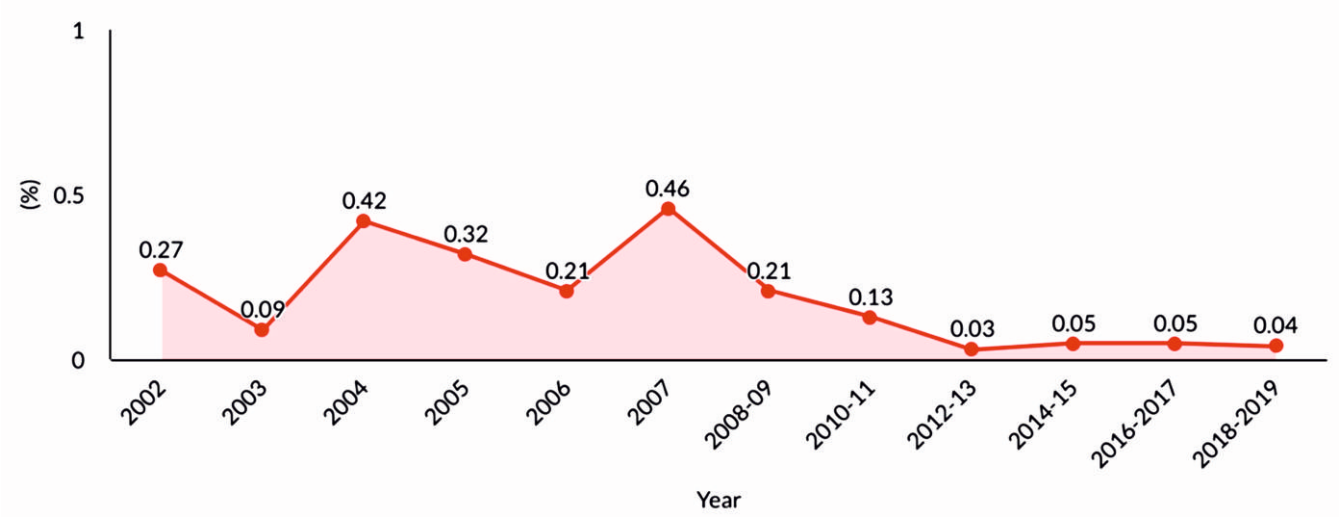


CHAPTER 3

PROFILE OF ANC ATTENDEES IN KERALA

Kerala, situated in South-West India, shares its boundary with, Karnataka in the north, Tamil Nadu in the east and south, Lakshadweep Sea in the west. Kerala has 14 districts with a total area of 38,863 sq. km and a population of 33.38 million as per the 2011 census. Kerala had been a consistent low HIV prevalent state and has implemented various programmes to bring down the HIV prevalence further. The pregnant women who attend the ANC clinics are considered proxy for general population and serve as a key indicator of the adult HIV prevalence. HIV prevalence among pregnant women in Kerala which was 0.27% in 2002 has declined below 0.1% in 2013. The prevalence among had stabilized since then and was recorded 0.04% in 2019.

Figure 8: HIV Prevalence Trend in Kerala among ANC Attendees, 2002-19



The section presents findings from the 2019 round of sentinel surveillance among the antenatal clinic attendees in Kerala. First, the distribution of the respondents by their background characteristics has been presented by followed by HIV and Syphilis seropositivity. Analysis of these variables is important because they help programme managers and policymakers understand the background characteristics of clinic attendees. Also, they help in the identification of particular characteristics that make respondents more prone to acquiring HIV infection.

Table 3 : Distribution of the respondents by their background characteristics

Variables	Kerala	(N=5600)
Age	Number	%
15-24	2230	39.8
25-34	3020	53.9
35-44	347	6.2
45-49	3	0.1
literacy Status		
Illiterate	47	0.8
Literate and till 5th standard	41	0.7
6th to 10th standard	1370	24.5
11th to Graduation	3473	62.0
Post Graduation	663	11.8
Order of current pregnancy		
First	2404	42.9
Second	2152	38.4
Third	772	13.8
Fourth or more	266	4.8
Duration of current pregnancy		
First trimester	2489	44.4
Second trimester	1547	27.6
Third trimester	1561	27.9
Received ANC service during current pregnancy		
Yes	3981	71.1
No	1618	28.9
Source of referral to the ANC clinic		
Self Referral	3583	64.0
Family/ Relatives/ Neighbors/ Friends	1414	25.3
NGO	2	0.0
Private Hospital (Doctor/ Nurses)	137	2.4
Govt. Hospital (including, ASHA/ ANM)	460	8.2
ICTC /ART Centre		
Current place of residence		
Urban	1952	34.9
Rural	3629	64.8
Current occupation of the respondent		
Agricultural Labourer	4	0.1
Non-Agricultural Labourer	42	0.8
Domestic Servant	2	0.0
Skilled / Semiskilled worker	116	2.1
Petty business / small shop	14	0.3
Large Business/Self employed	14	0.3
Service (Govt./Pvt.)	574	10.3
Student	140	2.5
Hotel staff	5	0.1
Truck driver/Helper		
Local transport worker (auto/taxi driver, hand cart pullers, rickshaw pullers etc)	2	0.0
Agricultural cultivator / landholder		
Housewife	4685	83.7
Current occupation of the spouse		
Agricultural Labourer	119	2.1
Non-Agricultural Labourer	1307	23.3
Domestic Servant		

Skilled / Semiskilled worker	1354	24.2
Petty business / small shop	373	6.7
Large Business/Self employed	247	4.4
Service (Govt./Pvt.)	1284	22.9
Student		
Hotel staff	140	2.5
Truck driver/Helper	90	1.6
Local transport worker (auto/taxi driver, hand cart pullers, rickshaw pullers etc)	637	11.4
Agricultural cultivator / landholder	37	0.7
Unemployed	8	0.1
Not Applicable (For Never married/widows/Divorced/Separated)	1	0.0
Spouse resides alone in another place/town from wife for work for longer than 6 months		
Yes	578	10.3
No	5020	89.6
Not Applicable (For Never married/Widows/Divorced/Separated)	1	0.0
Ever Been tested for HIV		
Yes	4231	75.6
No	1369	24.4
If ever tested HIV, When was the last tested		
Tested during current pregnancy	2353	42.0
Consented today		
Tested before current pregnancy	1878	33.5
NA (For never tested)	1369	24.4
Result of respondent's last HIV test result		
Positive		
Negative	4228	75.5
Did not collect the last result	3	0.1
No response		
NA (For never tested/Consented today))	1369	24.4
If previous HIV test positive, taking ART medications		
Yes		
No		
NA (never tested or Not positive when last tested/Consented today)	5600	100.0
HIV		
Negative	5598	99.96
Positive	2	0.04
Syphilis		
Negative	5598	99.96
Positive	2	0.04

CHAPTER 4

DISTRIBUTION AND HIV PREVALENCE BY SOCIO-DEMOGRAPHIC VARIABLES

The correlation between respondent's background characteristics and HIV prevalence has been presented.

4.1 Distribution and HIV Prevalence by Age Group:

Figure 9: Percentage (%) Distribution of respondents by age group

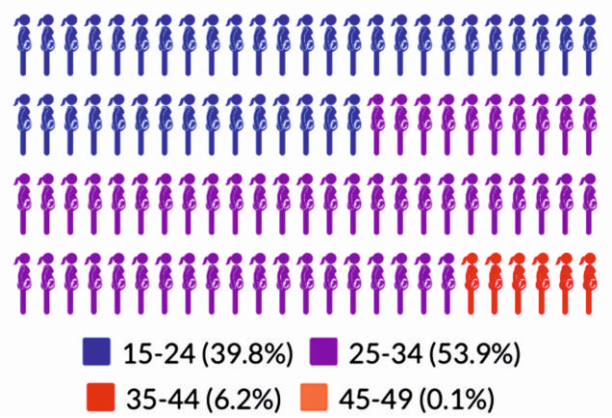
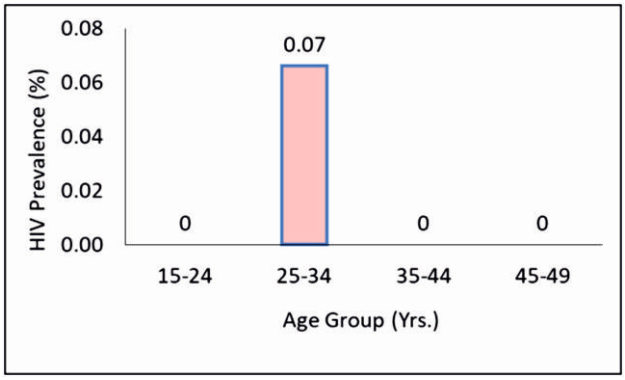


Figure 10: HIV Prevalence among ANC Clinic Attendees by Age



Age of the respondents ranged from 17 to 49 years with a median age of 26 years. Nearly one-third (39.8%) of the respondents were aged from 15 to 24 years and about half (53.9%) were in the age group of 25-34 years. About 6.2% respondents belonged to the age group of 35-44 years and 0.1% of the respondents belonged to the age group of 45-49 years. HIV prevalence of 0.07% was recorded among respondents of age 25 – 34 years, while the rest recorded zero prevalence.

4.2 Distribution and HIV Prevalence by Literacy Status

Figure 11: Percent Distribution of respondents by educational status

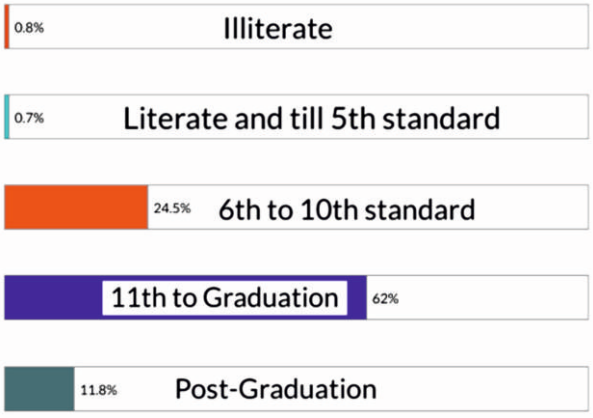
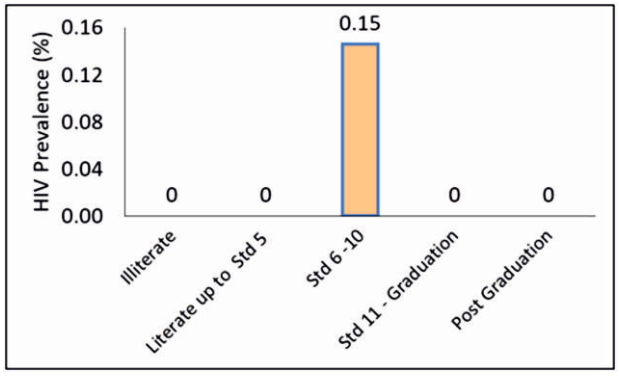


Figure 12: HIV Prevalence (%) among ANC Clinic Attendees by Literacy Status



Nearly two-third of the respondents had higher secondary or undergraduate level education (62.0%) and one-fourth had secondary level (24.5%) of education. The HIV prevalence among the former was 0.17% and the later was 0.22%. Only about 0.8 % illiterates, and 0.7% were educated up to primary levels, whereas about 11.8% were post-graduates. HIV prevalence of 0.15% was recorded among respondents with secondary level education, while the rest recorded zero prevalence.

4.3 Distribution and HIV Prevalence by Order of Pregnancy

Figure 13: Percent Distribution of respondents by order of pregnancy

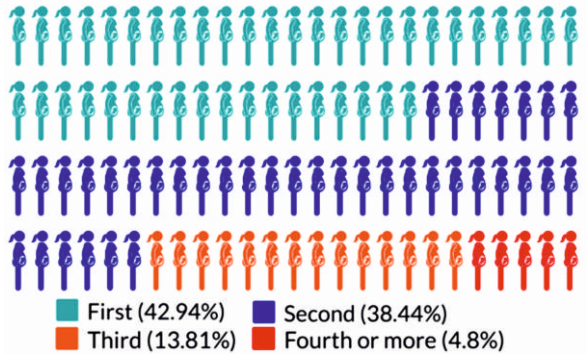
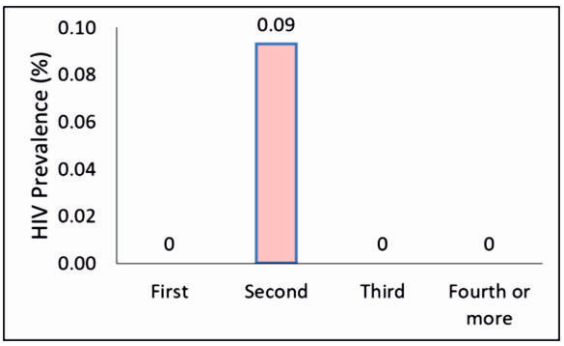


Figure 14: HIV Prevalence (%) among ANC Clinic Attendees by Order of Pregnancy



The order of pregnancy, also known as gravida, is the number of times a woman had become pregnant including live births, still births and abortions. About 42.94% of the respondents were in their first gravida, 38.44 % in their second, 13.81% in their third and 4.8% in fourth or higher. HIV prevalence of 0.09% was recorded among respondents of second order pregnancy, while the rest recorded zero prevalence.

4.4 Distribution and HIV Prevalence by Duration of Pregnancy:

Figure 15: Percent Distribution of respondents by duration of current pregnancy

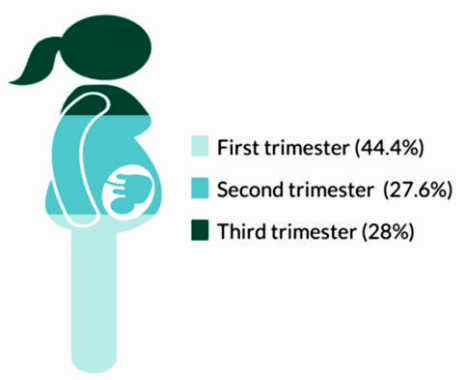
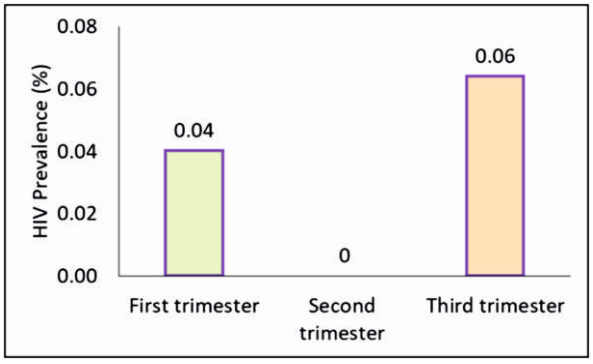


Figure 16: HIV Prevalence (%) among ANC Clinic Attendees by Duration of Pregnancy



About 44.4% of the respondents belonged to the first trimester followed by 27.6% in second trimester and 28.0% in the third trimester. HIV prevalence of 0.06% was recorded among respondents in third trimester, followed by 0.04 % in third and 0.0% in second trimesters.

4.5 Distribution and HIV Prevalence by ANC Service Utilization:

This refers to any prior receipt of antenatal care services from a health care facility (PHC/CHC/District hospitals/Maternity hospitals/Private health care facilities/NGO Health care facilities) by the pregnant women during her current pregnancy. In Kerala, about 71.1% of respondents had received ANC services during current pregnancy prior to the surveillance whereas 2.9 % of respondents had not received prior ANC services. HIV prevalence was 0.0% and 0.12% among respondents who had and had not received prior ANC services, respectively.

Figure 17: Percent Distribution of respondents by ANC service uptake

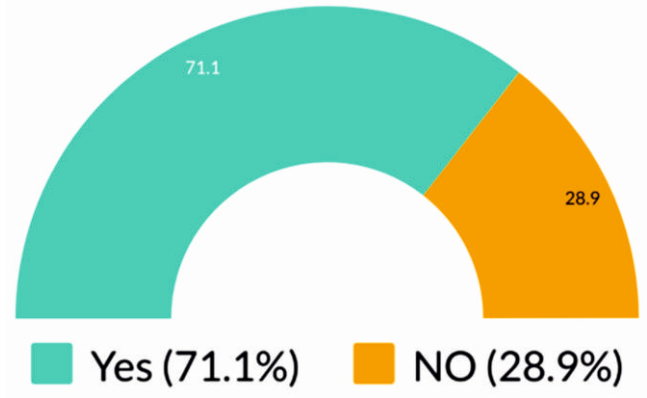
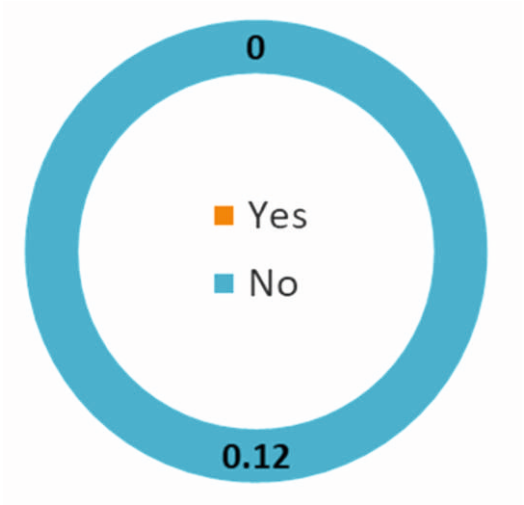


Figure 18: HIV Prevalence among ANC Clinic Attendees by ANC service uptake



4.6 Distribution and HIV Prevalence by Source of Referral:

Figure 19: Percent Distribution of respondents by source of referral

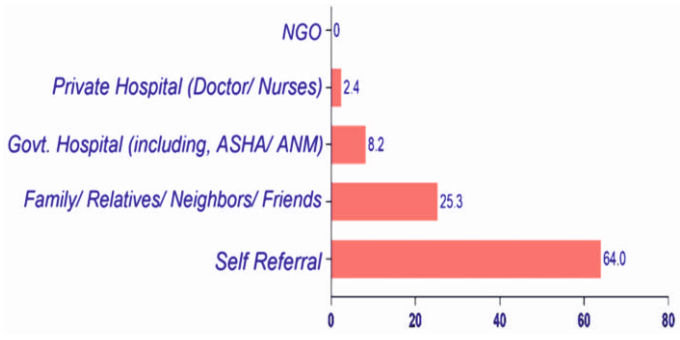
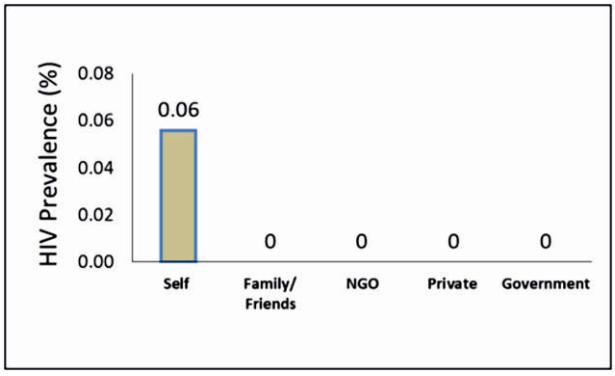


Figure 20: HIV Prevalence (%) among ANC Clinic Attendees by Source of Referral

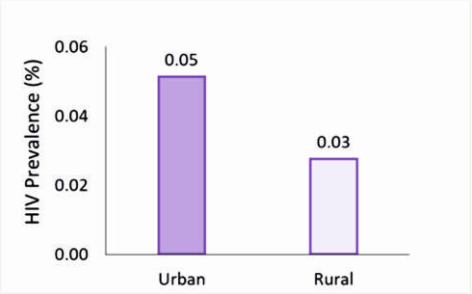


Knowing the sources of referral helps to identify referral bias being introduced in the sample due to specific referrals of HIV-positive cases from any source. Self-referral was identified as the major referral source (64.0%) to ANC clinics, followed by family/relatives/ neighbour/friends (25.3%) and Government based sources including hospital, ANM/ASHA (8.2%). HIV prevalence of 0.06% was recorded among self-referral respondents.

4.7 Distribution and HIV Prevalence by Place of Residence:

Figure 21: Percent Distribution of respondents by current place of residence

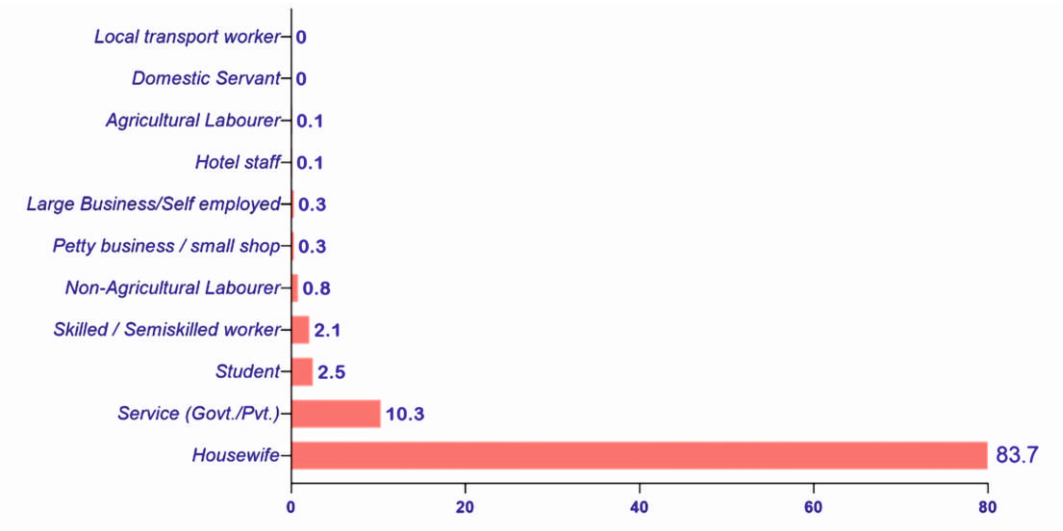
Figure 22: HIV Prevalence (%) among ANC Clinic Attendees by Place of residence



Current residence of the respondent was recorded either as urban or rural. Areas under Municipal Corporation, municipal council, or cantonment area, were classified as urban and the rest were classified as rural. At the state level, 64.8 % of the respondents reported to be currently residing in rural areas and the rest (34.9%) reported to be currently residing in urban areas. However, there were inter-district variations. HIV prevalence among the urban-resident respondents was 0.05%; whereas it was 0.03% among the rural-resident respondents.

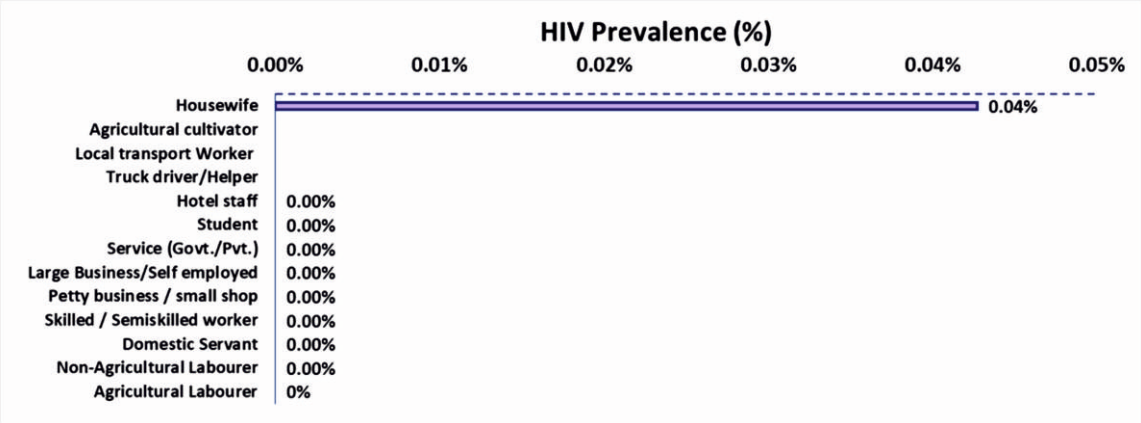
4.8 Distribution and HIV Prevalence by Occupation of the Respondent:

Figure 23: District-wise % Distribution of respondents by Occupation



Certain occupations are associated with higher risk of exposure and HIV infection. Hence, understanding the profile of respondents with respect to their occupation, helps to identify specific focus areas. While a vast majority of them were housewives (83.7%), about 10.3% were agricultural labourers, 2.5% were students and 2.1% were skilled or semi-skilled workers. In Kerala, HIV prevalence of 0.04% was recorded among pregnant mothers who were housewives.

Figure 24: HIV Prevalence (%) among ANC Clinic Attendees by Current Occupation of Respondent



4.9 Distribution and HIV Prevalence by Occupation of the Respondents' Spouse:

HIV transmission in South India is mainly driven through heterosexual route and pregnant mothers represent the sexually active population. Hence occupation of spouse serves to identify population groups at higher infection risk. The proportion spouses of ANC mothers who were skilled or semi-skilled labourers was 24.2%, followed by non-agricultural labourers (23.3%), and service sector employees (22.9%). While 11.4% were local transport workers, 1.6% were truckers. The proportion spouses of ANC mothers who were petty or small business owners was 6.7 %, large business owners/self-employed was 4.4% and hotel staffs was 2.5%. HIV prevalence was the highest among the ANC attendees whose spouses were local transport workers (0.16%) followed by skilled or semi-skilled workers (0.07%).

Figure 25: % Distribution of respondents by the Occupation of spouse

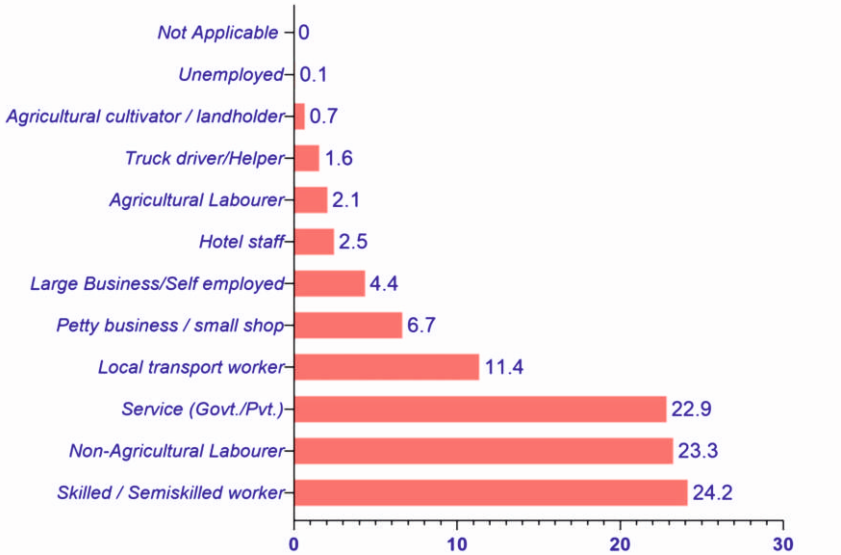
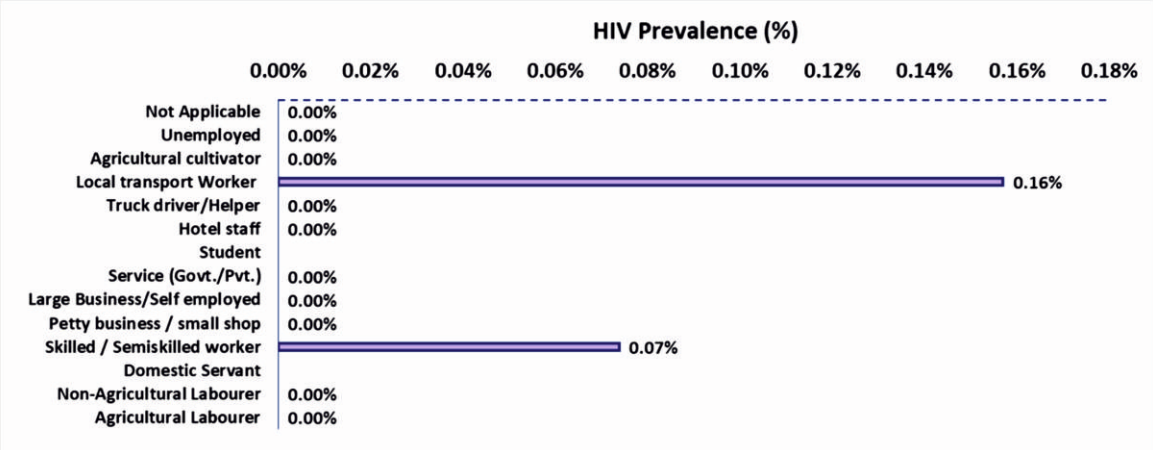


Figure 26: HIV Prevalence among ANC Clinic Attendees by Current Occupation of Spouse

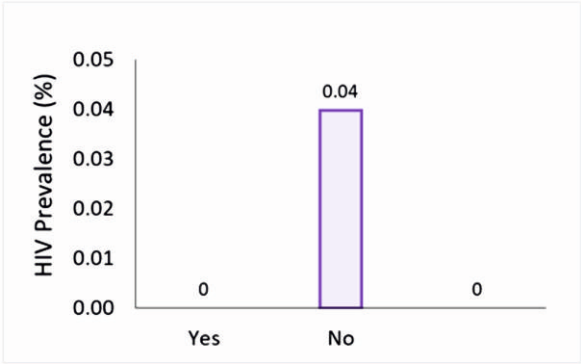


4.10 Distribution and HIV Prevalence by Migration Status of the Respondents' Spouse:

The spouse of the respondent is considered to be a migrant if he resides alone in another place or town away from wife for work for longer than 6 months. In Kerala, during HSS 2019, 89.6% of the pregnant women reported their husbands to be non-migrants while the spouses of 10.3% pregnant women were migrants. While the HIV prevalence among pregnant women with migrant spouses was 0.0%, that of the pregnant women with non-migrant spouses was 0.04%.

Figure 27: Percentage of respondents with migrant spouse

Figure 28: HIV Prevalence among ANC Clinic Attendees by Migration status of Spouse



4.11 Distribution and HIV Prevalence by HIV Test History:

HIV Testing has been mandated for all pregnant mothers. With reference to their previous HIV test history, 75.6% of the respondents were already tested for HIV, prior to the current surveillance. HIV prevalence among those who had previously tested for HIV was 0.02% and it was 0.07% among those who had previously not tested for HIV

Among the respondents, 42.04% had tested for HIV prior to the surveillance during current pregnancy while 33.53% had tested before current pregnancy. About 24.42% had not tested for HIV. Of those who had last tested for HIV, prior to the current surveillance, 75.5% were HIV Negative, 0.0% were HIV positive, 0.1% had not collected the results of the last HIV test.

Figure 29: Percent Distribution of respondents by HIV testing history

Figure 30: HIV Prevalence by HIV Test History

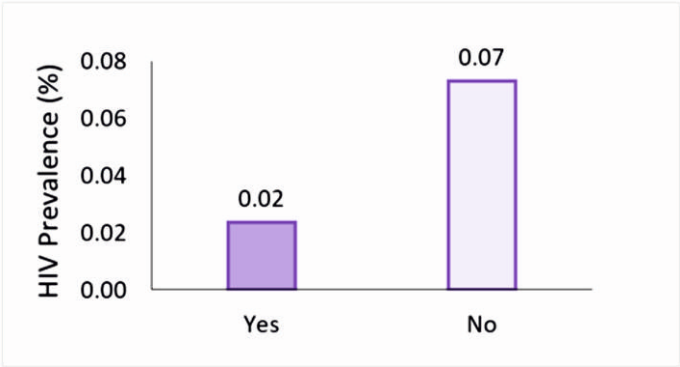


Figure 31: Percent Distribution of respondents by Time of last HIV Testing

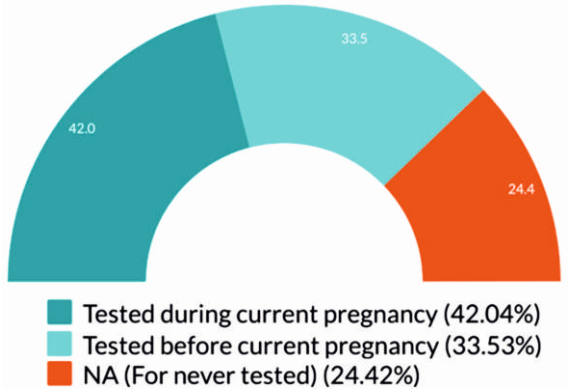
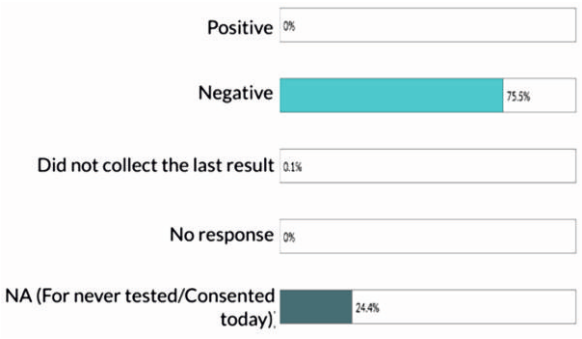


Figure 32: HIV prevalence by Result of last HIV test



CHAPTER 5

5.1 District-wise Distribution of Respondents, HIV Prevalence and Trend

The national, state and district response to the HIV epidemic is guided by data obtained through HIV Sentinel Surveillance (HSS). The HIV epidemic in India continues to be concentrated among HRG with low level and declining prevalence among general population. Over time, HIV Sentinel Surveillance has offered vital clues to newer areas where HIV was emerging, highlighting rising trends in certain districts or regions.

This chapter gives district-wise distribution of respondents, HIV prevalence and its trend details as observed against the key fifteen socio-demographic variables which were recorded for each respondent. Data from the year 2002 has been used for trend analysis. Data from only consistent sites was used for trend analysis as it avoids the effect of addition of new sites on HIV prevalence in subsequent years, and hence provides a better picture of HIV trends in a district. Though there was a clear declining trend seen in Kerala, within the state, there are variations in HIV prevalence of the districts. A detailed district-wise analysis by applying local knowledge about vulnerabilities and risk factors, will be needed to understand heterogeneity of the disease and inter-district variations, which is essential for planning district strategies in HIV prevention and control.

Figure 9: District-wise HIV Prevalence in Kerala, 2019

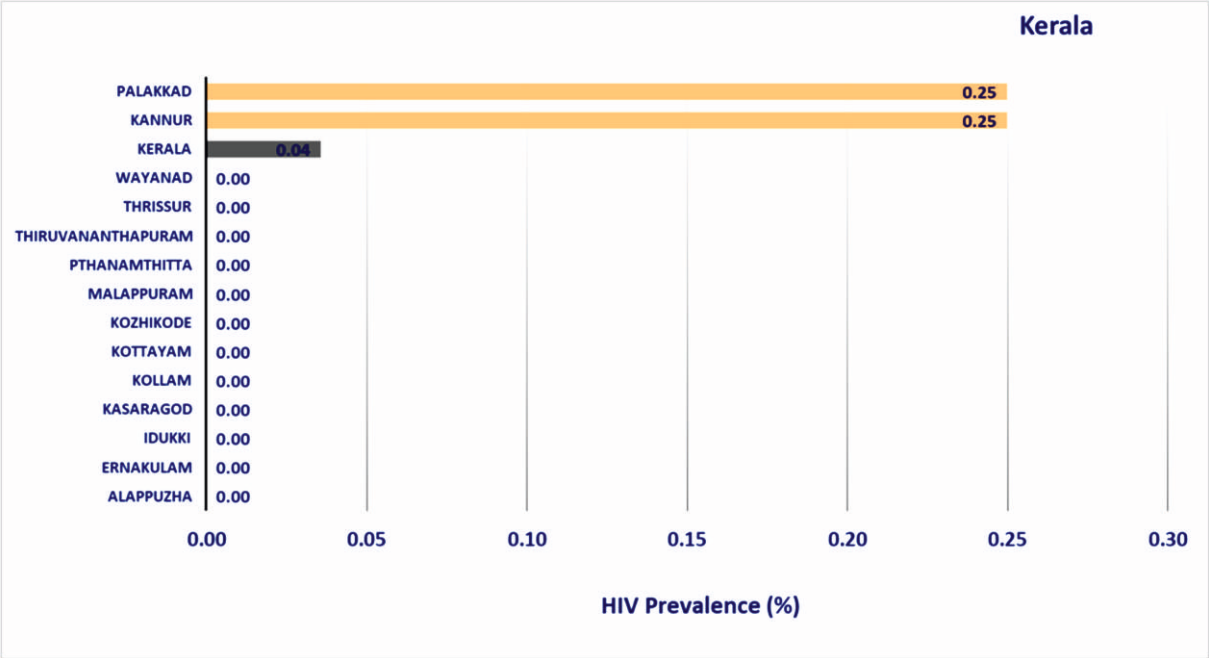


Figure 10: Spatial Representation of district-wise HIV Prevalence in Kerala, 2019

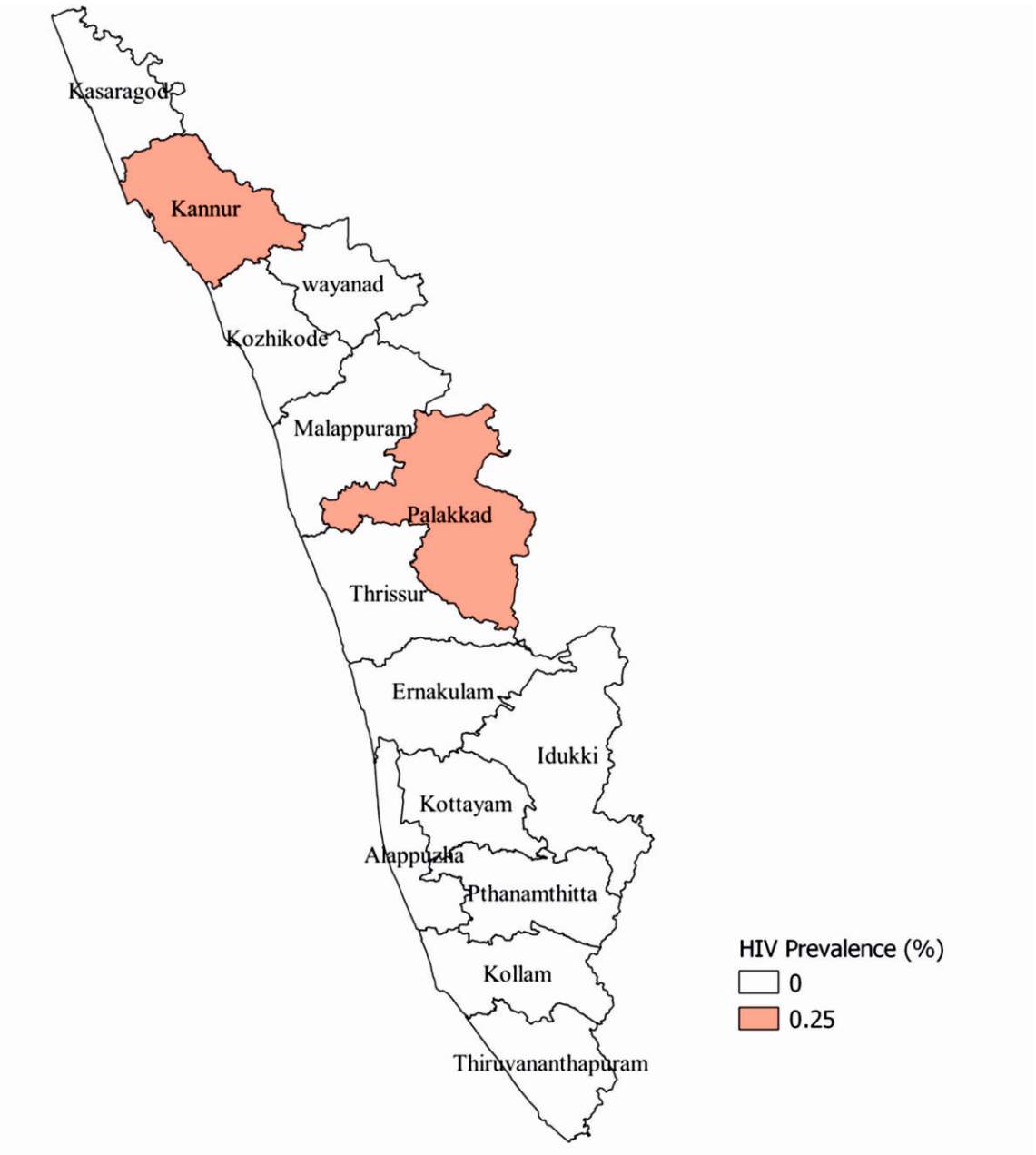


Table 4 District wise distribution of respondents based on the age group (%)

Age Group	15-24	25-34	35-44	45-49	Total
Kerala	39.8	53.9	6.2	0.1	5600
Alappuzha	39.0	56.0	4.8	0.3	400
Ernakulam	18.3	70.5	10.8	0.5	400
Idukki	35.8	57.3	7.0	0	400
Kannur	38.3	52.5	9.3	0	400
Kasaragod	37.8	54.8	7.5	0	400
Kollam	51.8	44.3	4.0	0	400
Kottayam	27.3	61.8	11.0	0	400
Kozhikode	27.3	67.5	5.3	0	400
Malappuram	54.0	41.5	4.5	0	400
Palakkad	48.3	48.5	3.3	0	400
Pthanamthitta	33.0	57.5	9.5	0	400
Thiruvananthapuram	45.0	51.5	3.5	0	400
Thrissur	50.0	47.8	2.3	0	400
wayanad	52.0	43.8	4.3	0	400

Table 5: District-wise distribution of respondents based on the literacy status (%)

State/District	Illiterate	Literate and till 5th standard	6th to 10th standard	11th to Graduation	Post Graduation	Total
Kerala	0.8	0.7	24.5	62.1	11.9	5600
Alappuzha	0.3	0.8	13.8	78.3	7.0	400
Ernakulam	0.0	0.0	2.8	48.4	48.9	400
Idukki	0.0	0.3	35.0	57.8	7.0	400
Kannur	0.5	1.0	29.3	62.5	6.8	400
Kasaragod	2.0	2.5	52.0	41.3	2.3	400
Kollam	0.0	0.8	18.8	75.3	5.3	400
Kottayam	0.0	0.0	19.3	70.0	10.8	400
Kozhikode	0.3	0.8	1.5	50.6	46.9	400
Malappuram	1.0	0.5	31.0	65.8	1.8	400
Palakkad	0.8	0.8	38.7	54.0	5.8	400
Pthanamthitta	0.5	0.5	30.6	65.7	2.8	400
Thiruvananthapuram	0.3	0.3	17.3	71.3	11.0	400
Thrissur	0.0	1.0	16.5	75.9	6.5	400
wayanad	6.3	1.3	36.5	52.5	3.5	400

Table 6: District-wise distribution of respondents based on the Order of Pregnancy (%)

State/District	First	Second	Third	Fourth or more	Total
Kerala	42.9	38.4	13.8	4.8	5600
Alappuzha	39.3	38.3	17.5	4.8	400
Ernakulam	57.3	32.8	8.0	1.5	400
Idukki	30.8	46.5	19.0	3.8	400
Kannur	38.8	40.8	14.0	6.5	400
Kasaragod	36.8	34.3	16.5	12.5	400
Kollam	53.3	40.3	5.8	0.8	400
Kottayam	42.3	37.5	15.3	5.0	400
Kozhikode	42.8	48.3	7.8	1.3	400
Malappuram	37.3	31.5	19.0	12.3	400
Palakkad	41.8	40.8	13.5	3.8	400
Pthanamthitta	48.8	42.5	8.3	0.5	400
Thiruvananthapuram	53.3	31.8	11.3	3.5	400
Thrissur	43.0	41.0	14.0	2.0	400
wayanad	36.0	32.0	23.3	8.5	400

Table 7: District-wise distribution of respondents based on the Duration of Pregnancy (%)

State/District	First trimester	Second trimester	Third trimester	Total
Kerala	44.4	27.6	27.9	5600
Alappuzha	53.5	19.0	27.5	400
Ernakulam	47.5	32.3	20.0	400
Idukki	37.5	27.0	35.5	400
Kannur	26.5	50.8	22.5	400
Kasaragod	31.5	36.8	31.8	400
Kollam	62.8	18.8	18.5	400
Kottayam	27.8	21.0	51.3	400
Kozhikode	30.8	41.8	27.5	400
Malappuram	39.8	37.0	23.3	400
Palakkad	43.5	21.5	35.0	400
Pthanamthitta	75.3	15.5	9.3	400
Thiruvananthapuram	61.5	10.5	28.0	400
Thrissur	39.5	22.8	37.5	400
wayanad	45.0	32.3	22.8	400

Table 8: District-wise distribution of respondents based on the Prior ANC service uptake (%)

State/District	YES	NO	Total
Kerala	71.1	28.9	5600
Alappuzha	77.3	22.8	400
Ernakulam	71.5	28.5	400
Idukki	99.0	1.0	400
Kannur	34.3	65.8	400
Kasaragod	90.5	9.5	400
Kollam	54.3	45.8	400
Kottayam	57.0	43.0	400
Kozhikode	94.8	5.3	400
Malappuram	77.8	22.3	400
Palakkad	80.5	19.5	400
Pthanamthitta	21.5	78.5	400
Thiruvananthapuram	97.5	2.5	400
Thrissur	97.0	3.0	400
wayanad	42.5	57.3	400

Table 9: District-wise distribution of respondents based on the Source of Referral (%)

State/District	Self Referral	Family/ Relatives/ Neighbors/ Friends	NGO	Private (Doctor/ Nurses)	Govt (including, ASHA/ ANM)	ICTC / ART Centre	Total
Kerala	64.0	25.3	0.0	2.4	8.2	0.0	5600
Alappuzha	59.5	38.8	0.0	0.5	1.3	0.0	400
Ernakulam	64.3	34.0	0.0	1.8	0.0	0.0	400
Idukki	96.3	0.3	0.0	3.3	0.3	0.0	400
Kannur	94.5	4.3	0.0	0.8	0.3	0.0	400
Kasaragod	57.3	10.3	0.0	12.3	20.3	0.0	400
Kollam	86.8	13.0	0.0	0.0	0.0	0.0	400
Kottayam	76.3	0.0	0.0	6.3	17.5	0.0	400
Kozhikode	60.8	37.8	0.0	1.3	0.0	0.0	400
Malappuram	31.0	65.3	0.0	2.5	1.3	0.0	400
Palakkad	44.5	55.0	0.0	0.0	0.3	0.0	400
Pthanamthitta	73.0	16.8	0.0	4.0	6.3	0.0	400
Thiruvananthapuram	53.0	41.0	0.5	0.8	4.8	0.0	400
Thrissur	98.5	0.5	0.0	0.8	0.3	0.0	400
wayanad	0.3	36.8	0.0	0.3	62.8	0.0	400

Table 10 : District- wise distribution of respondents based on Place of Residence(%)

State/District	Urban	Rural	Total
Kerala	34.9	64.8	5600
Alappuzha	45.8	54.3	400
Ernakulam	84.0	14.0	400
Idukki	22.3	77.8	400
Kannur	21.0	79.0	400
Kasaragod	12.8	87.3	400
Kollam	19.3	80.8	400
Kottayam	10.5	89.5	400
Kozhikode	79.0	21.0	400
Malappuram	6.3	93.8	400
Palakkad	96.0	3.0	400
Pthanamthitta	22.5	76.0	400
Thiruvananthapuram	47.3	52.8	400
Thrissur	19.0	81.0	400
wayanad	2.5	97.3	400

Table 11: District wise distribution of respondents based on the Occupation (%)

State/Distirct	Agricultural Labourer	Non-Agricultural Labourer	Domestic Servant	Skilled / Semiskilled worker	Petty business / small shop	Large Business/Self employed	Service (Govt./Pvt.)	Student	Hotel staff	Truck driver/Helper	Local transport Worker	Agricultural cultivator	Housewife	Total
Kerala	0.1	0.8	0.0	2.1	0.3	0.3	10.3	2.5	0.1	0.0	0.0	0.0	83.7	5600
Alappuzha	0.0	0.8	0.0	0.3	0.5	0.0	14.0	3.3	0.5	0.0	0.0	0.0	80.5	400
Ernakulam	0.0	0.0	0.0	0.0	0.0	0.0	33.5	1.3	0.3	0.0	0.0	0.0	65.0	400
Idukki	0.0	0.0	0.0	0.5	0.3	0.0	8.8	0.0	0.0	0.0	0.3	0.0	90.3	400
Kannur	0.0	1.0	0.0	2.5	0.0	0.0	5.5	0.5	0.0	0.0	0.0	0.0	90.5	400
Kasaragod	0.0	1.8	0.0	6.0	0.0	0.0	5.8	0.3	0.0	0.0	0.0	0.0	86.3	400
Kollam	0.0	3.0	0.0	0.3	0.0	0.5	7.3	6.3	0.0	0.0	0.0	0.0	82.8	400
Kottayam	0.0	0.5	0.0	0.0	0.5	0.0	18.0	0.3	0.0	0.0	0.0	0.0	80.8	400
Kozhikode	0.3	0.0	0.3	10.8	0.3	2.3	13.5	4.0	0.3	0.0	0.3	0.0	68.3	400
Malappuram	0.0	1.0	0.0	1.8	0.0	0.0	3.5	5.0	0.0	0.0	0.0	0.0	88.8	400
Palakkad	0.8	0.0	0.0	0.8	0.3	0.0	4.5	2.5	0.3	0.0	0.0	0.0	90.8	400
Pthanamthitta	0.0	0.0	0.0	2.8	0.0	0.0	5.0	0.5	0.0	0.0	0.0	0.0	91.8	400
Thiruvananthapuram	0.0	0.0	0.3	0.5	0.3	0.5	14.5	6.3	0.0	0.0	0.0	0.0	77.8	400
Thrissur	0.0	0.5	0.0	3.0	1.5	0.3	7.0	4.0	0.0	0.0	0.0	0.0	83.8	400
wayanad	0.0	2.0	0.0	0.0	0.0	0.0	2.8	1.0	0.0	0.0	0.0	0.0	94.3	400

Table 12: District-wise distribution of respondents based on the Occupation of spouse (%)

State/District	Agricultural Labourer	Non-Agricultural Labourer	Domestic Servant	Skilled / Semiskilled worker	Petty business / small shop	Large Business/Self employed	Service (Govt./Pvt.)	Student	Hotel staff	Truck driver/Helper	Local transport Worker	Agricultural cultivator	Unemployed	Not Applicable	Total
Kerala	2.1	23.3	0.0	24.2	6.7	4.4	22.9	0.0	2.5	1.6	11.4	0.7	0.1	0.0	5600
Alappuzha	0.3	16.5	0.0	18.3	8.0	5.5	38.8	0.0	1.5	0.0	11.3	0.0	0.0	0.0	400
Ernakulam	0.5	0.5	0.0	3.0	6.3	7.8	77.3	0.0	1.5	1.5	1.8	0.0	0.0	0.0	400
Idukki	2.8	11.5	0.0	35.0	7.0	2.0	17.8	0.0	3.3	0.0	12.8	7.8	0.0	0.3	400
Kannur	1.0	36.0	0.0	24.8	5.5	0.3	13.8	0.0	4.5	2.0	11.0	0.0	1.3	0.0	400
Kasaragod	4.5	41.0	0.0	23.5	4.0	0.5	7.8	0.0	7.8	0.0	10.0	1.0	0.0	0.0	400
Kollam	0.5	33.5	0.0	21.0	0.8	4.5	18.8	0.0	0.8	0.0	20.0	0.0	0.0	0.0	400
Kottayam	0.0	20.8	0.0	26.5	9.0	0.0	25.8	0.0	3.8	0.0	14.3	0.0	0.0	0.0	400
Kozhikode	0.3	0.0	0.0	22.3	8.3	33.3	34.5	0.0	0.0	0.3	1.3	0.0	0.0	0.0	400
Malappuram	0.3	49.0	0.0	20.3	7.8	0.0	8.3	0.0	0.8	4.5	9.0	0.0	0.3	0.0	400
Palakkad	9.5	14.0	0.0	26.8	9.5	0.5	11.0	0.0	4.8	3.0	20.0	0.5	0.0	0.0	400
Pthanamthitta	7.0	39.8	0.0	19.3	5.5	1.0	9.8	0.0	3.3	0.0	14.5	0.0	0.0	0.0	400
Thiruvananthapuram	0.0	10.0	0.0	33.0	5.0	3.3	32.5	0.0	0.8	1.8	13.3	0.0	0.5	0.0	400
Thrissur	0.0	0.0	0.0	52.5	10.8	0.8	15.3	0.0	1.0	5.3	14.5	0.0	0.0	0.0	400
wayanad	3.3	54.3	0.0	12.5	6.0	2.5	10.0	0.0	1.5	4.3	5.8	0.0	0.0	0.0	400

Table 13: District-wise distribution of respondents based on Migration of Spouse (%)

State/District	YES	No	Not Applicable	Total
Kerala	10.3	89.6	0	5600
Alappuzha	11.5	88.5	0	400
Ernakulam	19.0	81.0	0	400
Idukki	1.3	98.5	0.3	400
Kannur	12.0	88.0	0	400
Kasaragod	0.5	99.5	0	400
Kollam	20.0	79.8	0	400
Kottayam	3.8	96.3	0	400
Kozhikode	33.0	67.0	0	400
Malappuram	12.3	87.8	0	400
Palakkad	4.3	95.8	0	400
Pthanamthitta	1.8	98.3	0	400
Thiruvananthapuram	5.0	95.0	0	400
Thrissur	6.0	94.0	0	400
wayanad	14.3	85.8	0	400

Table 14: District-wise distribution of respondents based on HIV tested history (%)

State/District	Yes	No	Total
Kerala	75.6	24.4	5600
Alappuzha	82.5	17.5	400
Ernakulam	87.3	12.8	400
Idukki	84.5	15.5	400
Kannur	61.5	38.5	400
Kasaragod	85.3	14.8	400
Kollam	64.8	35.3	400
Kottayam	82.0	18.0	400
Kozhikode	89.0	11.0	400
Malappuram	68.5	31.5	400
Palakkad	78.8	21.3	400
Pthanamthitta	52.8	47.3	400
Thiruvananthapuram	65.3	34.8	400
Thrissur	81.0	19.0	400
wayanad	74.8	25.3	400

Table 15: District-wise distribution of respondents based on The time of the last HIV test(%)

(Only the respondent whom tested for HIV test previously)

State/District	Tested previously during current pregnancy	Consented today	Tested before current pregnancy	Total
Kerala	55.61	0.00	44.39	4231
Alappuzha	50.30	0.00	49.70	330
Ernakulam	74.79	0.00	25.21	349
Idukki	68.34	0.00	31.66	338
Kannur	6.10	0.00	93.90	246
Kasaragod	55.43	0.00	44.57	341
Kollam	39.77	0.00	60.23	259
Kottayam	87.50	0.00	12.50	328
Kozhikode	65.45	0.00	34.55	356
Malappuram	57.30	0.00	42.70	274
Palakkad	67.62	0.00	32.38	315
Pthanamthitta	6.16	0.00	93.84	211
Thiruvananthapuram	45.98	0.00	54.02	261
Thrissur	67.59	0.00	32.41	324
wayanad	48.83	0.00	51.17	299

Table 16: District-wise distribution of respondents based on the Result of their last HIV test(%)

(Only the respondent whom tested for HIV test previously)

State/District	Positive	Negative	Did not collect the test result	No Response	Total
Kerala	0.00	99.93	0.07	0.00	4231
Alappuzha	0.00	99.39	0.61	0.00	330
Ernakulam	0.00	100.00	0.00	0.00	349
Idukki	0.00	100.00	0.00	0.00	338
Kannur	0.00	100.00	0.00	0.00	246
Kasaragod	0.00	100.00	0.00	0.00	341
Kollam	0.00	100.00	0.00	0.00	259
Kottayam	0.00	100.00	0.00	0.00	328
Kozhikode	0.00	100.00	0.00	0.00	356
Malappuram	0.00	100.00	0.00	0.00	274
Palakkad	0.00	100.00	0.00	0.00	315
Pthanamthitta	0.00	100.00	0.00	0.00	211
Thiruvananthapuram	0.00	99.62	0.38	0.00	261
Thrissur	0.00	100.00	0.00	0.00	324
wayanad	0.00	100.00	0.00	0.00	299

Table 17: HIV Prevalence among ANC Clinic Attendees by Age

State/Districts	15-24		25-34		35-44		45-49		Total
	%	Total	%	Total	%	Total	%	Total	
Kerala	0	2230	0.07	3020	0	347	0	3	5600
Alappuzha	0	156	0	224	0	19	0	1	400
Ernakulam	0	73	0	282	0	43	0	2	400
Idukki	0	143	0	229	0	28			400
Kannur	0	153	0.48	210	0	37			400
Kasaragod	0	151	0	219	0	30			400
Kollam	0	207	0	177	0	16			400
Kottayam	0	109	0	247	0	44			400
Kozhikode	0	109	0	270	0	21			400
Malappuram	0	216	0	166	0	18			400
Palakkad	0	193	0.52	194	0	13			400
Pthanamthitta	0	132	0	230	0	38			400
Thiruvananthapuram	0	180	0	206	0	14			400
Thrissur	0	200	0	191	0	9			400
wayanad	0	208	0	175	0	17			400

Table 18: HIV Prevalence (%) among ANC Clinic Attendees by Literacy Status and Districts

State/District	1. Illiterate		2. Literate and till 5th standard		3. 6th to 10th standard		4. 11th to Graduation		5. Post Graduation		Total
	%	Total	%	Total	%	Total	%	Total	%	Total	
Kerala	0	47	0	41	0.15	1370	0	3473	0	663	5600
Alappuzha	0	1	0	3	0	55	0	313	0	28	400
Ernakulam	0		0		0	11	0	193	0	195	400
Idukki	0		0	1	0	140	0	231	0	28	400
Kannur	0	2	0	4	0.85	117	0	250	0	27	400
Kasaragod	0	8	0	10	0	208	0	165	0	9	400
Kollam	0		0	3	0	75	0	301	0	21	400
Kottayam	0		0		0	77	0	280	0	43	400
Kozhikode	0	1	0	3	0	6	0	202	0	187	400
Malappuram	0	4	0	2	0	124	0	263	0	7	400
Palakkad	0	3	0	3	0.65	154	0	215	0	23	400
Pthanamthitta	0	2	0	2	0	122	0	262	0	11	400
Thiruvananthapuram	0	1	0	1	0	69	0	285	0	44	400
Thrissur	0		0	4	0	66	0	303	0	26	400
wayanad	0	25	0	5	0	146	0	210	0	14	400

Table 19: HIV Prevalence (%) among ANC Clinic Attendees by Order of Pregnancy and districts

State/District	First		2. Second		3. Third		4. Fourth or more		Total
	%	N	%	N	%	N	%	N	
Kerala	0	2404	0.09	2152	0	772	0	266	5600
Alappuzha	0	157	0	153	0	70	0	19	400
Ernakulam	0	229	0	131	0	32	0	6	400
Idukki	0	123	0	186	0	76	0	15	400
Kannur	0	155	0.61	163	0	56	0	26	400
Kasaragod	0	147	0	137	0	66	0	50	400
Kollam	0	213	0	161	0	23	0	3	400
Kottayam	0	169	0	150	0	61	0	20	400
Kozhikode	0	171	0	193	0	31	0	5	400
Malappuram	0	149	0	126	0	76	0	49	400
Palakkad	0	167	0.61	163	0	54	0	15	400
Pthanamthitta	0	195	0	170	0	33	0	2	400
Thiruvananthapuram	0	213	0	127	0	45	0	14	400
Thrissur	0	172	0	164	0	56	0	8	400
wayanad	0	144	0	128	0	93	0	34	400

Table 20 : HIV Prevalence (%) among ANC Clinic Attendees by Duration of Pregnancy and districts

State/District	First trimester		Second trimester		Third trimester		Total
	%	N	%	N	%	N	
Kerala	0.04	2489	0	1547	0.06	1561	5600
Alappuzha	0	214	0	76	0	110	400
Ernakulam	0	190	0	129	0	80	400
Idukki	0	150	0	108	0	142	400
Kannur	0	106	0	203	1.11	90	400
Kasaragod	0	126	0	147	0	127	400
Kollam	0	251	0	75	0	74	400
Kottayam	0	111	0	84	0	205	400
Kozhikode	0	123	0	167	0	110	400
Malappuram	0	159	0	148	0	93	400
Palakkad	0.57	174	0	86	0	140	400
Pthanamthitta	0	301	0	62	0	37	400
Thiruvananthapuram	0	246	0	42	0	112	400
Thrissur	0	158	0	91	0	150	400
wayanad	0	180	0	129	0	91	400

Table 21: HIV Prevalence (%) among ANC Clinic Attendees by ANC service uptake and districts

State/District	Yes		No		Total
	%	N	%	N	
Kerala	0	3981	0.12	1618	5600
Alappuzha	0	309	0	91	400
Ernakulam	0	286	0	114	400
Idukki	0	396	0	4	400
Kannur	0	137	0.38	263	400
Kasaragod	0	362	0	38	400
Kollam	0	217	0	183	400
Kottayam	0	228	0	172	400
Kozhikode	0	379	0	21	400
Malappuram	0	311	0	89	400
Palakkad	0	322	1.28	78	400
Pthanamthitta	0	86	0	314	400
Thiruvananthapuram	0	390	0	10	400
Thrissur	0	388	0	12	400
wayanad	0	170	0	229	400

Table 22: HIV Prevalence (%) among ANC Clinic Attendees by Source of Referral

State/District	1. Self Referral		2. Family/ Relatives/ Neighbors/ Friends		3. NGO		4. Private (Doctor/ Nurses)		5. Govt (including, ASHA/ ANM)		6. ICTC / ART Centre		Total
	%	N	%	N	%	N	%	N	%	N	%	N	
Kerala	0.06	3583	0	1414	0	2	0	137	0	460			5600
Alappuzha	0	238	0	155			0	2	0	5			400
Ernakulam	0	257	0	136			0	7					400
Idukki	0	385	0	1			0	13	0	1			400
Kannur	0.26	378	0	17			0	3	0	1			400
Kasaragod	0	229	0	41			0	49	0	81			400
Kollam	0	347	0	52									400
Kottayam	0	305					0	25	0	70			400
Kozhikode	0	243	0	151			0	5					400
Malappuram	0	124	0	261			0	10	0	5			400
Palakkad	0.56	178	0	220					0	1			400
Pthanamthitta	0	292	0	67			0	16	0	25			400
Thiruvananthapuram	0	212	0	164	0	2	0	3	0	19			400
Thrissur	0	394	0	2			0	3	0	1			400
wayanad	0	1	0	147			0	1	0	251			400

Table 23: Prevalence among ANC Clinic Attendees by Place of Residence and district

State/District	Urban		Rural		Total
	%	N	%	N	
Kerala	0.05	1952	0.03	3629	5600
Alappuzha	0	183	0	217	400
Ernakulam	0	336	0	56	400
Idukki	0	89	0	311	400
Kannur	0	84	0.32	316	400
Kasaragod	0	51	0	349	400
Kollam	0	77	0	323	400
Kottayam	0	42	0	358	400
Kozhikode	0	316	0	84	400
Malappuram	0	25	0	375	400
Palakkad	0.26	384	0	12	400
Pthanamthitta	0	90	0	304	400
Thiruvananthapuram	0	189	0	211	400
Thrissur	0	76	0	324	400
wayanad	0	10	0	389	400

Table 24: HIV Prevalence among ANC Clinic Attendees by Current Occupation of Respondent

State/District	Agricultural Labourer		Non-Agricultural Labourer		Domestic Servant		Skilled /Semiskilled worker		Petty business / small shop		Large Business/Self employed		Service (Govt./Pvt.)		Student		Hotel staff		Truck driver/Helper		Local transport Worker		Agricultural cultivator/		Housewife		Total
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	
Kerala	0	4	0	42	0	2	0	116	0	14	0	14	0	574	0	140	0	5				2			0.04%	4685	5600
Alappuzha			0	3			0	1	0	2			0	56		13		2							0	322	400
Ernakulam													0	134		5		1							0	260	400
Idukki							0	2	0	1			0	35								1			0	361	400
Kannur			0	4			0	10					0	22		2									0.28%	362	400
Kasaragod			0	7			0	24					0	23		1									0	345	400
Kollam			0	12			0	1				2	0	29		25									0	331	400
Kottayam			0	2					0	2			0	72		1									0	323	400
Kozhikode	0	1			0	1	0	43	0	1		9	0	54		16		1				1			0	273	400
Malappuram			0	4			0	7					0	14		20									0	355	400
Palakkad	0	3					0	3	0	1			0	18		10		1							0.28%	363	400
Pthanamthitta							0	11					0	20		2									0	367	400
Thiruvananthapuram					0	1	0	2	0	1		2	0	58		25									0	311	400
Thrissur			0	2			0	12	0	6		1	0	28		16									0	335	400
wayanad			0	8									0	11		4									0	377	400

Table 25: HIV Prevalence among ANC Clinic Attendees by Current Occupation of Spouse

State/District	Agricultural Labourer		Non-Agricultural Labourer		Domestic Servant		Skilled / Semiskilled worker		Petty business / small shop		Large Business/Self employed		Service (Govt./Pvt.)		Student		Hotel staff		Truck driver/Helper		Local transport Worker		Agricultural cultivator/		Unemployed		Not Applicable		Total
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	
Kerala	0	119	0	1307			0.07%	1354	0	373	0	247	0	1284			0	140	0	90	0.16%	637	0	37	0	8	0	1	5600
Alappuzha	0	1	0	66			0	73	0	32	0	22	0	155			0	6			0	45							400
Ernakulam	0	2	0	2			0	12	0	25	0	31	0	309			0	6	0	6	0	7							400
Idukki	0	11	0	46			0	140	0	28	0	8	0	71			0	13			0	51	0	31			0	1	400
Kannur	0	4	0	144			0	99	0	22	0	1	0	55			0	18	0	8	2.27%	44				5			400
Kasaragod	0	18	0	164			0	94	0	16	0	2	0	31			0	31			0	40	0	4					400
Kollam	0	2	0	134			0	84	0	3	0	18	0	75			0	3			0	80							400
Kottayam			0	83			0	106	0	36			0	103			0	15			0	57							400
Kozhikode	0	1					0	89	0	33	0	133	0	138					0	1	0	5							400
Malappuram	0	1	0	196			0	81	0	31			0	33			0	3	0	18	0	36				1			400
Palakkad	0	38	0	56			0.93%	107	0	38	0	2	0	44			0	19	0	12	0	80	0	2					400
Pthanamthitta	0	28	0	159			0	77	0	22	0	4	0	39			0	13			0	58							400
Thiruvananthapuram			0	40			0	132	0	20	0	13	0	130			0	3	0	7	0	53				2			400
Thrissur							0	210	0	43	0	3	0	61			0	4	0	21	0	58							400
wayanad	0	13	0	217			0	50	0	24	0	10	0	40			00	6	0	17	0	23							400

Table 26: HIV Prevalence among ANC Clinic Attendees by Migration status of Spouse

State/District	Yes		No		Not Applicable		Total
	%	N	%	N	%	N	
Kerala	0	578	0.04	5020	0	1	5600
Alappuzha	0	46	0	354			400
Ernakulam	0	76	0	324			400
Idukki	0	5	0	394	0	1	400
Kannur	0	48	0.28	352			400
Kasaragod	0	2	0	398			400
Kollam	0	80	0	319			400
Kottayam	0	15	0	385			400
Kozhikode	0	132	0	268			400
Malappuram	0	49	0	351			400
Palakkad	0	17	0.26	383			400
Pthanamthitta	0	7	0	393			400
Thiruvananthapuram	0	20	0	380			400
Thrissur	0	24	0	376			400
wayanad	0	57	0	343			400

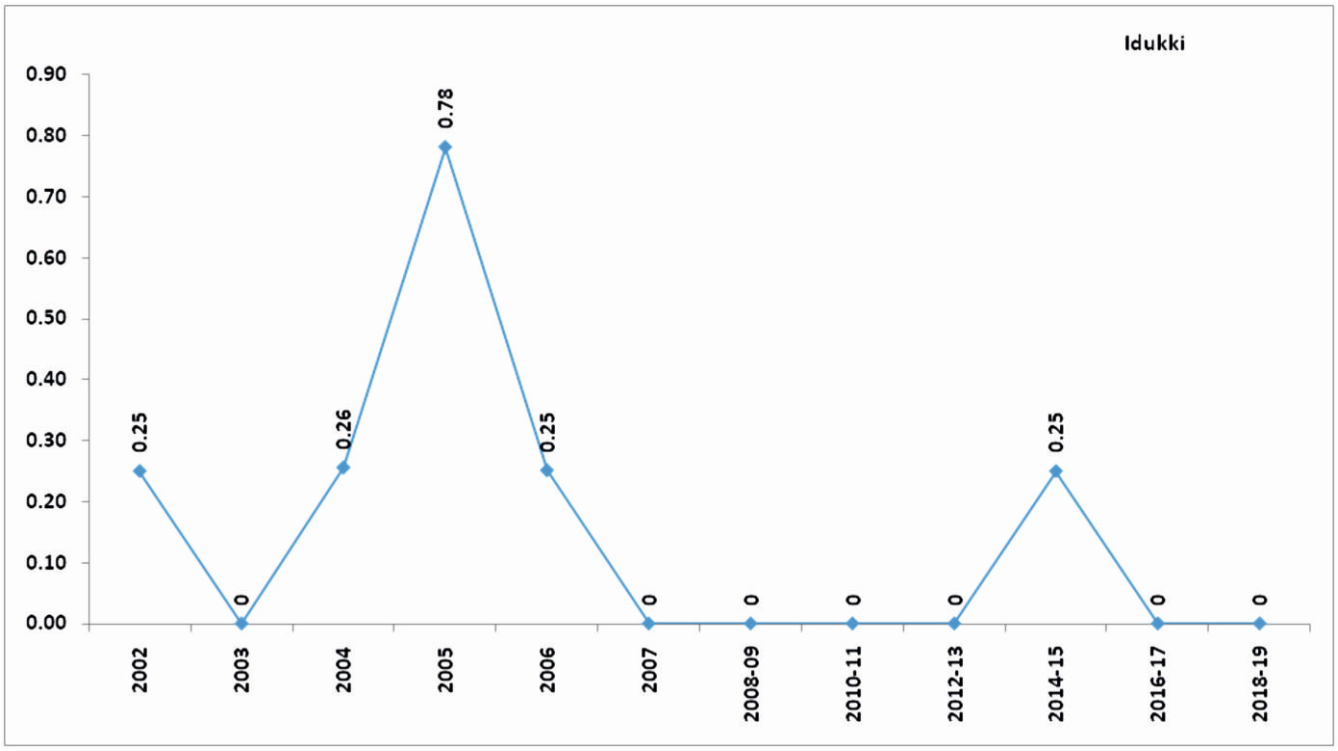
Table 27: HIV Prevalence among ANC Clinic Attendees based on HIV tested history

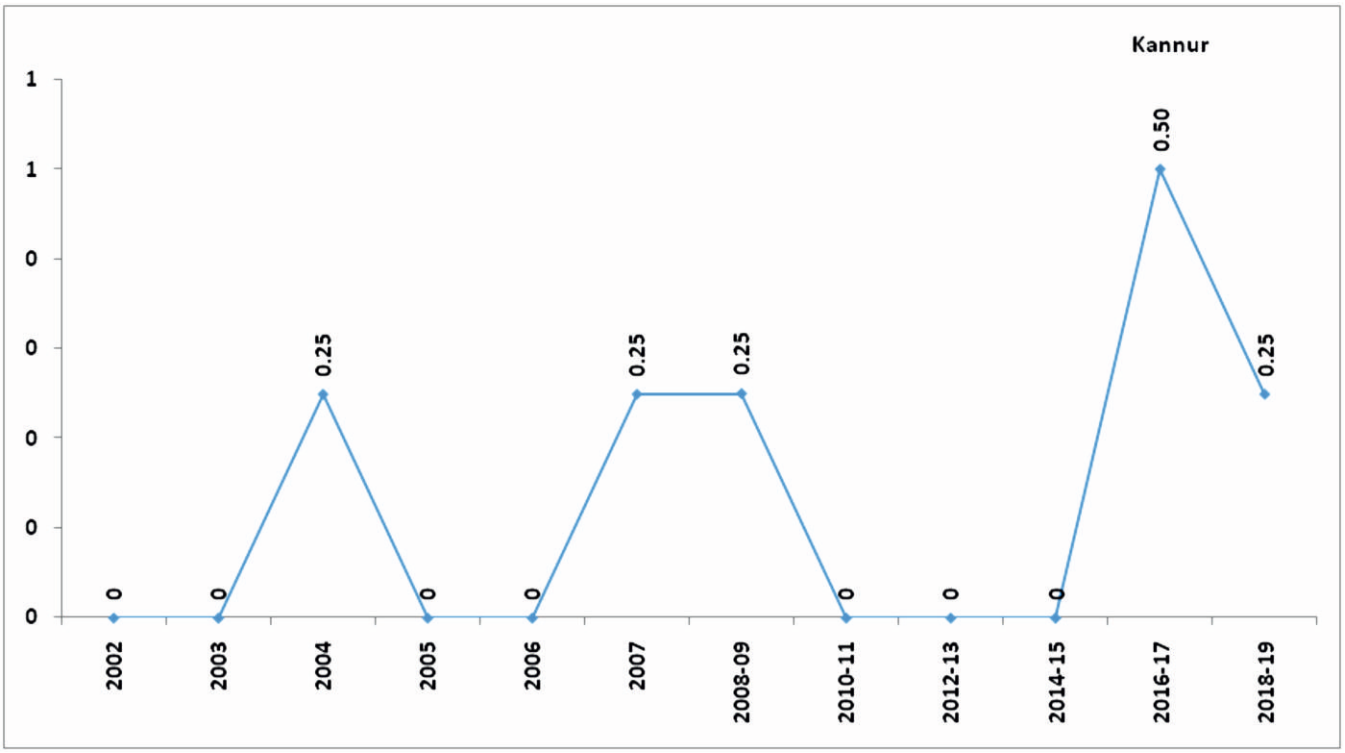
State/District	YES		NO		Total
	%	N	%	N	
Kerala	0.02	4231	0.07	1369	5600
Alappuzha	0	330	0	70	400
Ernakulam	0	349	0	51	400
Idukki	0	338	0	62	400
Kannur	0	246	0.65	154	400
Kasaragod	0	341	0	59	400
Kollam	0	259	0	141	400
Kottayam	0	328	0	72	400
Kozhikode	0	356	0	44	400
Malappuram	0	274	0	126	400
Palakkad	0.32	315	0	85	400
Pthanamthitta	0	211	0	189	400
Thiruvananthapuram	0	261	0	139	400
Thrissur	0	324	0	76	400
wayanad	0	299	0	101	400

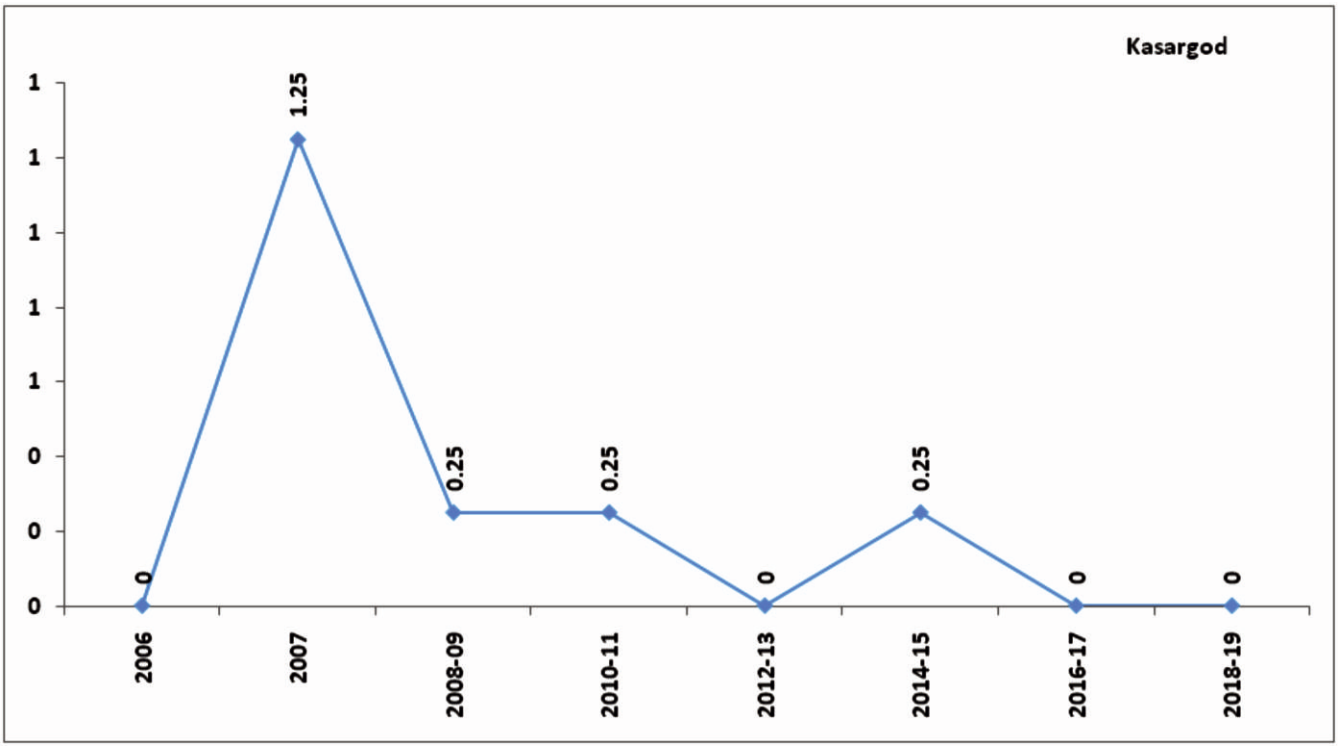
Table 28: District-wise HIV Prevalence trend 2002 -2019

District	2002	2003	2004	2005	2006	2007	2009	2011	2013	2015	2017	2019
Alappuzha										0	0	0
Ernakulam								0	0	0	0	0
Idukki	0.25	0	0.26	0.78	0.25	0	0	0	0	0.25	0	0
Kannur	0	0	0.25	0	0	0.25	0.25	0	0	0	0.50	0.25
Kasargod					0	1.25	0.25	0.25	0	0.25	0	0
Kollam										0	0	0
Kottayam	0.50	0	0.40	0	0.50	0.50	0.50	0	0.25	0	0	0
Kozhikode								0	0	0	0	0
Malappuram								0.50	0	0	0	0
Palakkad								0.50	0	0.25	0	0.25
Pthanamthitta										0	0	
Thiruvananthapuram					0	0.25	0.25	0	0	0	0	0
Thrissur	0.25	0.25	0.75	0.50	0.50	0.50	0	0	0	0	0.25	0
wayanad										0	0	0

5.2 HIV Prevalence trend at district level



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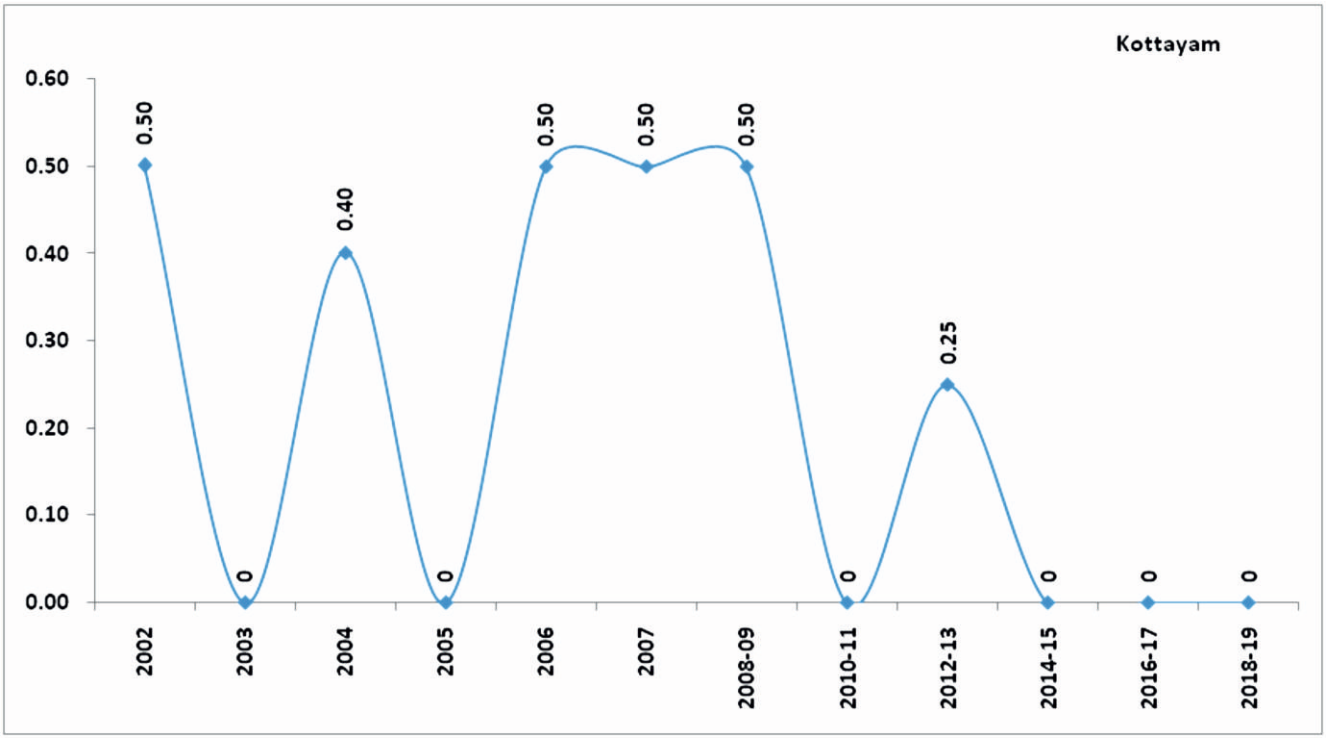
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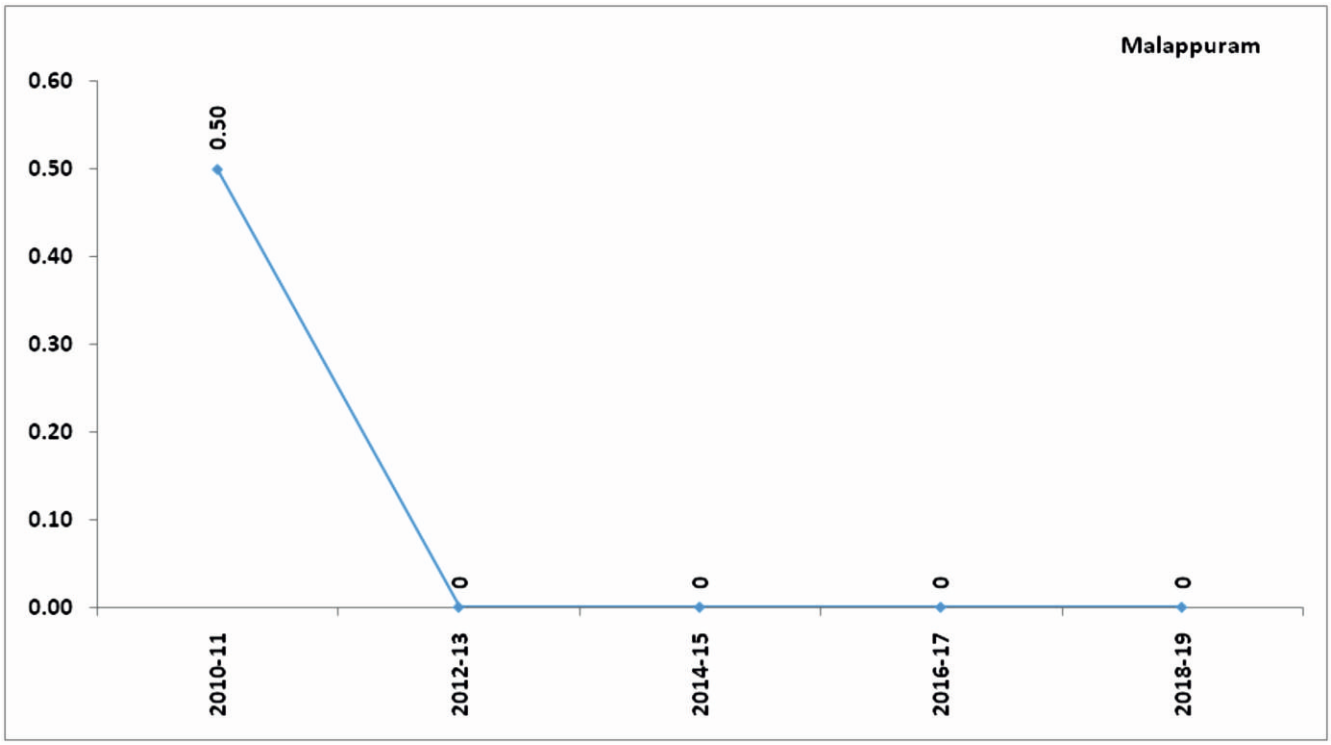
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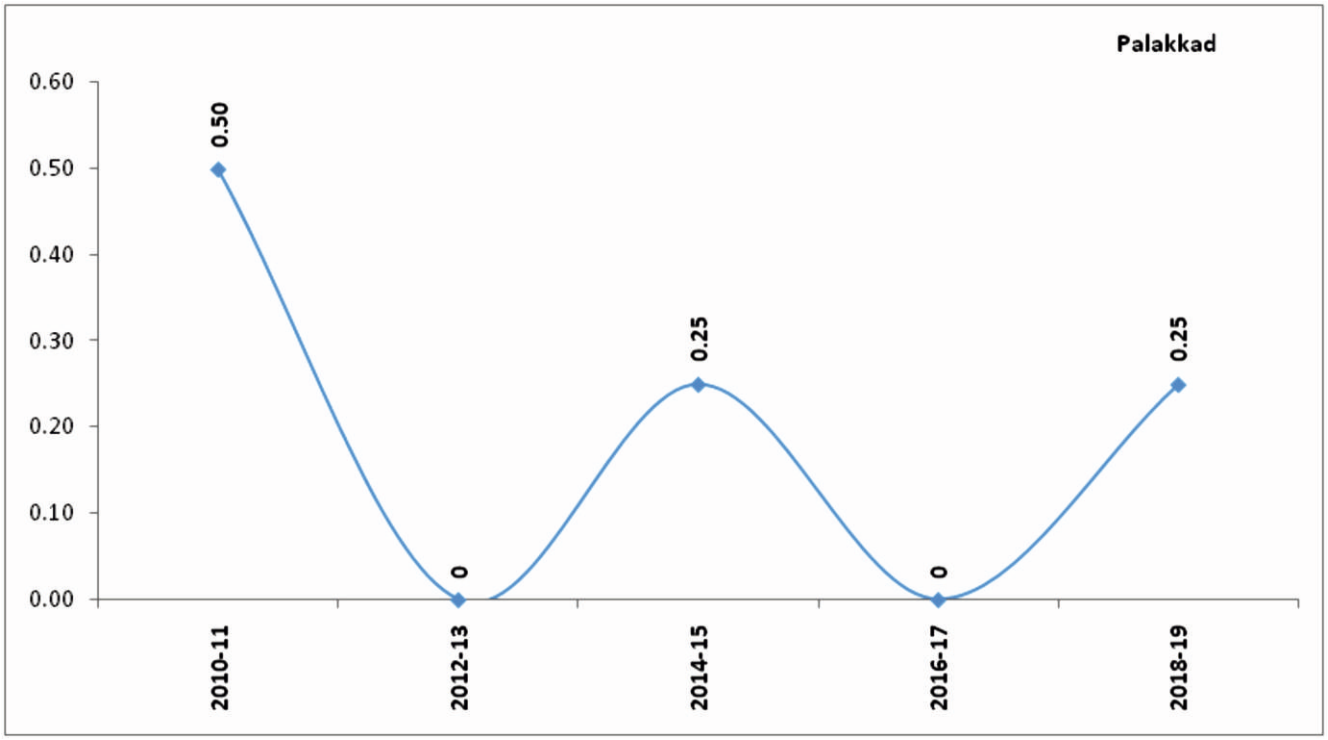
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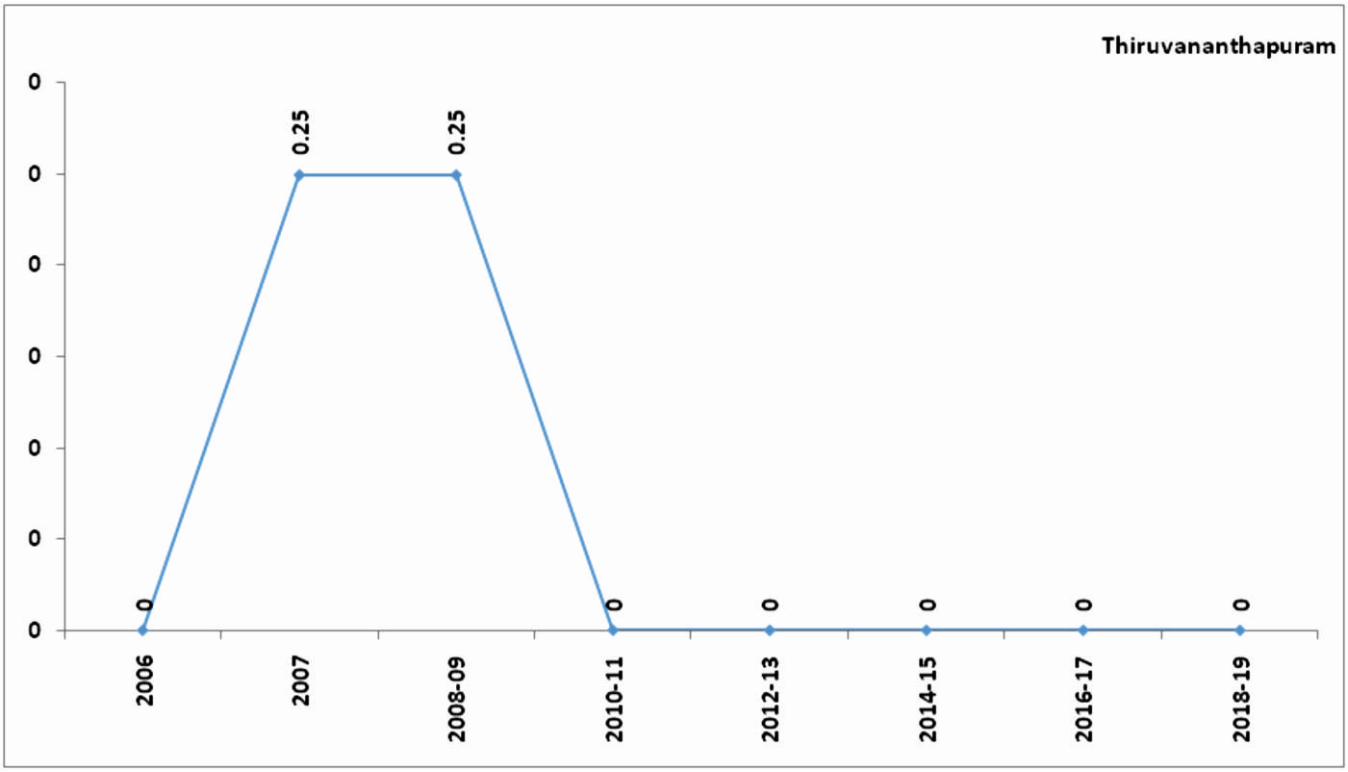
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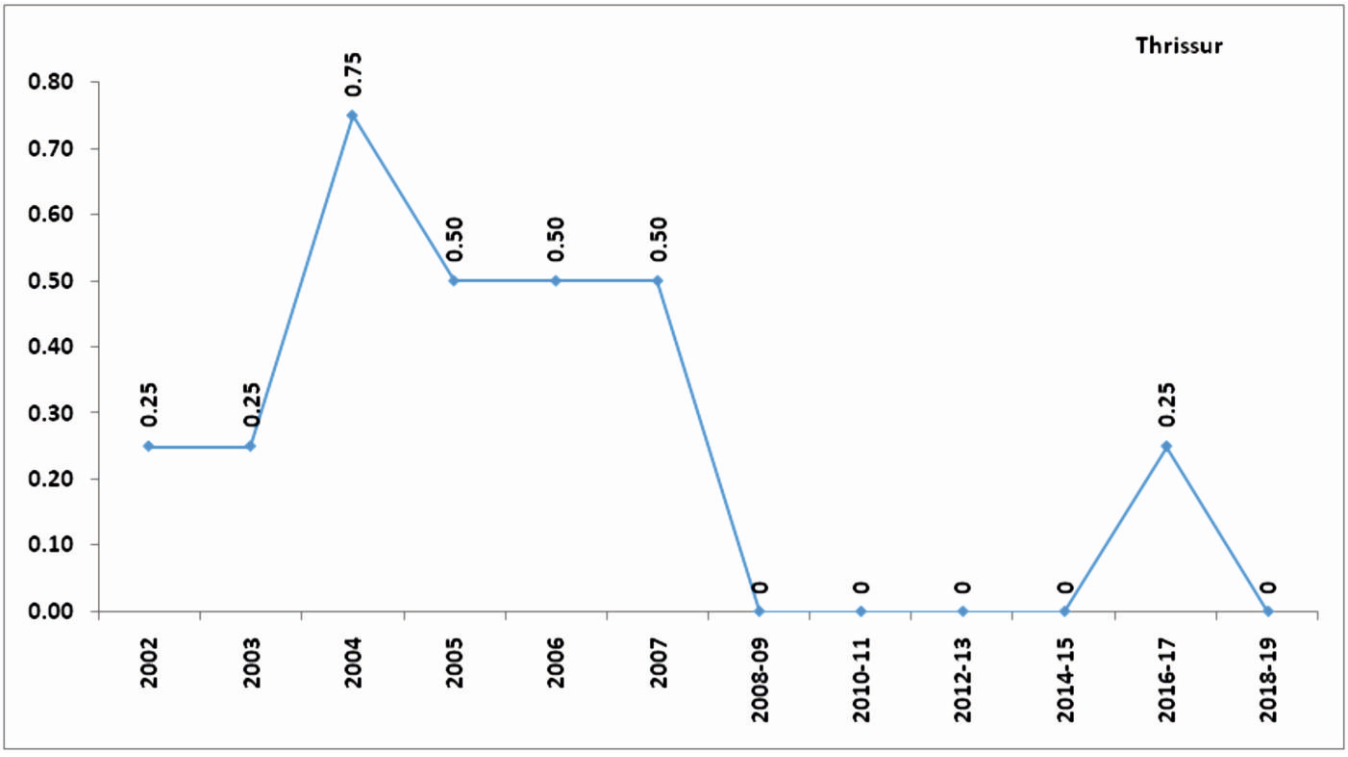
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CHAPTER 6

SUMMARY

The 16th round of HSS among pregnant women in 2019 was implemented at 14 sites across 14 districts in Kerala collecting a total of 5600 complete data forms and biological specimens following consecutive sampling method and linked anonymous strategy as in previous round.

The median age of respondents were 26 years in the state and ranged between 17 and 49 years across the districts. The overall HIV prevalence among ANC clinic attendees in Kerala in 2019 was low at 0.04%. District-wise, Palakkad and Kannur recorded higher HIV prevalence of 0.25% than that of the state average (0.04%). Other districts had zero HIV prevalence

HIV prevalence among ANC clinic attendees exhibits a stabilizing trend at the state level as well as in most districts.

In general, HIV prevalence was recorded among middle age-group women (25 to 34 years), those at second order pregnancies, and those who were house wives. HIV prevalence was observed among pregnant women whose spouses were working as local transport workers and skilled or semi-skilled workers.

Findings from 2019 round of ANC HSS corroborates with previous rounds showing a low and declining trend at the state level, with persistent geographical diversity at district level. Sustained declining trend among ANC clients nationally and at the state-level, is positive indicator of the successful response of the National AIDS Control Programme (NACP). However, district-level fluctuating trends is a continuing challenge. The findings will be used as a compass by the policy makers and programme managers towards achieving 'End of AIDS' as a public health threat by 2030.

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