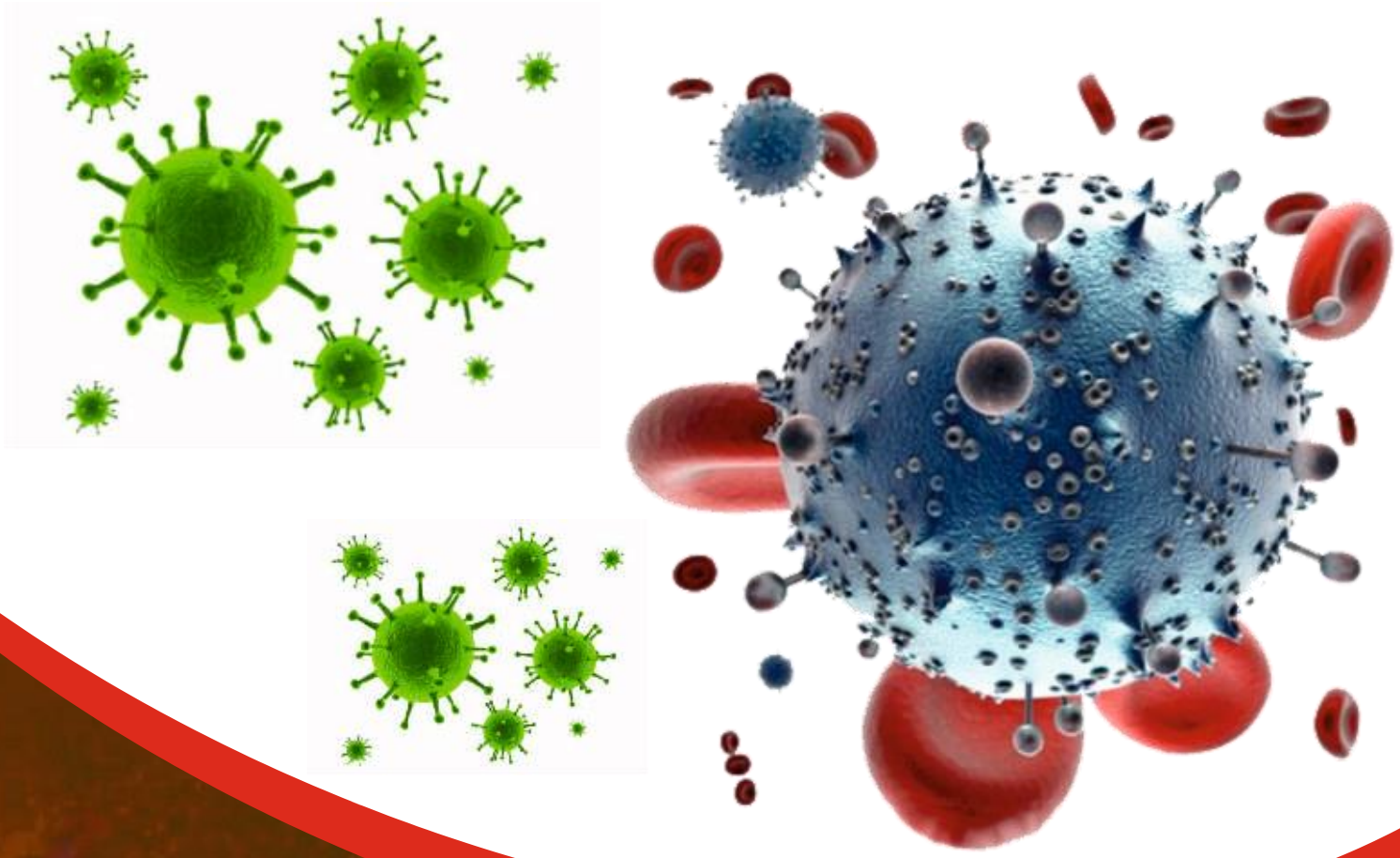

HIV

SENTINEL SURVEILLANCE (ANC)

Andhra Pradesh State Report

2016-17

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INDIAN COUNCIL OF MEDICAL RESEARCH | NATIONAL INSTITUTE OF EPIDEMIOLOGY

NACO

HIV

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ICMR-NATIONAL INSTITUTE OF EPIDEMIOLOGY
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NATIONAL AIDS CONTROL ORGANISATION
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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 15th 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. S. Venkatesh, Deputy 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

Suggested citation

ICMR - National Institute of Epidemiology (2020). HIV Sentinel Surveillance 2016-17, Andhra Pradesh State Report: Indian Council of Medical Research, Department of Health Research, Ministry of Health and Family Welfare, Government of India.

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CONTENTS

CHAPTER 1.

INTRODUCTION

Acquired immune deficiency syndrome or acquired immunodeficiency syndrome (AIDS) is a disease of the human immune system caused by the human immunodeficiency virus (HIV). This condition progressively reduces the effectiveness of the immune system and leaves individuals susceptible to opportunistic infections and tumours. The first HIV infection was reported in the year 1981 in the United States of America. Afterwards the epidemic spread rapidly throughout the globe.

In India it was in 1986, the first HIV infection reported from Chennai, Tamil Nadu. In the last two decades the awful disease spread throughout the country.

Surveillance is a vital component of any disease control programme. The purpose of surveillance is to actually look for evidence of disease risk, to predict the pattern and to plan appropriate action for control and prevention. Providing meaningful insights for action at policy, strategy, planning, or implementation levels at the appropriate time is the key objective of surveillance. The HIV epidemic in India is concentrated, with high prevalence among high-risk groups, moderate prevalence among bridge populations, and low prevalence among general population. 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. HIV sentinel surveillance measures the prevalence of HIV in a specific risk group in a specific region at a specific point of time. The HIV sentinel surveillance system in India is based on the HIV transmission dynamics mentioned above and monitors the HIV epidemic patterns among the following groups:

1. High-risk groups

a. Female sex workers
b. Men who have sex with men (MSM)
c. Injecting drug users
d. People who are TG (transgender)/eunuchs

2. Bridge populations

a. Single male migrants
b. Long-distance Truckers (LDTs)
c. People attending STI or gynaecology clinics (currently discontinued)

3. General population

a. Pregnant women attending the ANC clinics in urban and rural areas, and the ANC clinic attendees were considered proxy for general population. STI patients were considered proxy for people with high-risk behaviour (high-risk and bridge populations and their partners).

1.1. Objectives and Application of HIV Sentinel Surveillance

The key objectives of HIV sentinel surveillance in India are to:

1. Monitor trends in HIV prevalence over time.
2. Monitor the distribution and spread of HIV in different subgroups and geographical areas.
3. Identify emerging pockets of HIV epidemic in the country.
4. Applications of HIV sentinel surveillance data.
5. Estimate and project burden of HIV at state and national levels.
6. Support programme prioritization and resource allocation.
7. Assist evaluation of programme impact.
8. Provide evidence to advocacy efforts.

1.2. Evolution of HIV Sentinel Surveillance in India

HIV surveillance in India began in 1985 when the Indian Council of Medical Research (ICMR) initiated a surveillance activity among blood donors and patients with STIs. After the National AIDS Control Organisation (NACO) was established in 1992, sentinel surveillance for HIV in India was initiated in 1993-94 with 52 sentinel sites in selected cities. In 1998, NACO formalized annual sentinel surveillance for HIV infection in the country with 180 sentinel sites, of which 176 were valid.

The first major expansion of the surveillance network was in 2003. More than 200 rural antenatal care (ANC) sentinel sites were established at the community health centre (CHC) level in most of the districts in high-prevalence states as well as some districts in low-prevalence states in North India. However, half of these ANC rural sites, especially those in low prevalence states of North India, were discontinued in the next round because they could not achieve the required target sample size due to poor utilization rates. Another significant expansion in 2003 was the addition of 30 FSW sites. Overall, 354 districts had at least one HSS site in 2003. From 2003 and until 2005, the same sentinel sites continued with expansion to 83 FSW and 30 injecting drug user (IDU) sites.

The year 2006 could be considered the watershed year for HSS development in India. The goal was to have at least one sentinel site in every district of India and new sentinel sites were added for all risk groups in that year. Key developments in 2006 included:

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. Major expansion of STI and ANC urban sentinel sites in low-prevalence states of North India.
. Addition of rural ANC sites in high-prevalence states.
. Initiation of special ANC sites for 15-24-year-old pregnant women to monitor new infection.
. Expansion of sentinel sites among FSW, MSM and IDU.
. Initiation of sentinel sites among long-distance truckers (LDTs), single male migrants, and people who are transgender (TG).
. Introduction of composite sites in HSS that facilitated establishment of sentinel sites in places where it had been difficult to do so, such as rural areas and places with fewer HRGs.

In year 2006, the scale of surveillance operations increased from 703 sites in high prevalence states in 2005 to 1,122 sites to cover the entire country. The surveillance was also expanded from being only clinic-based to also include Targeted Intervention (TIs)

Five leading regional public health institutions in the country were involved to expand and strengthen the surveillance network and implementation activities and follow up programmes. These regional institutes (RI) provided technical support, guidance, monitoring, and supervision for implementing HSS. Two more RIs were created in 2008. Supervisory structures were further strengthened with constitution of central and state surveillance teams, comprised of public health experts, epidemiologists, and microbiologists from several medical colleges and research institutions.

During the subsequent three rounds of HSS (2007, 2008-09, and 2010-11), the focus was on expansion of surveillance among high-risk and bridge populations.

Key strategic HSS implementation improvements in these rounds included:

1. Technical validation of new sentinel sites by regional institutes before inclusion in surveillance and dropping poorly performing sites.
2. Introduced the dried blood spot (DBS) method of sample collection from high-risk groups (HRGs) to overcome logistic problems at HRG sites.
3. Introduced informed consent at high-risk group sites to address ethical concerns.
4. Initiated random sampling methods of recruitment at HRG sites, taking advantage of the availability of updated line lists of HRGs at the TI projects.
5. Standardized training protocols across states with uniform session plans and materials, and adoption of a two-tier training plan with training-of-trainers (TOT) followed by training of site personnel.
6. Developed a four-tier supervisory structure: national-level central team; regional institutes; state surveillance teams; and State AIDS Control Society (SACS) teams.
7. Strengthened focus on supportive supervision and action-oriented monitoring.
8. Increased focus on quality of planning, training, implementation, supervision and feedback.
9. Decreased number of testing laboratories for ANC and STD samples, limiting them to high-performing laboratories with enzyme-linked immunosorbent assay (ELISA) facilities to ensure high-quality testing and close supervision.
10. Developed a new web-based data management system to enhance data quality and ensure realtime monitoring of surveillance activities.
11. Initiated epidemiological investigation into unusual findings (sudden rise or decline in prevalence) to understand reasons and correct.
12. Conducted pre-surveillance sentinel site evaluation to assess preparedness of site for HSS and to obtain profile-related information.

Between 2008 and 2009, the annual frequency of HSS was shifted to biennial (once in two years). STI sites were gradually being discontinued in 2008-09 and 2010-11.The 13th round of HSS was implemented at 763 sentinel sites (750 ANC and 13 STI sites). Most of the STI sites from the 12th round of HSS were phased out during HSS 2014-15. For high-risk and bridge populations, National Integrated Biological and Behavioural Surveillance (IBBS) was conducted to strengthen surveillance among these groups.

CHAPTER 2

METHODOLOGY AND IMPLEMENTATION

This chapter describes HSS methodology and the implementation mechanisms adopted during HSS 2016-17.

2.1. Methodology of HIV Sentinel Surveillance at ANC Sentinel Sites

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. Under HIV sentinel surveillance (HSS), recruitment of respondents is conducted for three months at selected ANC sentinel sites. Because of the low HIV prevalence in India, the classical survey method of sample size calculation that gives a large sample size cannot feasibly be collected through facility-based surveillance on an annual basis. Hence, a sample size of 400 for surveillance among ANC attendees was approved by a consensus of experts. Eligible respondents are enrolled until the sample size of 400 is reached or until the end of the surveillance period, whichever is earlier.

The eligibility criteria for recruiting respondents at an ANC sentinel sites were:

1. Age 15-49 years

2. Pregnant woman attending the antenatal clinic for the first time during the current round of surveillance period. “Sampling method” refers to the approach adopted at the sentinel sites for recruiting eligible individuals into HSS. Consecutive sampling method is adopted in HSS in India for ANC clinic attendees. After the start of surveillance, all individuals attending the ANC sentinel site facility who are eligible for inclusion are recruited in the order they attend the clinic. This sampling method removes all chances of selection or exclusion based on individual preferences or other reasons, and hence reduces the selection bias. It is convenient, feasible, and easy to follow.

”Testing strategy” refers to the approach adopted for collecting and testing blood specimens and handling the test results in HSS. In India, the unlinked anonymous testing strategy is used. Testing is conducted on a portion of blood specimen collected for routine diagnostic purposes (such as syphilis) after removing all personal identifiers. Neither the information collected in the data form nor the HIV test result from the blood specimen is ever linked to the individual from whom the information/ specimen is collected. Neither the personnel collecting the specimen nor the personnel testing the specimen are able to track the results back to the individual.

Hence, the personal identifiers such as name, address, outpatient registration number, etc. were not mentioned anywhere in the data form, blood specimen, or data form transportation or sample transportation sheets. Similarly, the HSS sample number or any mark indicating inclusion in HSS is not mentioned in the ANC register or patient/OPD card. The portion of the blood specimen with identifiers is used for reporting the results of the routine test for which it has been collected. The portion of the blood specimen without identifiers is sent for HIV testing under HSS.

"Testing protocol" refers to the number of HIV tests conducted on the blood specimen collected during HSS. A two-test protocol is adopted in HSS. The first test is of high sensitivity and second of high specificity and is confirmatory in nature. The second test is conducted only if the first is found to be positive. HIV testing under surveillance is for the purpose of ascertaining HIV levels and trends in a community and not for case diagnosis, which is why the two-test protocol is the global standard for surveillance.

The methodology of HSS at ANC sentinel sites is summarized in Table 1 below:

Table 1: Methodology of HIV Sentinel Surveillance 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

2.2. Information Collected under HSS at ANC Sentinel Sites

HSS provides information on two bio-markers- HIV and syphilis. All blood specimens collected under HSS are tested for these two infections. When recruiting an individual in HSS, information is collected on basic demographic parameters such as age, education, occupation, spouse's occupation, and order of pregnancy. Collected information is kept minimal and restricted to those who might be asked under routine clinic procedures. During the recent rounds, a few questions were added to identify potential biases in the sample (e.g., source of referral) or to further profile the respondents with respect to their vulnerability(migration status of spouse) so that HIV prevalence estimates can be better explained and interpreted. HSS 2016-17 collects information on the following nine key demographic variables from every respondent.

1. Age: The age of the respondent is recorded in number of completed years. Since age is a part of eligibility criteria, improper recording or non-recording of age makes a sample invalid. Information on age helps identify the age groups with high HIV prevalence. In the absence of data on HIV incidence, high prevalence among younger age groups is considered a proxy for recent infections.

2. Literacy status: The literacy status of an individual has a direct bearing on the awareness levels with respect to risks of acquiring HIV and means of protecting oneself. Knowing the literacy status of the pregnant woman, helps in understanding the differentials in HIV prevalence and informs demographics about the women who are accessing services at ANC clinics. This information may also be helpful to compare and standardize the demographic profiles of two independent samples under HSS, while investigating any unusual increase or decrease in trends. Under HSS 2014-15, the literacy status of respondents was classified into five categories as defined below.

(a). Illiterate: People with no formal or non-formaleducation. **(b). Literate and till 5th standard:** People with non-formaleducation or those who joined school but did not study beyond 5thstandard. **(c). 6thto 10thstandard:** Those who studied beyond5thstandard but not beyond 10th standard. **(d).11thto graduation:** Those who studied beyond10thstandard but not beyond graduation. Includes those with technical education/diplomas,. **(e). Post-graduation:** Those who studied beyond graduation.

3. Order of current pregnancy: The order of pregnancy denotes the number of times a woman has been pregnant. It includes the number of live births, still births, and abortions. It is also referred to as gravidity. Women who are pregnant for the first time are referred to as primi-gravida. In the context of HIV, order of pregnancy indicates the duration of exposure to sexual risks. Since primi-gravida are likely to be exposed to sexual risks only recently, HIV prevalence among them is considered a proxy for new HIV infections and helps in understanding the HIV incidence in that region. The order of pregnancy is recorded as first, second, third, fourth, or more.

4. Duration of pregnancy: Duration of pregnancy is usually measured in terms of three trimesters; each of them of about three month's duration. (a) First trimester: The first trimester of pregnancy is from conception to 12th week of pregnancy. (b) Second trimester: The second trimester of pregnancy is from 13th to 27th week of pregnancy. (3) Third trimester: The third trimester of pregnancy spans from week 28 to birth.

5. Prior receipt of antenatal care services during current pregnancy : 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.

6. Source of referral to the ANC clinic: Under HSS, ANC clinic attendees are asked who referred them to the clinic for antenatal check-up. This variable was added to the data collection form to understand the various sources of referral, especially to assess if there is any specific bias in the sample because of specific referrals of HIV-positive cases from any source. Published literature indicates that there is disproportionate referral of HIV-positive cases from private sector to government hospitals. Similarly, if there are higher numbers of referrals from ICTC/ ART centres in the sample, it may bias the HIV prevalence, as those respondents are likely to be people who have been exposed to HIV risk, to have HIV risk perception or w ho are known to be HIV-positive. This variable helps assess any such phenomenon. The response categories listed in the HSS data form include: ***(a). Self-referral (b). Family/ relatives/ neighbours/ friends (c). NGO (d). Private hospital (doctors/ nurses) (e). Government hospital (including ANM/ ASHA) (f). ICTC/ ART centre.***

7. Current place of residence: HSS 2014-15 records the reported current residence of the respondent as 'Urban' or 'Rural'. If the current place of residence of the respondent i.e., the place she is living with her husband falls under Municipal Corporation, municipal council, or cantonment area, it is classified as 'urban'. Otherwise, it is recorded as 'rural'. Place of residence helps in studying the epidemic patterns in urban and rural areas separately and provides programmatic insight for implementing interventions. In the context of formerly high-prevalence states, urban rural differentials of HIV prevalence is important because HIV is known to have spread to rural areas, sometimes with higher prevalence in these states. In low-prevalence states with rising HIV trends, migration from rural areas to high prevalence destinations is likely to play a role. Therefore, studying rural epidemics is important to characterise the epidemic appropriately.

8. Current occupation of respondent: Certain occupations are associated with higher exposure and risk to HIV. It is important to understand the profile of respondents and differentials of HIV with respect to their occupation. For this purpose, HSS has categorized occupations into 13 categories ensuring that all the possible occupations are covered and the categories are relevant to the epidemiological analysis of HIV prevalence data. The occupation categories and their definitions were as follows: (a). Agricultural labourer (b). Non-agricultural labourer: includes workers at construction sites, quarries, stone crushers, road or canal works, brick-kilns. (c). Domestic servant (d). Skilled/semi-skilled worker: includes workers in small-scale or cottage industries; industrial/ factory workers; technicians such as electricians, masons, plumbers, carpenters, goldsmiths, iron-smiths, and those involved in automobile repair; artisans such as weavers, potters, painters, cobblers, shoe-makers, tailors. (e). Petty business/small shop: includes vendors selling vegetables, fruits, milk, and newspapers; pan shop operators. (f). Large business/self-employed: includes professionals and business people. (g). Service (govt/pvt): those working on salary basis in government, private, or institutional sector; excludes drivers and hotel staff. (h). Student (i). Truck drivers/helpers (j). Local transport workers (auto/ taxi drivers, handcart pullers, rickshaw pullers, etc.) (k). Hotel staff (l). Agricultural cultivators/ landholders (m). Housewife (in order to be consistent with the occupation codes for spouse of respondent, housewife is Code 14).

9. Current occupation of spouse: Occupation of spouse is an important epidemiological variable that may help identify population groups that are at higher risk of acquiring HIV. HSS used the same occupational categories as those used for the respondent. The two differences are that the category 'unemployed' (Code13) is used in the place of 'housewife' and there is an additional category: 'Not applicable (never married/widow/divorced/separated)' (Code 99).

10. Migration status of spouse: Analyses of drivers of the emerging epidemic in some low-prevalence states points to migration from these states to high-prevalence destinations (NACO Annual Report 2013-14, Chapter 2. Current Epidemiological Scenario of HIV/AIDS, pg.12). In order to assess the effects of migration status of spouse on HIV prevalence among ANC clinic attendees, respondents in HSS were asked whether spouse resides alone in another place/town away from wife for work for longer than 6 months. This question is not applicable to respondents who were never married/widowed/ divorced/separated.

11. HIV Testing History: This refers to the HIV testing history of pregnant women.

12. Time of last HIV Testing: This question aims to understand the timing of last HIV testing of respondents in reference to current pregnancy.

13. Result of last HIV test: This refers to the result of the last HIV test of the ANC respondent.

14. Management of HIV infections: This refers to the enrolment of HIV positive respondents in HIV care, either for pre-ART or ART services, at the time of surveillance.

15. ART Uptake: This refers to the current uptake of 'Antiretroviral therapy' by HIV positive respondents.

2.3. Implementation Structure of HIV Sentinel Surveillance in India

HIV sentinel surveillance has a robust structure for planning, implementation, and review at national, regional, and state levels. The structure and key functions of involved agencies are shown in Figure 1.

National level: The National AIDS Control Organisation (NACO) is the nodal agency for strategy formulation and commissioning for each round of HSS. The Technical Resource Group on Surveillance and Estimation, comprised of experts from the fields of epidemiology, demography, surveillance, biostatistics, and laboratory services, advises NACO on the broad strategy and

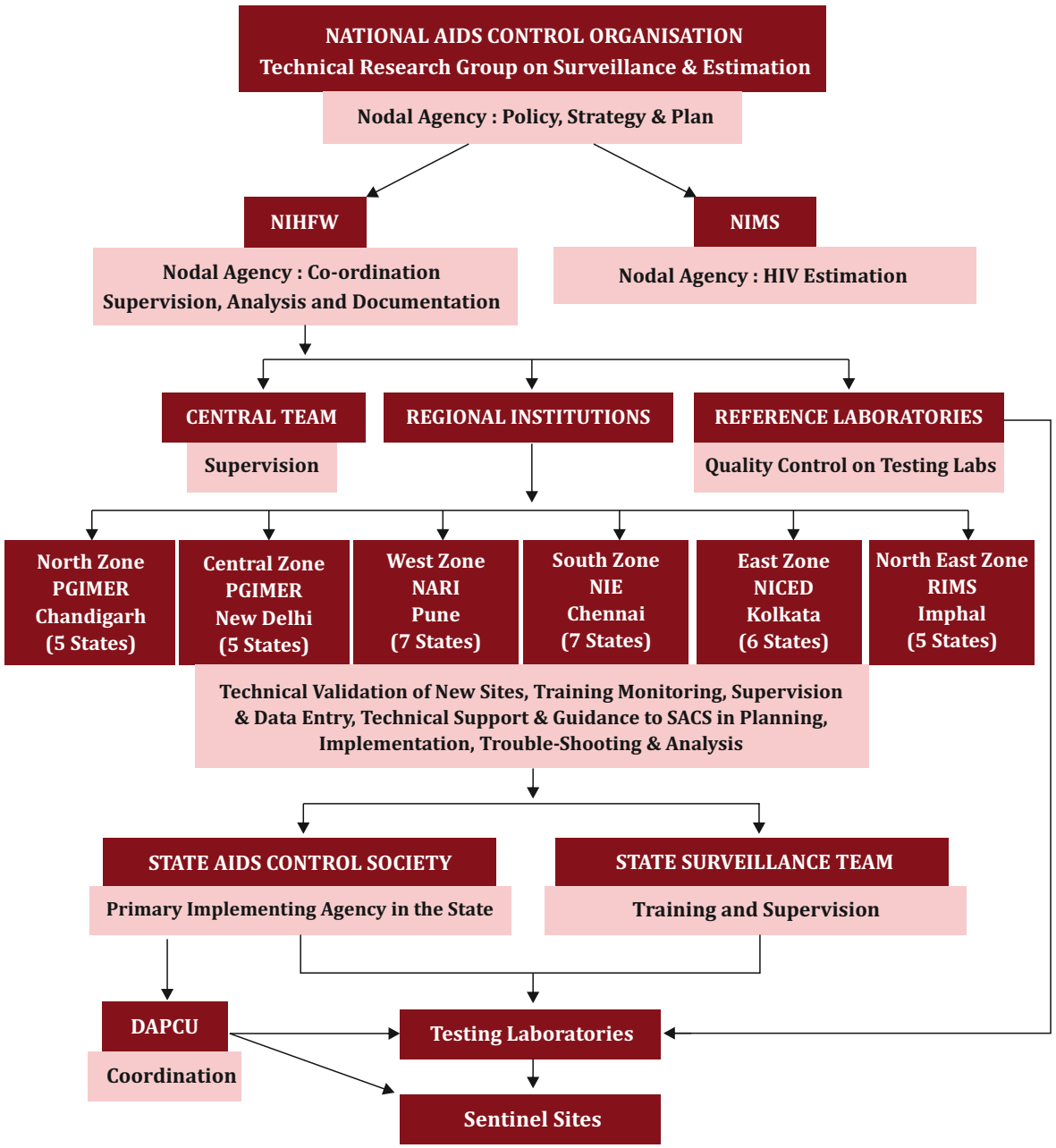


Figure : Implementing Structure of HIV Sentinel Surveillance in India

The main goal of implementing structure of HSS is for performing the assessment of the implementation plans of HSS and reviews the outcomes of each round. Two national institutes—National Institute of Health and Family Welfare (NIHFW) and ICMR- National Institute of Medical Statistics (ICMR- NIMS)—supports national level activity planning and coordination. In addition, the central team, which is coordinated by NIHFW, New Delhi and is comprised of experts from the Centres for Disease Control and Prevention (CDC), World Health Organisation (WHO),The Joint United Nations Programme on HIV and AIDS (UNAIDS), medical colleges, and other national and international agencies, provide support in training and supervision.

Regional level: Since 2006, NIE has been identified as regional institutes (RIs) for HSS to provide technical support to the State AIDS Control Societies (SACS) for all HSS activities in southern zone, starting with identification of new sites, training, monitoring and supervision, and improving quality of the data collection and their analysis. Data entry is another function performed by RIs. The team at each RI is comprised of two epidemiologists/public health experts and one micro-biologist, which are supported by one project coordinator, two research officers, one computer Assistant/data manager, and between four and ten data entry operators, depending on the volume of data entry. The names of the six regional institutes and the distribution of states among them are in Table 2.

State level: SACS is the primary agency responsible for implementation of HSS and NACO has appointed state epidemiologists at the SACS to support the activities and promote data analysis. In addition to these, every state has a surveillance team comprised of public health experts and microbiologists who support SACS in thetraining, supervision, and monitoring of the personnel involved in sentinel surveillance. State surveillance teams (SSTs) are formed by RIs in consultation with SACS. All activities are coordinated by RIs.

District level: In districts with functional district AIDS Prevention and Control Units (DAPCUs), theDAPCU staffs are involved in the coordination of HSS activities at the sentinel sites and the associated testing labs. Laboratory network Laboratory support is provided by a network of testing and reference labs. There are 117 state reference laboratories (SRLs) that conduct primary testing of blood specimens collected under HSS. Thirteen national reference laboratories (NRLs) provide external quality assurance to the SRLs through repeat testing of all HIV-positive blood specimens and 5 % of HIV negative specimens.

Table 2: Regional Institutes for HIV Sentinel Surveillance and their State Allocation

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

2.4. Key Initiatives during HIV Sentinel Surveillance 2016-17:

In response to key issues identified in the implementation of HSS during the previous rounds and to improve the quality and timeliness of the surveillance process in the 14thround, several new initiatives were implemented as part of continuous quality improvement.

SACS checklist for preparatory activities:

This was developed to monitor the planning process for HSS in each state (Annex 3). All the preparatory activities were broken into specific tasks with clear time lines and 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 time lines.

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:

These were 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 2016-17:

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 yoursentinel site” exercise, which helped participants identify the routine practices that could affect the implementation of surveillance at their sites andrecommended 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 site sfor supervisory visits.
5. Training reports for each batch were submitted in standard formats at the end of the each training.

Details of trainings :

1. Trainings started with two batches of national pre-surveillancemeetings with about 90 personnel from regional institutes and SACS to discuss the critical aspects of planning for HSS 2016-17 and to clearly under stand 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 @ 8-10sites 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 form icrobiologists 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-chargesurveillance, Epidemiologists, and M&E officers;280 state surveillance team members; 260laboratory personnel including microbiologists and lab technicians from the designated test inglabs; and more than 3,000 sentinel site personnel including medical officers, nurse/counsellors, and lab technicians were trained under HSS 2016-17.

Laboratory system: For HSS 2016-17, the laboratory system was strengthened by limiting the testing of specimens to designated SRLs. Real-time monitoring of the quality of blood specimens and laboratory processes was achieved through introduction of web based reporting through the SIMS application for HSS. Efforts were made to standardize quality assurance aspects of sample testing under HSS and to streamline responses in case of discordant test results between testing lab and reference lab through the SIMS application.

Supervisory mechanisms for HSS 2016-17: 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-orientedsupervision, 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 2016-17.

1. 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.

2. Data were supervised by data managers at RIsto monitor the quality of data collection and transportation using the SIMS module.

3. 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

1. An integrated supervision plan for each state was developed by RIs, SACS, and NIHFW to avoid duplication in monitoring coverage, there by facilitating maximum coverage of surveillance sites.

2. 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.

SMS-based daily reporting from sentinel sites

This was piloted in last round and implemented in this round as an approach of daily reporting of the number of samples collected a teach sentinel site through a group SMS from a registered mobile number to a central server. The system automatically compiled and displayed site-wise data on an Excel format on a real-time basis. Access to this web-based application was given to SACS, RIs, and DAC and facilitated identification of sites with poor performance and enabled initiation of corrective action at sites that initiated HSS late; where sample collection was too slow or too fast; and where there were large gaps in sample collection.

Chapter 3.

Profile of Respondents

Data was collected from each respondent on key fourteen socio-demographic variables. Analysis of these variables is important because they help programme managers and policy makers understand the background characteristics of clinic attendees. Also they help in the identification of particular characteristics which make respondents more prone to acquiring HIV infection. The Chapter-3 deals with the profile of respondents of HIV surveillance survey 2016-17 of Andhra Pradesh.

Table 3: Profile of Respondents at State Level, Andhra Pradesh HSS 2016-17

Variables	Number	%
Age (N-15460)		
15-24	11456	74.1
25-34	3904	25.3
35-44	100	0.6
45-49	0	0.0
literacy Status (N-15418)		
Illiterate	1999	13.0
Literate and till 5th standard	2778	18.0
6th to 10th standard	6446	41.8
11th to Graduation	3753	24.3
Post Graduation	442	2.9
Order of current pregnancy (N-15449)		
First	6620	42.9
Second	6843	44.3
Third	1644	10.6
Fourth or more	342	2.2
Duration of current pregnancy (N-15442)		
First trimester	2465	16.0
Second trimester	6171	40.0
Third trimester	6806	44.1
Received ANC service during current pregnancy? (N-15451)		
Yes	11512	74.5
NO	3939	25.5
Source of referral to the ANC clinic (N-15448)		
Self Referral	2364	15.3
Family/ Relatives/ Neighbors/ Friends	3942	25.5
NGO	4	0.0

Private (Doctor/ Nurses)	550	3.6
Govt (including, ASHA/ ANM)	8536	55.3
ICTC / ART Centre	52	0.3
Current place of residence(N-15381)		
Urban	4108	26.7
Rural	11273	73.3
Current occupation of the respondent (N-15443)		
Local transport Worker (auto/taxi driver, hand cart pullers, rickshaw pullers etc)	0	0.0
Truck driver/Helper	2	0.0
Hotel staff	4	0.0
Domestic Servant	22	0.1
Large Business/Self employed	41	0.3
Petty business / small shop	75	0.5
Student	94	0.6
Skilled / Semiskilled worker	114	0.7
Agricultural cultivator/	214	1.4
Service (Govt./Pvt.)	332	2.1
Non-Agricultural Labourer	617	4.0
Agricultural Labourer	2009	13.0
Housewife	11919	77.2
Current occupation of the spouse (N-15447)		
Domestic Servant	9	0.1
Not Applicable	12	0.1
Student	33	0.2
Unemployed	63	0.4
Hotel staff	85	0.6
Large Business/Self employed	415	2.7
Truck driver/Helper	557	3.6
Agricultural cultivator/	713	4.6

Petty business / small shop	739	4.8
Local transport worker (auto/taxi driver, hand cart pullers, rickshaw pullers etc)	899	5.8
Skilled / Semiskilled worker	2038	13.2
Service (Govt./Pvt.)	2492	16.1
Non-Agricultural Labourer	2798	18.1
AgriculturalLabourer	4594	29.7
Spouse resides alone in another place/town from wife for work for longer than 6 months(N-15448)		
Yes	358	2.3
No	15078	97.6
Not Applicable	12	0.1
Ever Been tested for HIV (N-15451)		
Yes	8958	58.0
No	6493	42.0
If ever tested HIV, When was the last tested (N-15441)		
Tested during current pregnancy	5287	34.2
Tested before current pregnancy	3661	23.7
NA (For never tested)	6493	42.1
Result of respondent's last HIV test result (N-15422)		
Positive	31	0.2
Negative	8859	57.4
Did not collect the last result	19	0.1
No response	20	0.1
NA (For never tested)	6493	42.1
If previous HIV test positive, taking ART medications (N-15447) Yes	25	0.2
No	4	0.0
NA (never tested or Notpositive when last tested)	15418	99.8
HIV (N-15460)		
Negative	15402	99.62
Positive	58	0.38
Syphilis (N-15460)		
Negative	15459	100.0
Positive	1	0.0

3.1. Age

Age in completed years is recorded for every respondent at the time of recruitment into HSS. The majority of respondents (74.1%) belonged to the age group of 15-24 years and 25.3% were in the age group of 25-34 years. Only 0.6% of respondents belonged to the age group of 35-44 years and no one has registered in the 45-49 years age group.

Figure 2: Percentage (%) Distribution of respondents by age group

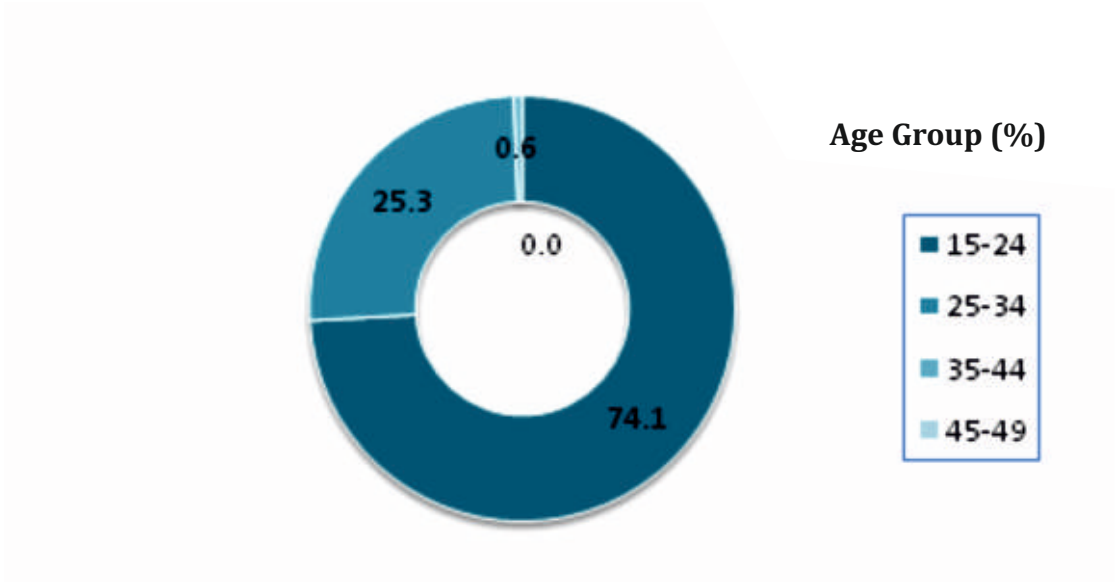


Table 4: Percentage (%) Distribution of respondents by age group and district, HSS 2016-17

Age Group	15-24	25-34	35-44	45-49	Grand Total
Andhra Pradesh	**74.10**	**25.25**	**0.65**	**0.00**	**15460**
Anantapur	71.25	28.38	0.38	0.00	1600
Chittoor	68.83	30.33	0.83	0.00	1200
Cuddapah	59.25	39.50	1.25	0.00	800
East Godavari	79.83	19.58	0.58	0.00	1200
Guntur	80.42	19.00	0.58	0.00	1200
Krishna	75.17	24.00	0.83	0.00	1200
Kurnool	71.25	28.25	0.50	0.00	1200
Nellore	69.92	29.00	1.08	0.00	1200
Prakasam	79.50	19.92	0.58	0.00	1200
Srikakulam	77.75	21.50	0.75	0.00	800
Visakhapatnam	67.26	32.05	0.68	0.00	1460
Vizianagaram	80.00	19.42	0.58	0.00	1200
West Godavari	81.58	18.33	0.08	0.00	1200

3.2. Literacy Status

Under HSS 2016-17, respondent literacy status was classified into five categories:

1. Illiterate: people with no formal or non-formal education.
2. Literate and till 5thstandard: people with non-formal education or those who joined school but had not studied beyond 5thstandard.
3. 6thto 10thstandard: people who studied beyond 5th standard but not beyond 10th standard.4. 11thto graduation: people who studied beyond 10th standard but not beyond graduation. Includes those with technical education/diplomas.
5. Post-graduation: people who studied beyond graduation.

At the state level,13% of respondents had no formal education. Around 18% of respondents studied up to fifth standard and the highest proportion of respondents (41.8%) were studied between sixth and tenth standards. Around 24.3% of the respondents reported to have studied beyond 10th standard and up to graduation, while another about 2.9% had studied beyond graduation.

Figure 3: Percent Distribution of respondents by educational status

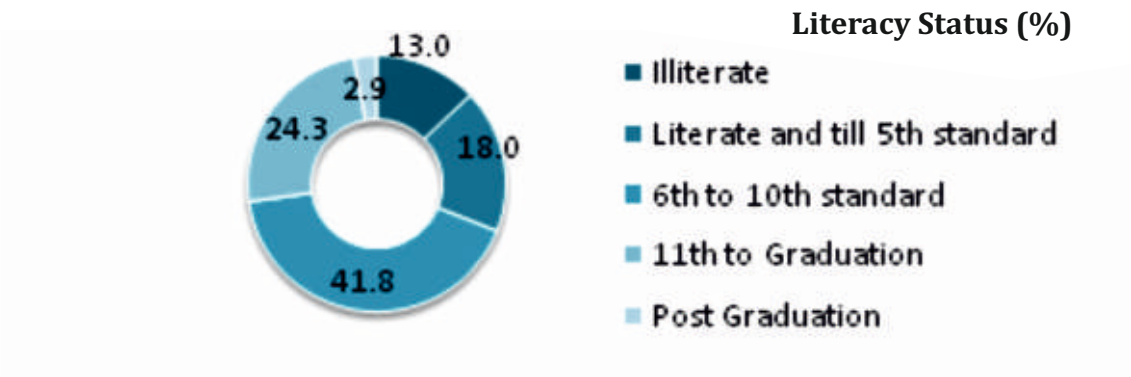


Table 5: Percent Distribution of respondents by education and districts in Tamil Nadu, HSS 2016-17

State/District	Illiterate	Literate and till 5th standard	6th to 10th standard	11th to Graduation	Post Graduation	N
Andhra Pradesh	13.0	18.0	41.8	24.3	2.9	15418
Anantapur	13.0	25.1	39.7	18.9	3.3	1596
Chittoor	8.8	6.1	48.3	33.1	3.8	1199
Cuddapah	9.3	28.4	40.7	20.7	1.0	799
East Godavari	6.7	11.3	57.8	22.7	1.5	1193
Guntur	19.0	14.2	47.0	16.3	3.4	1199
Krishna	7.1	9.4	45.6	32.0	5.9	1198
Kurnool	24.8	24.1	33.9	16.1	1.1	1200
Nellore	15.5	28.2	44.7	10.9	0.8	1200
Prakasam	21.9	16.5	41.3	18.0	2.3	1193
Srikakulam	3.8	55.5	20.7	19.5	0.5	794
Visakhapatnam	12.1	7.3	34.4	40.4	5.8	1459
Vizianagaram	15.3	9.1	38.3	35.3	2.0	1197
West Godavari	7.1	15.0	46.1	28.0	3.9	1191

3.3. Order of Pregnancy

The order of pregnancy denotes the number of times a woman has become pregnant. It includes the number of live births, still births and abortions. It is also referred to as 'gravida'. As noted earlier in the context of HIV, order of pregnancy indicates the duration of exposure to sexual risks, so HIV prevalence among primi-gravida is considered as a proxy for new HIV infections and is an indicator of state HIV incidence.

At the state level, around 42.9% of the respondents reported being pregnant for the first time, while close to 45%of the respondents was pregnant for the second time and 10.6% of respondents reported that it was their third pregnancy. Only 2.2% of respondents were pregnant for the fourth or more time.

Figure 4:Percent Distribution of respondents by order of pregnancy in Andhra Pradesh, HSS 2016-17

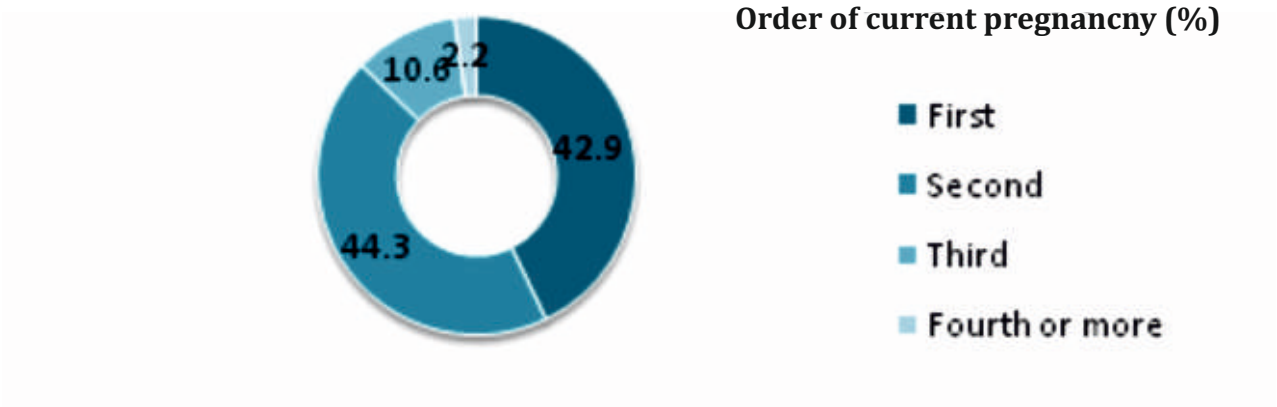


Table 6: District-wise % Distribution of respondents by Order of Pregnancy in Andhra Pradesh, HSS 2016-17

State/District	First	Second	Third	Fourth or more	N
Andhra Pradesh	42.85	44.29	10.64	2.21	15449
Anantapur	36.56	46.69	14.94	1.81	1600
Chittoor	40.83	43.00	14.00	2.17	1200
Cuddapah	27.00	58.38	13.00	1.63	800
East Godavari	44.19	46.28	7.77	1.75	1197
Guntur	40.70	44.29	12.01	3.00	1199
Krishna	49.83	42.32	6.18	1.67	1198
Kurnool	43.95	35.20	15.26	5.59	1199
Nellore	38.00	47.42	12.58	2.00	1200
Prakasam	42.12	40.87	13.84	3.17	1199
Srikakulam	44.88	49.25	4.50	1.38	800
Visakhapatnam	48.32	39.62	9.73	2.33	1459
Vizianagaram	49.29	43.79	6.51	0.42	1199
West Godavari	47.71	45.29	5.50	1.50	1199

3.4. Duration of current Pregnancy

Duration of pregnancy is usually measured in terms of three trimesters; each of them of about three month's duration.

i. First trimester: The first trimester of pregnancy is from conception to 12th week of pregnancy.
ii. Second trimester: The second trimester of pregnancy is from 13th to 27th week of pregnancy.
iii. Third trimester: The third trimester of pregnancy spans from week 28 to birth.

At the state level, the majority of respondents (44.1%) belonged to the third trimester. Around 40% of respondents belonged to the second trimester, while another about 16% respondents were belonged to the first trimester.

Figure 5:Percent Distribution of respondents by duration of current pregnancy

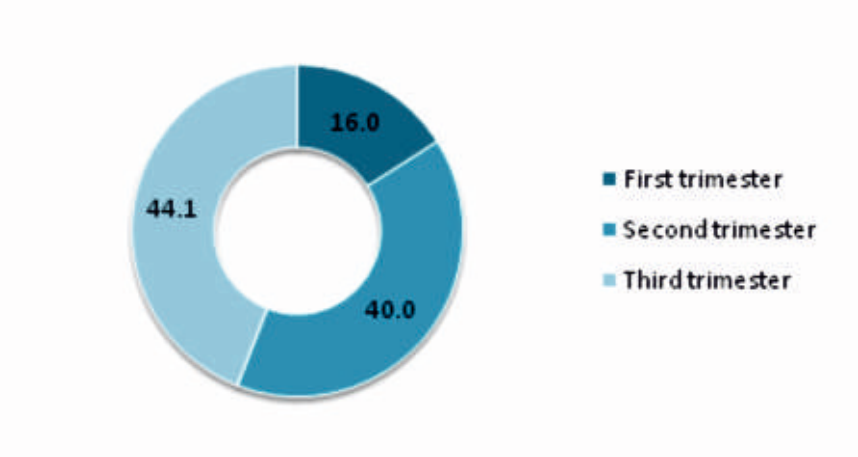


Table 7: District-wise % Distribution of respondents by Duration of pregnancy in Andhra Pradesh, HSS 2016-17

State/District	First trimester %	Second trimester %	Third trimester %	N
Andhra Pradesh	15.96	**39.96**	**44.07**	**15442**
Anantapur	18.65	51.75	29.60	1598
Chittoor	19.35	45.79	34.86	1199
Cuddapah	8.75	52.75	38.50	800
East Godavari	14.27	37.23	48.50	1198
Guntur	19.62	33.72	46.66	1198
Krishna	17.03	30.63	52.34	1198
Kurnool	21.12	36.39	42.49	1198
Nellore	14.19	40.98	44.82	1198
Prakasam	16.68	38.37	44.95	1199
Srikakulam	7.88	38.92	53.19	799
Visakhapatnam	17.88	42.40	39.73	1460
Vizianagaram	11.68	32.36	55.96	1199
West Godavari	14.02	37.65	48.33	1198

3.5. Prior receipt of antenatal care services during current pregnancy

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.

At the state level, about 74.5% of respondents were received ANC services during current pregnancy whereas 25.5% of respondents were not received antenatal care services.

Figure 6:Percent Distribution of respondents by ANC service uptake

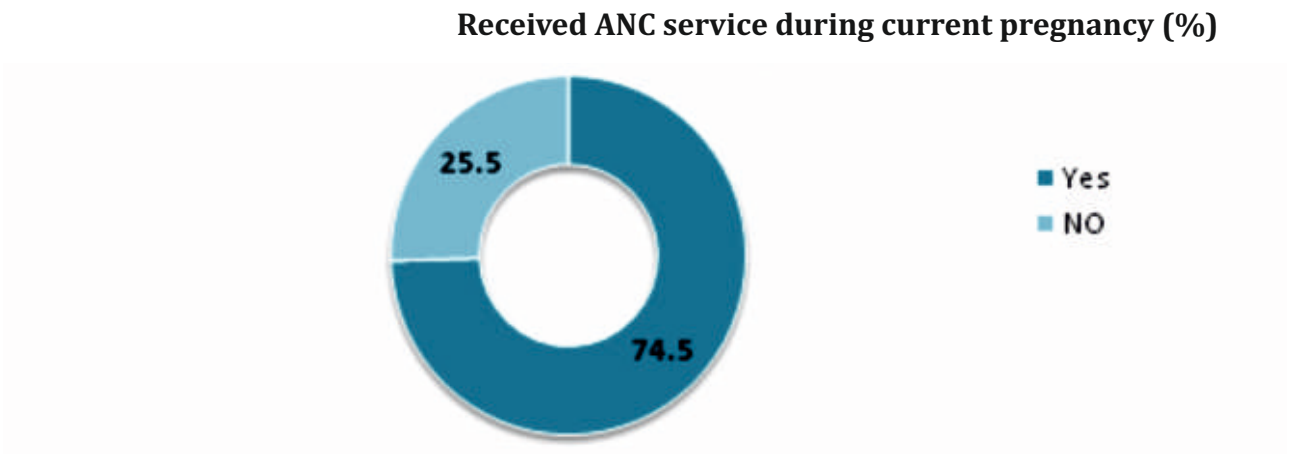


Table 8: District-wise % Distribution of respondents by Prior receipt of antenatal care services during current pregnancy in Andhra Pradesh, HSS 2016-17

State/District	YES %	NO %	N
Andhra Pradesh	**74.5**	**25.5**	**15451**
Anantapur	51.4	48.6	1599
Chittoor	66.6	33.4	1199
Cuddapah	76.1	23.9	799
East Godavari	69.1	30.9	1200
Guntur	71.4	28.6	1199
Krishna	79.4	20.6	1200
Kurnool	87.9	12.1	1200
Nellore	58.0	42.0	1199
Prakasam	81.5	18.5	1199
Srikakulam	87.5	12.5	798
Visakhapatnam	87.3	12.7	1460
Vizianagaram	73.8	26.2	1200
West Godavari	88.4	11.6	1199

3.6. Source of Referral to the ANC Clinic

This variable illuminates the various sources of referral, and helps identify if a specific bias is being introduced in the sample due to specific referrals of HIV-positive cases from any source. The response categories listed in the HSS data form include self-referral; family/relative/ neighbour/friend; NGO; private hospital (doctor/nurse); government hospital (including ANM/ASHA); and ICTC/ ART centre. Government health care providers include ANM, ASHA, doctors/nurses at PHC, and CHC.

At the state level, Govt. service providers (including ASHA/ANM)was identified as the major source of referral to ANC clinics, accounting for 55.3% of respondents, followed by family/relatives/neighbor/friends (25.5%) and self referral (15%).

Figure 7:Percent Distribution of respondents by source of referral

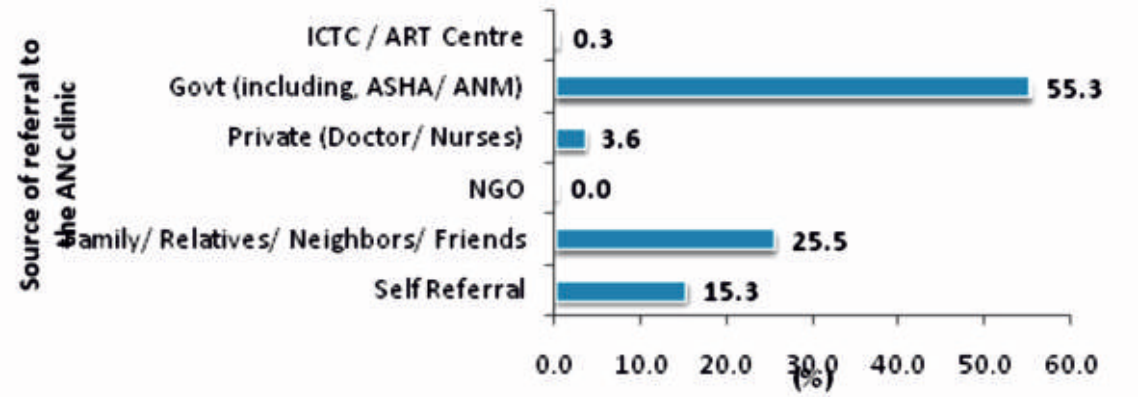


Table 9: District-wise % Distribution of respondents by source of referral and district in Andhra Pradesh, HSS 2016-17

State/District	Self Referral	Family/ Relatives/ Neighbors/ Friends	NGO	Private (Doctor/ Nurses)	Govt (including ASHA/ ANM)	ICTC / ART Centre	N
	%	%	%	%	%	%	
Andhra Pradesh	15.30	25.52	0.03	3.56	55.26	0.34	15448
Anantapur	41.53	21.45	0.06	0.63	36.27	0.06	1599
Chittoor	12.93	0.25	0.00	33.19	53.63	0.00	1199
Cuddapah	0.38	0.63	0.00	3.00	96.00	0.00	800
East Godavari	23.85	52.71	0.17	0.25	23.02	0.00	1199
Guntur	27.05	36.06	0.00	5.43	31.47	0.00	1198
Krishna	13.50	53.17	0.00	0.00	33.25	0.08	1200
Kurnool	6.92	35.92	0.00	0.25	56.92	0.00	1200
Nellore	6.51	34.61	0.00	0.50	54.21	4.17	1199
Prakasam	21.83	46.92	0.08	0.00	31.17	0.00	1200
Srikakulam	0.75	11.42	0.00	0.00	87.83	0.00	797
Visakhapatnam	16.86	10.28	0.00	2.60	70.25	0.00	1459
Vizianagaram	1.42	5.17	0.00	0.17	93.24	0.00	1199
West Godavari	6.51	14.76	0.00	0.08	78.65	0.00	1199

3.7. Current Place of Residence

2016-17 records the reported current residence of the respondent as urban or rural. If the current place of residence of the respondent was Municipal Corporation, municipal council, or cantonment area, it was classified as urban. Otherwise, it was recorded as rural.

At the state level, 73.3% of the respondentsare reported to be currently residing in rural areas and the rest (26.7%) are reported to be currently residing in urban areas. However, there were inter-district variations.

Figure 8:Percent Distribution of respondents by current place of residence

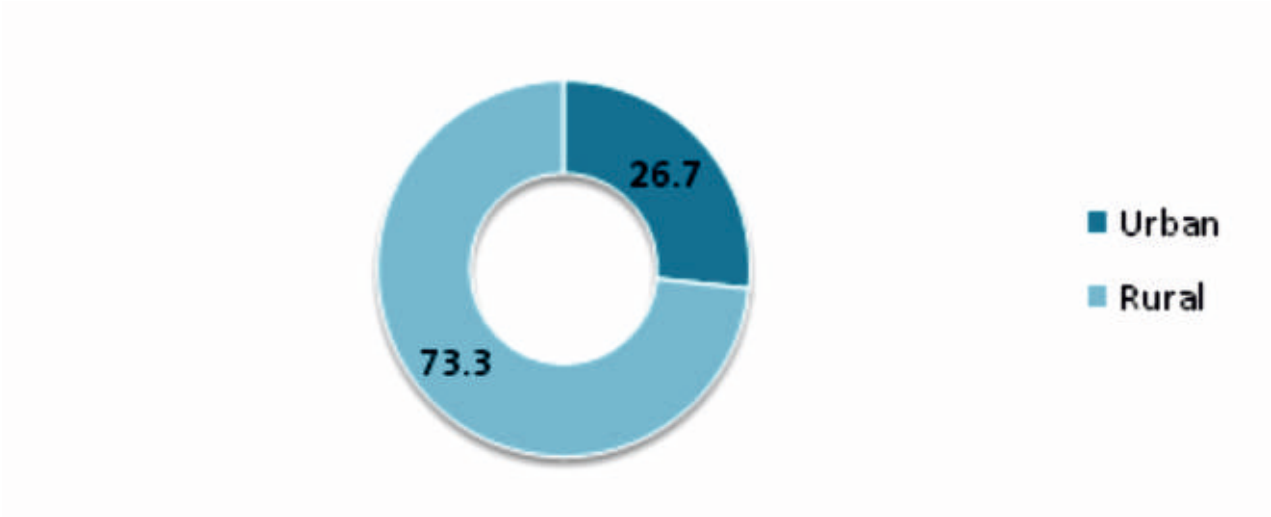


Table 10: District-wise % Distribution of respondents by Current Place of residence and district in Andhra Pradesh, HSS 2016-17

State/District	Urban %	Rural %	N
Andhra Pradesh	26.7	73.3	15381
Anantapur	26.7	73.3	1596
Chittoor	36.9	63.1	1190
Cuddapah	38.2	61.8	798
East Godavari	14.7	85.3	1195
Guntur	20.2	79.8	1189
Krishna	36.8	63.2	1198
Kurnool	33.9	66.1	1192
Nellore	26.2	73.8	1197
Prakasam	22.4	77.6	1197
Srikakulam	11.0	89.0	792
Visakhapatnam	37.2	62.8	1450
Vizianagaram	22.8	77.2	1195
West Godavari	16.5	83.5	1192

3.8. Current Occupation of the Respondent

Certain occupations are associated with higher exposure and risk to HIV. It is important to understand the profile of respondents with respect to their occupation. For this purpose, HSS has categorized 13 occupations, as detailed in an earlier chapter.

At the state level, the majority of the respondents (77.2%) were housewives, and 13% of respondents reported to be agricultural labourer and non-agricultural labourer were accounted for 4% of respondents followed by Service (Govt./Pvt.) (2.1%), Agricultural cultivator (1.4%), Skilled/ Semiskilled worker (0.7%), Student (0.6%), Petty business/small shop (0.55%), large business/self employed (0.3%) and domestic servant (0.1%).

Figure 9: District-wise % Distribution of respondents by Occupation

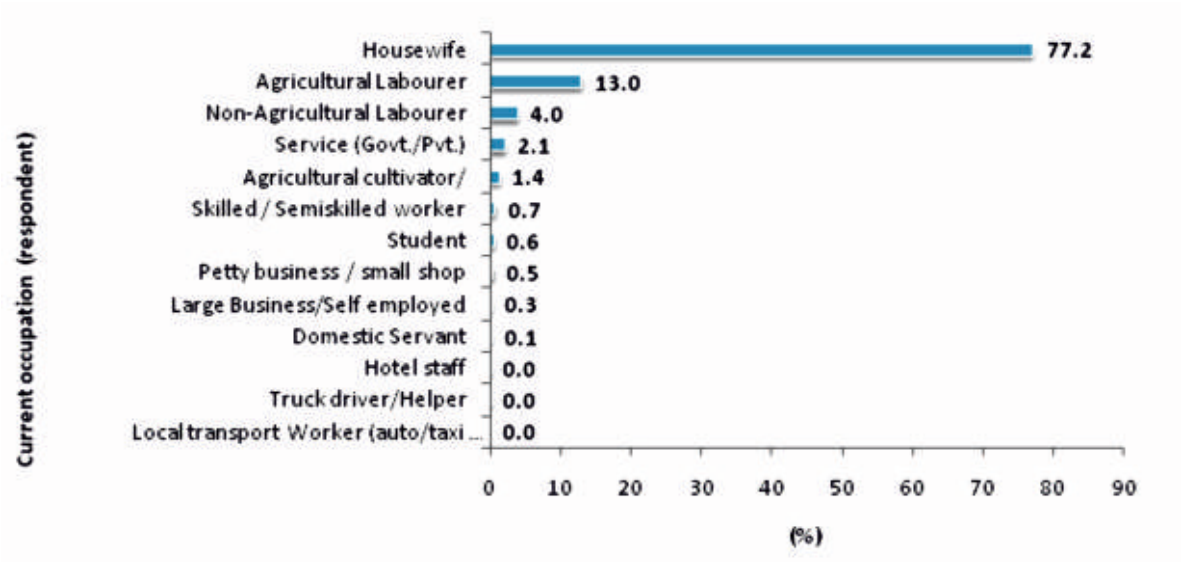


Table 11: District-wise % Distribution of respondents by Occupation in Andhra Pradesh, HSS 2016-17

State/District	Agricultural Labourer	NonAgricultural 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	N
	%	%	%	%	%	%	%	%	%	%	%	%	%	
Andhra Pradesh	13.01	4.00	0.14	0.74	0.49	0.27	2.15	0.61	0.03	0.01	0.00	1.39	77.18	15443
Anantapur	14.64	12.95	0.00	1.56	0.50	0.75	2.19	0.56	0.06	0.00	0.00	0.50	66.27	1598
Chittoor	6.51	1.00	0.08	0.75	0.83	0.17	2.50	0.50	0.00	0.00	0.00	0.50	87.15	1198
Cuddapah	15.14	2.38	0.00	1.50	0.13	1.00	0.75	0.00	0.00	0.00	0.00	0.13	78.97	799
East Godavari	2.84	1.09	0.00	0.25	0.08	0.08	0.67	0.17	0.00	0.00	0.00	0.67	94.15	1197
Guntur	22.77	4.75	0.42	1.33	0.50	0.00	1.67	0.75	0.00	0.00	0.00	2.25	65.55	1199

Krishna	0.50	0.25	0.00	0.17	0.33	0.17	3.84	0.42	0.00	0.08	0.00	0.00	94.25	1199
Kurnool	16.60	4.34	0.42	0.67	0.67	0.17	1.25	0.25	0.00	0.00	0.00	8.92	66.72	1199
Nellore	21.29	3.67	0.58	1.09	1.09	0.00	2.59	0.42	0.00	0.00	0.00	0.00	69.28	1198
Prakasam	18.25	3.42	0.25	0.83	0.50	0.92	1.92	0.75	0.17	0.00	0.00	0.08	72.92	1200
Srikakulam	6.38	12.27	0.13	0.25	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.25	79.97	799
Visakhapatnam	17.28	2.06	0.00	0.34	1.03	0.21	5.14	1.99	0.00	0.07	0.00	1.85	70.03	1458
Vizianagaram	9.59	1.75	0.00	0.50	0.25	0.00	1.83	1.25	0.00	0.00	0.00	2.25	82.57	1199
West Godavari	14.33	1.67	0.00	0.25	0.00	0.00	1.25	0.17	0.08	0.00	0.00	0.00	82.25	1200

3.9. Current Occupation of Spouse

The respondents were also asked about the current occupation of their spouses. Occupation of spouse is an important epidemiological variable that may help identify population groups at higher risk of acquiring HIV. HSS used the same occupational categories as those used for the respondent. The two differences were that the category 'unemployed' (Code 13) is used in the place of 'housewife' and there is an additional category 'not applicable' (for never married/widowed/divorced/ separated)' (Code 99).

Figure 10: % Distribution of respondents by the Occupation of spouse

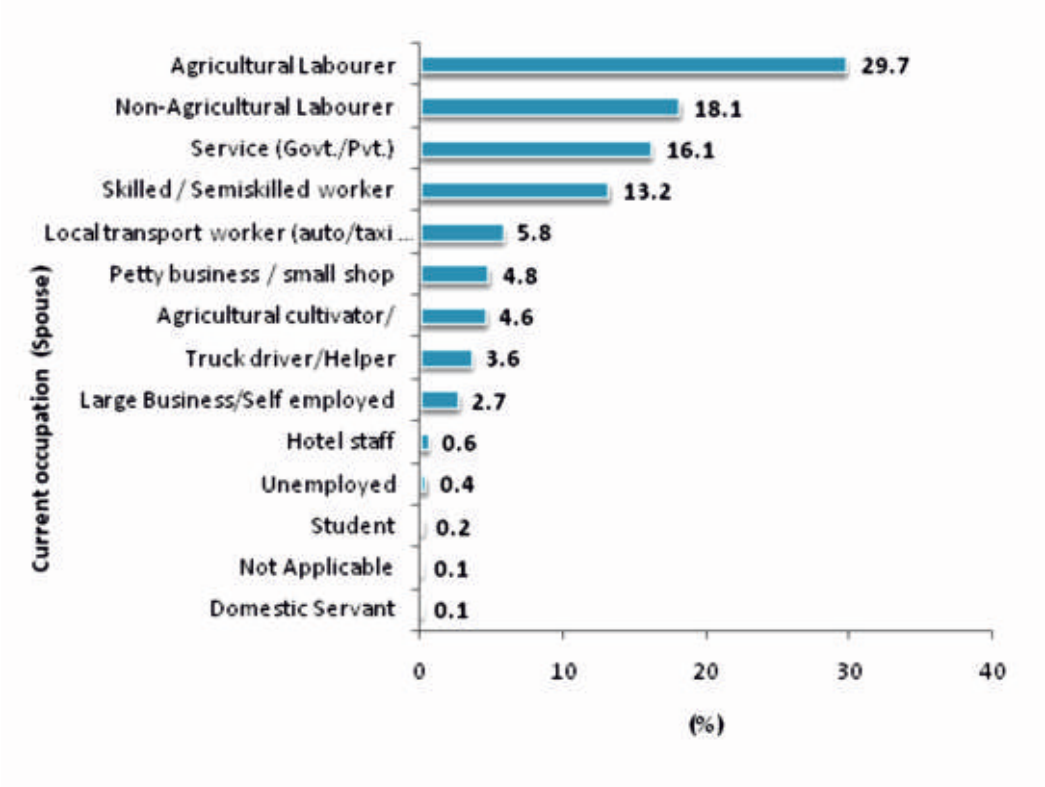


Table 12: District-wise % Distribution of respondents by the Occupation of spouse in Andhra Pradesh, HSS 2016-17

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	N
	%	%	%	%	%	%	%	%	%	%	%	%	%	99	
Andhra Pradesh	29.7	18.1	0.1	13.2	4.8	2.7	16.1	0.2	0.6	3.6	5.8	4.6	0.4	0.1	15447
Anantapur	35.8	24.0	0.0	8.5	2.9	3.3	11.4	0.1	1.0	3.4	5.1	4.1	0.4	0.0	1597
Chittoor	21.8	5.7	0.2	18.5	8.6	4.8	20.5	0.3	0.6	6.4	6.3	6.3	0.1	0.0	1198
Cuddapah	28.2	15.1	0.0	18.6	1.3	7.8	7.5	0.0	0.1	4.4	13.6	3.4	0.0	0.0	799
East Godavari	40.6	12.5	0.1	17.3	3.4	1.8	12.4	0.1	0.9	2.8	6.3	1.7	0.2	0.1	1198
Guntur	25.5	26.4	0.0	12.5	3.6	2.1	14.3	0.3	0.3	2.4	7.0	4.5	0.9	0.2	1199
Krishna	29.3	7.6	0.2	17.5	5.7	2.5	26.1	0.5	1.3	0.8	8.3	0.2	0.1	0.1	1200
Kurnool	15.4	16.7	0.3	14.3	4.3	3.2	12.6	0.4	0.4	1.4	9.8	20.7	0.5	0.0	1200
Nellore	35.2	23.3	0.0	10.4	4.2	1.1	11.2	0.0	0.6	4.9	7.1	2.0	0.1	0.0	1199
Prakasam	27.1	30.7	0.0	14.8	4.1	2.8	11.2	0.3	0.7	2.4	5.0	0.6	0.3	0.2	1199
Srikakulam	48.1	17.7	0.0	11.3	9.1	0.1	10.3	0.0	0.0	3.0	0.1	0.3	0.0	0.0	798
Visakhapatnam	22.1	13.3	0.0	3.8	8.9	3.8	32.6	0.3	0.4	5.8	2.0	5.5	1.6	0.0	1460
Vizianagaram	15.6	17.1	0.0	15.3	5.1	1.8	24.4	0.1	0.5	4.1	6.3	8.9	0.6	0.3	1200
West Godavari	47.3	23.4	0.0	13.4	1.1	0.6	8.5	0.2	0.0	4.6	0.5	0.1	0.2	0.3	1200

3.10. Migration Status of Spouse

In order to assess the relationship between spousal migration status and HIV prevalence among ANC clinic attendees, respondents in HSS were asked whether spouse resides in another place/town away from wife for work for longer than 6 months. This question was not applicable to those respondents who were never married/widowed/divorced/separated.

At the state level, around 2.3% of the respondents reported that their spouses were migrants, though there were significant inter-district variations.

Figure 11: Percentage of respondents with migrant spouse

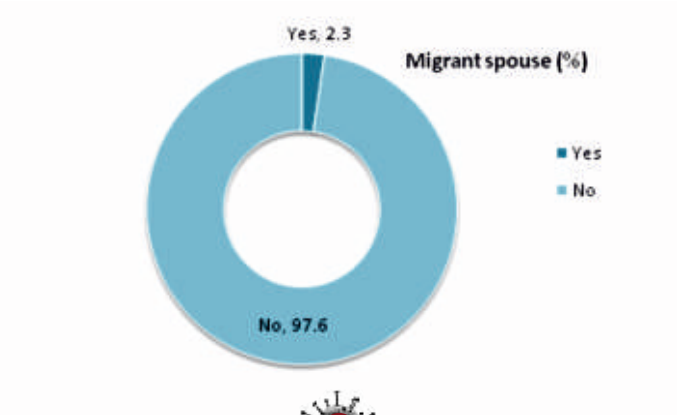


Table 13: District-wise percentage of respondents with migrant spouse in Andhra Pradesh, HSS 2016-17

State/District	YES %	NO %	NOT APPLICABLE %	N
Andhra Pradesh	2.3	97.6	0.1	15448
Anantapur	5.8	94.2	0.0	1599
Chittoor	3.6	96.4	0.0	1195
Cuddapah	3.5	96.5	0.0	800
East Godavari	1.8	98.2	0.1	1200
Guntur	1.9	97.9	0.2	1200
Krishna	0.6	99.3	0.1	1198
Kurnool	1.1	98.9	0.0	1200
Nellore	2.0	98.0	0.0	1199
Prakasam	5.5	94.3	0.2	1200
Srikakulam	0.3	99.8	0.0	800
Visakhapatnam	0.5	99.5	0.0	1458
Vizianagaram	1.8	98.0	0.3	1200
West Godavari	0.8	99.0	0.3	1199

3.11. HIV Testing History

This refers to the HIV testing history of pregnant women. At the state level, 58% of respondents were reported that they were previously tested for HIV.

Figure 12: Percent Distribution of respondents by HIV testing history

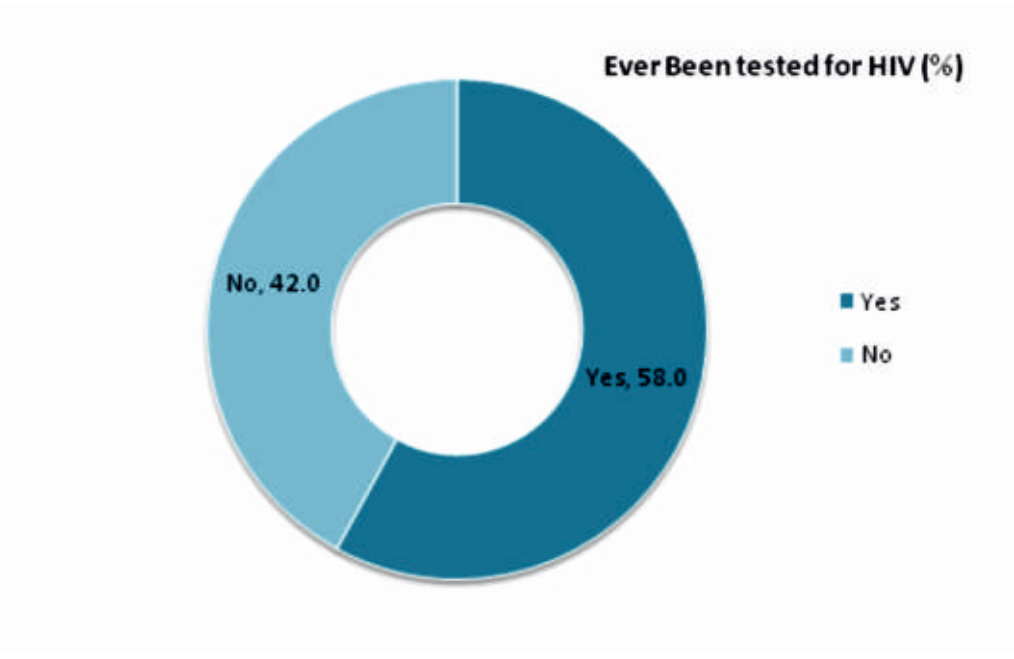


Table 14: District-wise percentage of respondents with HIV testing history in Andhra Pradesh, HSS 2016-17

State/District	Yes %	NO %	Grand Total
Andhra Pradesh	58.0	42.0	15451
Anantapur	34.1	65.9	1600
Chittoor	29.1	70.9	1195
Cuddapah	73.3	26.8	800
East Godavari	67.8	32.3	1200
Guntur	49.5	50.5	1200
Krishna	68.5	31.5	1198
Kurnool	67.3	32.7	1200
Nellore	57.4	42.6	1200
Prakasam	56.8	43.2	1200
Srikakulam	73.1	26.9	800
Visakhapatnam	67.8	32.2	1458
Vizianagaram	62.6	37.4	1200
West Godavari	62.2	37.8	1200

3.12. Time of last HIV Testing

This question aims to understand the timing of last HIV testing of respondents in reference to current pregnancy. At the state level, majority of the respondents (34.2%) were tested for HIV during current pregnancy, whereas 23.7% of respondents were tested before current pregnancy. Around 42.1% of the respondents were reported as never tested for HIV.

Figure 13: Percent Distribution of respondents by Time of last HIV Testing

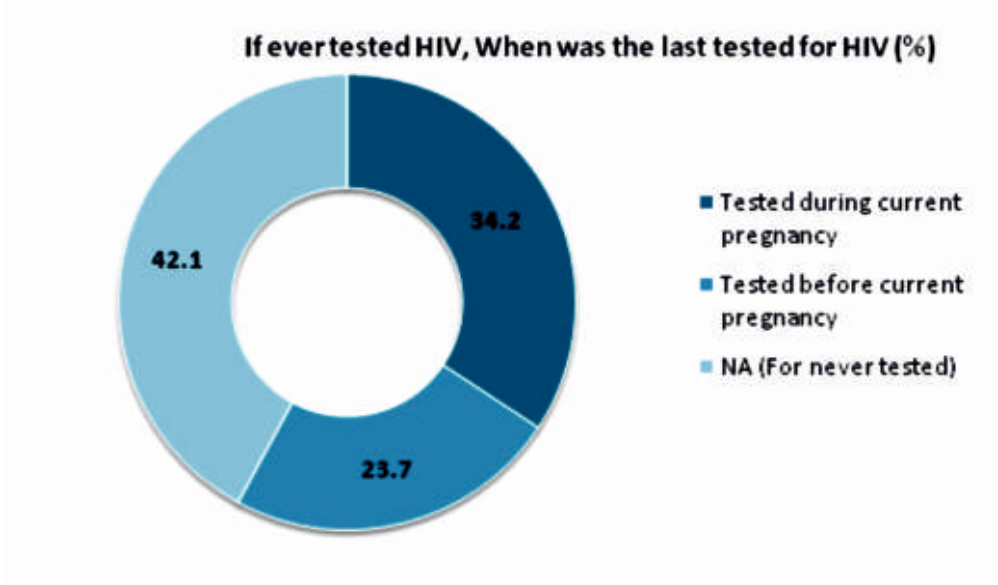


Table 15: District-wise percentage of respondents with Time of last HIV Testing in Andhra Pradesh, HSS 2016-17

State/District	(Only the respondent whom tested for HIV test previously) Tested during current pregnancy %	Tested before current pregnancy %	N
Andhra Pradesh	**59.1**	**40.9**	**8948**
Anantapur	89.0	11.0	546
Chittoor	14.1	85.9	348
Cuddapah	62.3	37.7	586
EastGodavari	62.1	37.9	813
Guntur	73.2	26.8	593
Krishna	66.7	33.3	821
Kurnool	36.4	63.6	808
Nellore	51.7	48.3	689
Prakasam	83.4	16.6	680
Srikakulam	31.0	69.0	584
Visakhapatnam	61.0	39.0	989
Vizianagaram	78.8	21.2	751
West Godavari	41.5	58.5	740

3.13. Result of last HIV test

This refers to the result of the last HIV test of the ANC respondent. At the state level, around 0.2% of the respondents were reported that their last HIV test result was Positive. The majority of respondents (57.4%) were reported as HIV negative. Whereas 42.1% of respondent reported that they were never tested.

Figure 14: Percent Distribution of respondents by Result of last HIV test

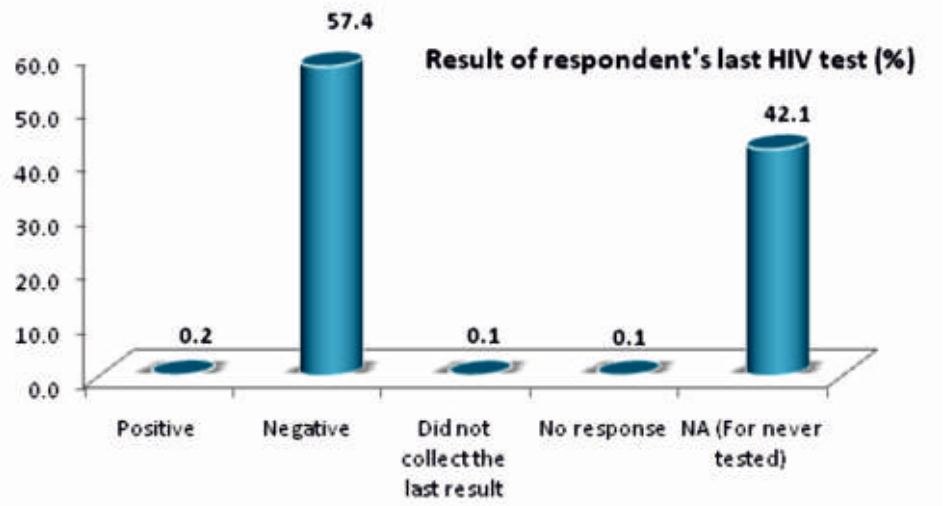


Table 16: District-wise percentage of respondents with Result of last HIV test in Andhra Pradesh, HSS 2016-17

(Only the respondent whom tested for HIV test previously)					
State/District	Positive	Negative	Did not collect the test result	No Response	N
	%	%	%	%	
Andhra Pradesh	0.35	99.22	0.21	0.22	8929
Anantapur	0.37	99.63	0.00	0.00	545
Chittoor	0.57	99.43	0.00	0.00	348
Cuddapah	0.17	99.83	0.00	0.00	586
East Godavari	0.37	99.63	0.00	0.00	808
Guntur	0.34	97.64	0.34	1.68	594
Krishna	0.49	99.51	0.00	0.00	821
Kurnool	0.50	98.38	1.00	0.12	804
Nellore	0.29	99.71	0.00	0.00	688
Prakasam	0.29	98.24	1.32	0.15	682
Srikakulam	0.51	99.49	0.00	0.00	584
Visakhapatnam	0.20	99.59	0.00	0.20	987
Vizianagaram	0.53	98.67	0.00	0.80	751
West Godavari	0.00	100.00	0.00	0.00	731

3.14. Management of HIV infections

This refers to the enrolment of HIV positive respondents in HIV care, either for pre-ART or ART services, at the time of surveillance. At the state level, 80.6% (n=25) of the respondents whom with HIV positive results were taking care from Government hospital/ART centres.

Table 17: District-wise percentage of respondents with Management of HIV infections in Andhra Pradesh, HSS 2016-17

(If respondent whom say Positive for privious HIV test and their current HIV management)

	(1) ART	(2) NGO	(3) PVt	(4) Pharmacist/Chemist	(5) Alternative/non Allopathic	(6) Any other type	(7) Not seeking taking for HIV management	(1)+(2)	(1)+(3)	(1)+(2)+(3)	(1)+(2)+(3)+(6)	(1)+(2)+(6)	No Answer	total
Andhra Pradesh	80.64	0	0	0	0	0	9.67	3.22	0	0	0	0	6.45	31

Anantapur	100	0	0	0	0	0	0	0	0	0	0	0	0	2
Chittoor	100	0	0	0	0	0	0	0	0	0	0	0	0	2
Cuddapah	100	0	0	0	0	0	0	0	0	0	0	0	0	1
East Godavari	100	0	0	0	0	0	0	0	0	0	0	0	0	3
Guntur	100	0	0	0	0	0	0	0	0	0	0	0	0	2
Krishna	75	0	0	0	0	0	25	0	0	0	0	0	0	4
Kurnool	50	0	0	0	0	0	50	0	0	0	0	0	0	4
Nellore	50	0	0	0	0	0	0	50	0	0	0	0	0	2
Prakasam	50	0	0	0	0	0	0	0	0	0	0	0	50	2
Srikakulam	66.66	0	0	0	0	0	0	0	0	0	0	0	33.33	3
Visakhapatnam	100	0	0	0	0	0	0	0	0	0	0	0	0	2
Vizianagaram	100	0	0	0	0	0	0	0	0	0	0	0	0	4

3.15. ART Uptake

This refers to the current uptake of 'Antiretroviral therapy' by HIV positive respondents (N=31). At the state level, 80.6% (n=25) of the respondents with HIV positive were currently taking ART.

Table 18: District-wise percentage of HIV positive respondents with ART uptake in Andhra Pradesh, HSS 2016-17

(Results Only;If respondent whom Previous HIV test results postive and ART taken currently)				
State/District	Yes %	No %	Blank/Missing) (blank)	N
Andhra Pradesh	80.6	12.9	6.5	31
Anantapur	100.0	0.0	0.0	2
Chittoor	50.0	50.0	0.0	2
Cuddapah	100.0	0.0	0.0	1
East Godavari	100.0	0.0	0.0	3
Guntur	100.0	0.0	0.0	2
Krishna	75.0	25.0	0.0	4
Kurnool	50.0	50.0	0.0	4
Nellore	100.0	0.0	0.0	2
Prakasam	50.0	0.0	50.0	2
Srikakulam	66.7	0.0	33.3	3
Visakhapatnam	100.0	0.0	0.0	2
Vizianagaram	100.0	0.0	0.0	4

CHAPTER 4

LEVELS OF HIV PREVALENCE AMONG ANC CLINIC ATTENDEES

HIV prevalence is the proportion of respondents who are found HIV positive at a given point of time in a specified geographic area. It indicates the burden of the epidemic in different population groups.

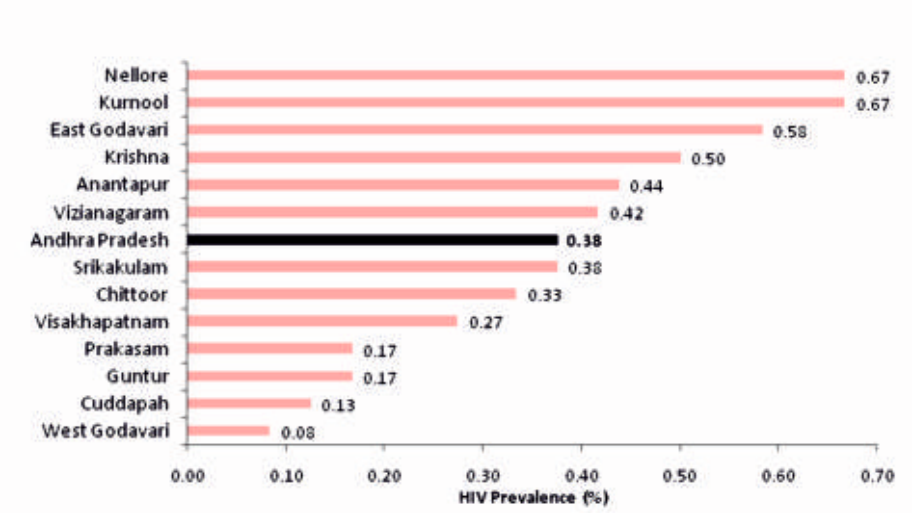
HIV prevalence among ANC clinic attendees is considered as proxy for HIV burden in general population. HIV prevalence of 1% or more among ANC clinic attendees is considered as high level, 0.5-0.99% is considered as moderate level and less than 0.5% is considered as low HIV prevalence for the analysis purpose in this report. This chapter describes the levels of HIV prevalence among ANC clinic attendees at state and district level.

4.1. HIV Prevalence at State District Level

Table 19: HIV Prevalence at State &District Level

District	Positive (%)	Grand Total
West Godavari	0.08	1600
Cuddapah	0.13	1200
Guntur	0.17	800
Prakasam	0.17	1200
Visakhapatnam	0.27	1200
Chittoor	0.33	1200
Srikakulam	0.38	1200
Andhra Pradesh	0.38	15460
Vizianagaram	0.42	1200
Anantapur	0.44	1200
Krishna	0.50	800
East Godavari	0.58	1460
Kurnool	0.67	1200
Nellore	0.67	1200

Figure 15: HIV Prevalence among (%) among ANC Clinic Attendees by district, HSS 2016-17



CHAPTER 5

HIV PREVALENCE AMONG ANC CLINIC ATTENDEES BY BACKGROUND CHARACTERISTIC

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.

This chapter gives details about HIV/AIDS prevalence as observed against the key fourteen demographic and socio-economic variables which were recorded for each respondent. Fully acknowledging that several factors work in tandem or individually to either cause or prevent HIV, hence we do not suggest any evident causation by projecting the key variables vis a vis the HIV prevalence, as risk factors for acquiring HIV. However, this sort of detailed analysis will help the programme and policy makers to understand the risk factors associated with transmission of HIV/AIDS with particular demographic characteristics. This chapter presents cross tabulations of demographic variables with HIV/AIDS positivity amongthe ANC clinic attendees. A detailed state-wise analysis will be needed to understand region wise variations, applying local knowledge about vulnerabilities and risk factors.

The following sections present the findings for each of these background characteristics.

1. Age

2. Literacy status

3. Order of current pregnancy

4. Duration of Pregnancy

5. ANC service uptake

6. Source of referral to the ANC clinic

7. Current place of residence

8. Current occupation of respondent

9. Current occupation of spouse

10. Migration status of spouse

5.1. HIV Prevalence among ANC Clinic Attendees by Age

Figure 16: HIV Prevalence among ANC Clinic Attendees by Age, HSS 2016-17, Andhra Pradesh

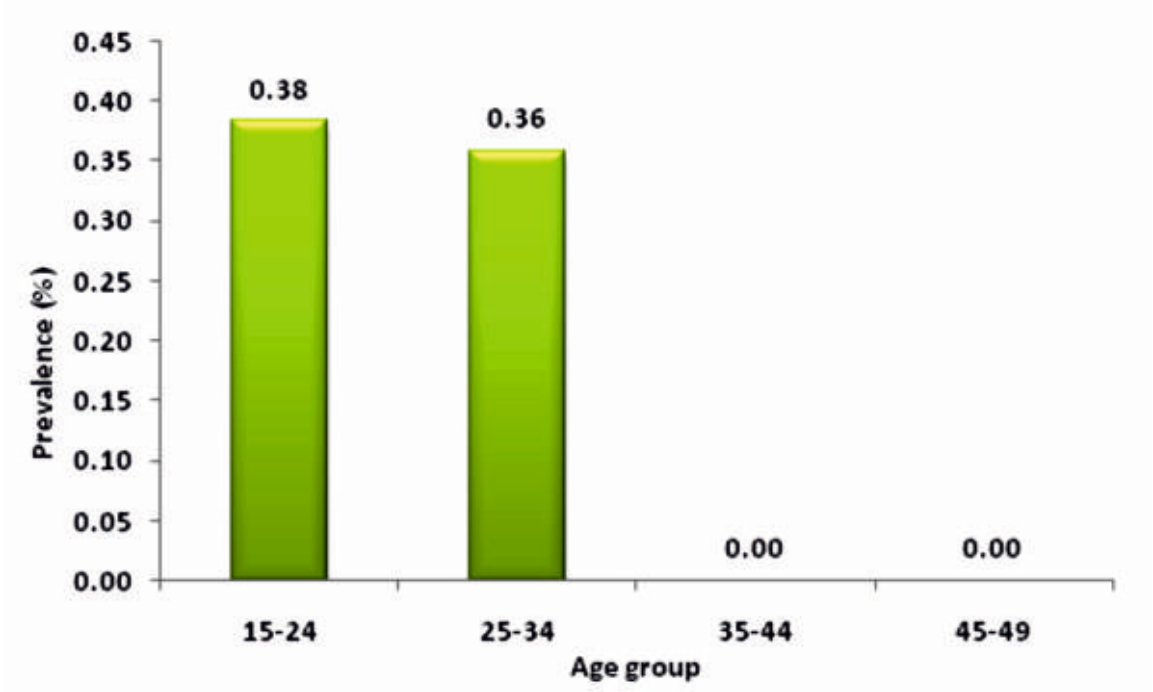


Table 20 HIV Prevalence among ANC Clinic Attendees by Age

	15-24		25-34		35-44		45-49		Grand Total
State/Districts	%	Total	%	Total	%	Total	%	Total	N
Andhra Pradesh	0.38	11456	0.36	3904	0.00	100	0.0	0.00	15460
Anantapur	0.44	1140	0.44	454	0.00	6	0	0.00	1600
Chittoor	0.36	826	0.27	364	0.00	10	0	0.00	1200
Cuddapah	0.21	474	0.00	316	0.00	10	0	0.00	800
East Godavari	0.42	958	1.28	235	0.00	7	0	0.00	1200
Guntur	0.10	965	0.44	228	0.00	7	0	0.00	1200
Krishna	0.55	902	0.35	288	0.00	10	0	0.00	1200
Kurnool	0.47	855	1.18	339	0.00	6	0	0.00	1200
Nellore	0.83	839	0.29	348	0.00	13	0	0.00	1200
Prakasam	0.21	954	0.00	239	0.00	7	0	0.00	1200
Srikakulam	0.48	622	0.00	172	0.00	6	0	0.00	800
Visakhapatnam	0.31	982	0.21	468	0.00	10	0	0.00	1460
Vizianagaram	0.52	960	0.00	233	0.00	7	0	0.00	1200
West Godavari	0.10	979	0.00	220	0.00	1	0	0.00	1200

5.2. HIV Prevalence among ANC Clinic Attendees by Literacy Status

Under HSS 2014-15, ANDHRA PRADESH, HIV prevalence among ANC Clinic attendees the literacy status was classified into five categories:

Illiterate: people with no formal or non-formal education the HIV prevalence is 0.60%

Literate and till 5th standard: people with non-formal education or those who joined school but had not studied beyond 5th standard the HIV prevalence is 0.32%

6 to 10th standard: people who studied beyond 5th standard but not beyond 10th standard the HIV prevalence is 0.42%.

11 to graduation: people who studied beyond 10th standard but not beyond graduation. Includes those with technical education/diplomas the HIV prevalence is 0.24%.

Post-graduation: people who studied beyond graduation the HIV prevalence is 0.23%.

Figure 17: HIV Prevalence (%) among ANC Clinic Attendees by Literacy Status, HSS 2016-17, Andhra Pradesh

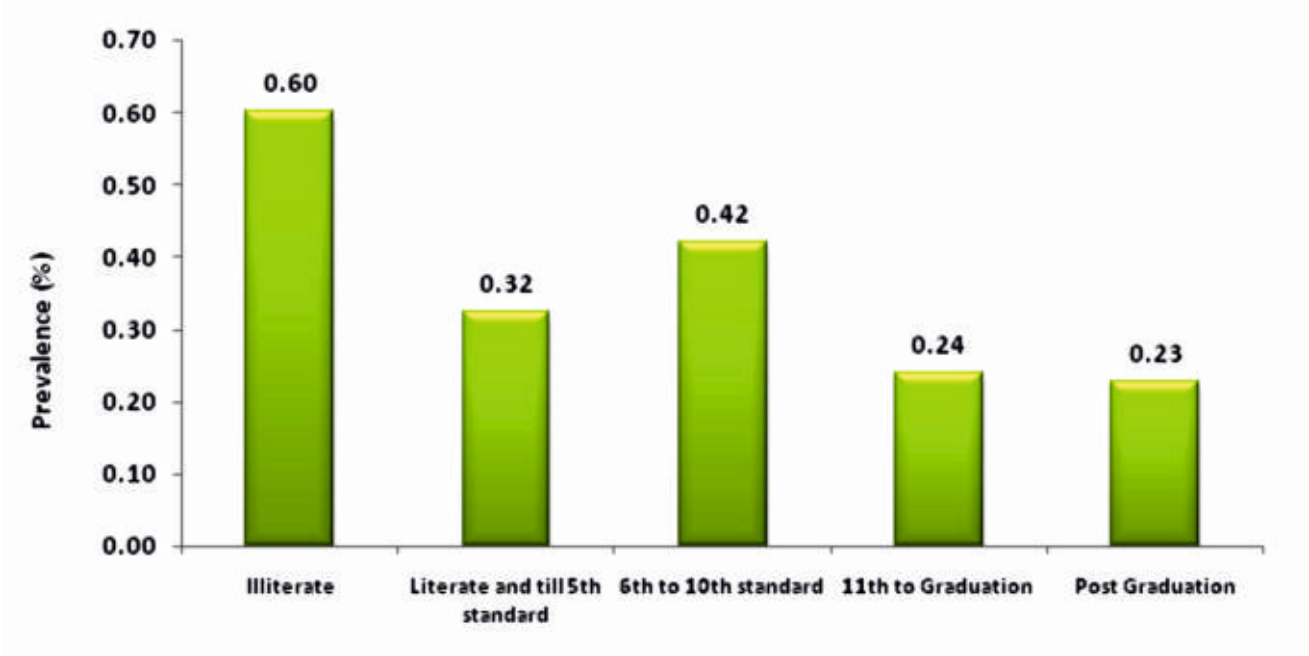


Table 21: HIV Prevalence (%) among ANC Clinic Attendees by Literacy Status and Districts, HSS 2016-17, Andhra Pradesh

State/District	1. Illiterate Total		2. Literate and till 5th standard Total		3. 6th to 10th standard Total		4. 11th to Graduation Total		5. Post Graduation Total		N
	%	Total	%	Total	%	Total	%	Total	%	Total	
Andhra Pradesh	0.60	1999	0.32	2778	0.42	6446	0.24	3753	0.23	442	15418
Anantapur	1.92	208	0.25	401	0.32	634	0.00	301	0.00	52	1596
Chittoor	0.00	105	0.00	73	0.52	579	0.25	397	0.00	45	1199
Cuddapah	0.00	74	0.00	227	0.31	325	0.00	165	0.00	8	799
East Godavari	2.50	80	2.22	135	0.15	689	0.37	271	0.00	18	1193
Guntur	0.00	228	0.59	170	0.18	564	0.00	196	0.00	41	1199
Krishna	1.18	85	0.00	113	0.55	546	0.52	383	0.00	71	1198
Kurnool	0.34	298	0.35	289	0.98	407	1.04	193	0.00	13	1200
Nellore	0.54	186	0.59	338	0.93	536	0.00	131	0.00	9	1200
Prakasam	0.00	261	0.00	197	0.20	493	0.47	215	0.00	27	1193
Srikakulam	3.33	30	0.23	441	0.61	164	0.00	155	0.00	4	794
Visakhapatnam	0.00	177	0.00	106	0.40	502	0.17	590	1.19	84	1459
Vizianagaram	1.09	183	0.00	109	0.44	458	0.24	423	0.00	24	1197
West Godavari	0.00	84	0.00	179	0.18	549	0.00	333	0.00	46	1191

5.3 HIV Prevalence among ANC Clinic Attendees by Order of Pregnancy

The order of pregnancy denotes the number of times a woman has become pregnant. It includes the number of live births, still births and abortions. It is also referred to as 'gravida'. As noted earlier in the context of HIV, order of pregnancy indicates the duration of exposure to sexual risks, so HIV prevalence among primi-gravida is considered as a proxy for new HIV infections and is an indicator of state HIV incidence.

Figure 18: HIV Prevalence (%) among ANC Clinic Attendees by Order of Pregnancy, HSS 2016-17, Andhra Pradesh

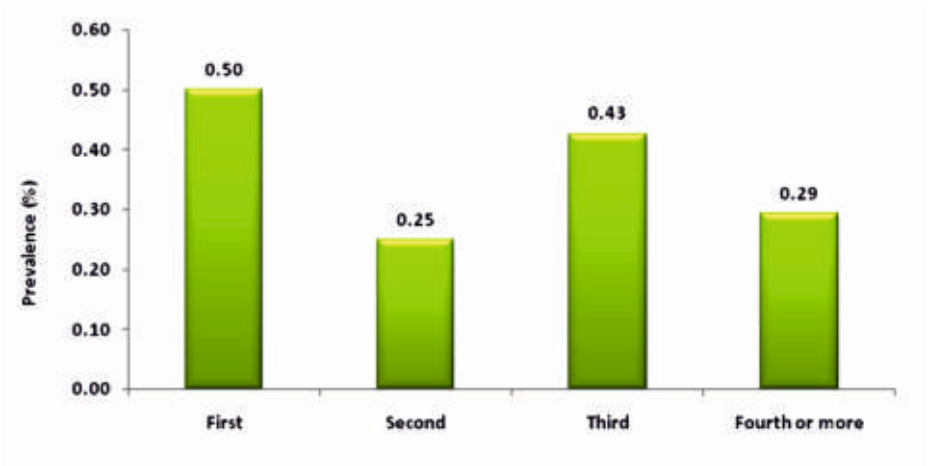


Table 22: HIV Prevalence (%) among ANC Clinic Attendees by Order of Pregnancy and districts, HSS 2016-17, Andhra Pradesh

State/District	1. First		2. Second		3. Third		4. Fourth or more		Total
	%	N	%	N	%	N	%	N	
Andhra Pradesh	0.50	6620	0.25	6843	0.43	1644	0.29	342	15449
Anantapur	0.68	585	0.27	747	0.42	239	0.00	29	1600
Chittoor	0.41	490	0.39	516	0.00	168	0.00	26	1200
Cuddapah	0.46	216	0.00	467	0.00	104	0.00	13	800
East Godavari	0.76	529	0.18	554	2.15	93	0.00	21	1197
Guntur	0.20	488	0.19	531	0.00	144	0.00	36	1199
Krishna	0.34	597	0.79	507	0.00	74	0.00	20	1198
Kurnool	0.38	527	0.95	422	1.09	183	0.00	67	1199
Nellore	1.54	456	0.00	569	0.00	151	4.17	24	1200
Prakasam	0.40	505	0.00	490	0.00	166	0.00	38	1199
Srikakulam	0.84	359	0.00	394	0.00	36	0.00	11	800
Visakhapatnam	0.28	705	0.17	578	0.70	142	0.00	34	1459
Vizianagaram	0.34	591	0.38	525	1.28	78	0.00	5	1199
West Godavari	0.17	572	0.00	543	0.00	66	0.00	18	1199

5.4 HIV Prevalence among ANC Clinic Attendees by Duration of Pregnancy

Figure 19: HIV Prevalence (%) among ANC Clinic Attendees by Duration of Pregnancy, HSS 2016-17, Andhra Pradesh

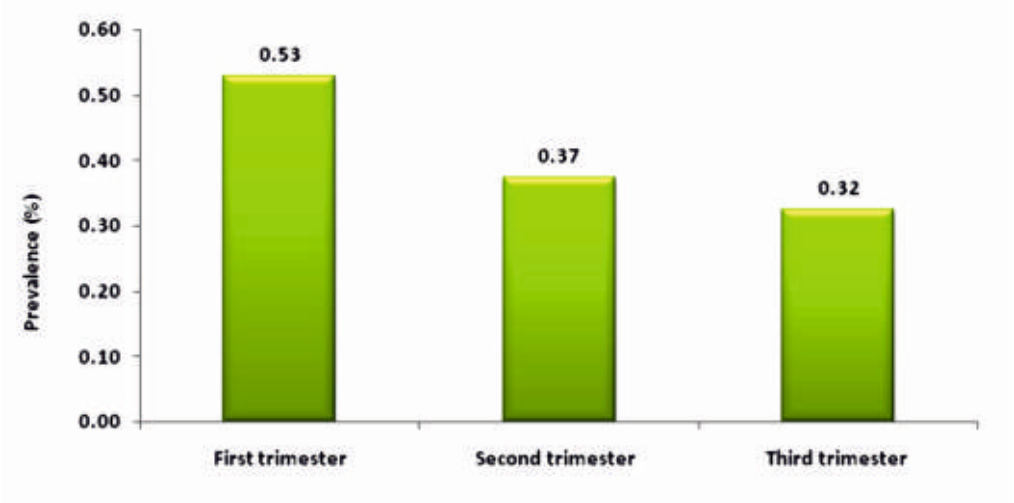


Table 23: HIV Prevalence (%) among ANC Clinic Attendees by Duration of Pregnancy and districts, HSS 2016-17, Andhra Pradesh

State/District	1. First		2. Second		3. Third		Grand Total
	%	N	%	N	%	N	
Andhra Pradesh	0.53	2465	0.37	6171	0.32	6806	15442
Anantapur	0.34	298	0.60	827	0.21	473	1598
Chittoor	0.86	232	0.18	549	0.24	418	1199
Cuddapah	0.00	70	0.00	422	0.32	308	800
EastGodavari	0.58	171	0.67	446	0.52	581	1198
Guntur	0.00	235	0.00	404	0.36	559	1198
Krishna	0.49	204	1.09	367	0.16	627	1198
Kurnool	0.40	253	0.92	436	0.59	509	1198
Nellore	1.76	170	0.20	491	0.74	537	1198
Prakasam	0.00	200	0.22	460	0.19	539	1199
Srikakulam	1.59	63	0.32	311	0.24	425	799
Visakhapatnam	0.77	261	0.16	619	0.17	580	1460
Vizianagaram	0.71	140	0.52	388	0.30	671	1199
West Godavari	0.00	168	0.00	451	0.17	579	1198

5.5 HIV Prevalence among ANC Clinic Attendees by ANC service uptake

Figure 20: HIV Prevalence (%) among ANC Clinic Attendees by Duration of Pregnancy and districts, HSS 2016-17, Andhra Pradesh

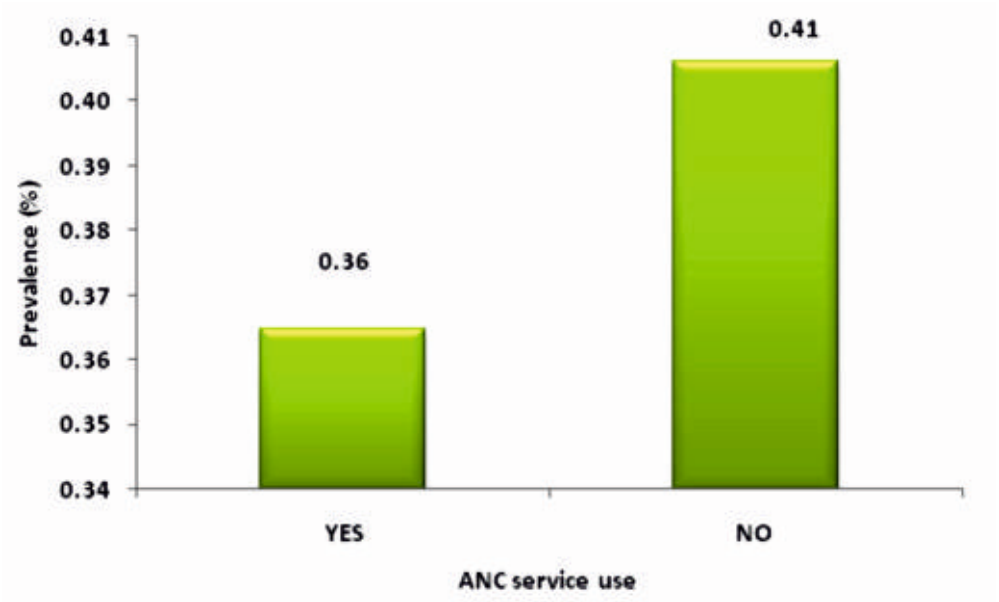


Table 24: HIV Prevalence (%) among ANC Clinic Attendees by Duration of Pregnancy and districts, HSS 2016-17, Andhra Pradesh

State/District	Yes		No		Total
	%	N	%	N	
Andhra Pradesh	0.36	11512	0.41	3939	15451
Anantapur	0.49	822	0.39	777	1599
Chittoor	0.38	798	0.25	401	1199
Cuddapah	0.16	608	0.00	191	799
East Godavari	0.36	829	1.08	371	1200
Guntur	0.12	856	0.29	343	1199
Krishna	0.63	953	0.00	247	1200
Kurnool	0.76	1055	0.00	145	1200
Nellore	0.43	695	0.99	504	1199
Prakasam	0.10	977	0.45	222	1199
Srikakulam	0.43	698	0.00	100	798
Visakhapatnam	0.24	1275	0.54	185	1460
Vizianagaram	0.56	886	0.00	314	1200
West Godavari	0.09	1060	0.00	139	1199

5.6 HIV Prevalence among ANC Clinic Attendees by Source of Referral

Figure 21: HIV Prevalence (%) among ANC Clinic Attendees by Source of Referral, HSS 2016-17, Andhra Pradesh

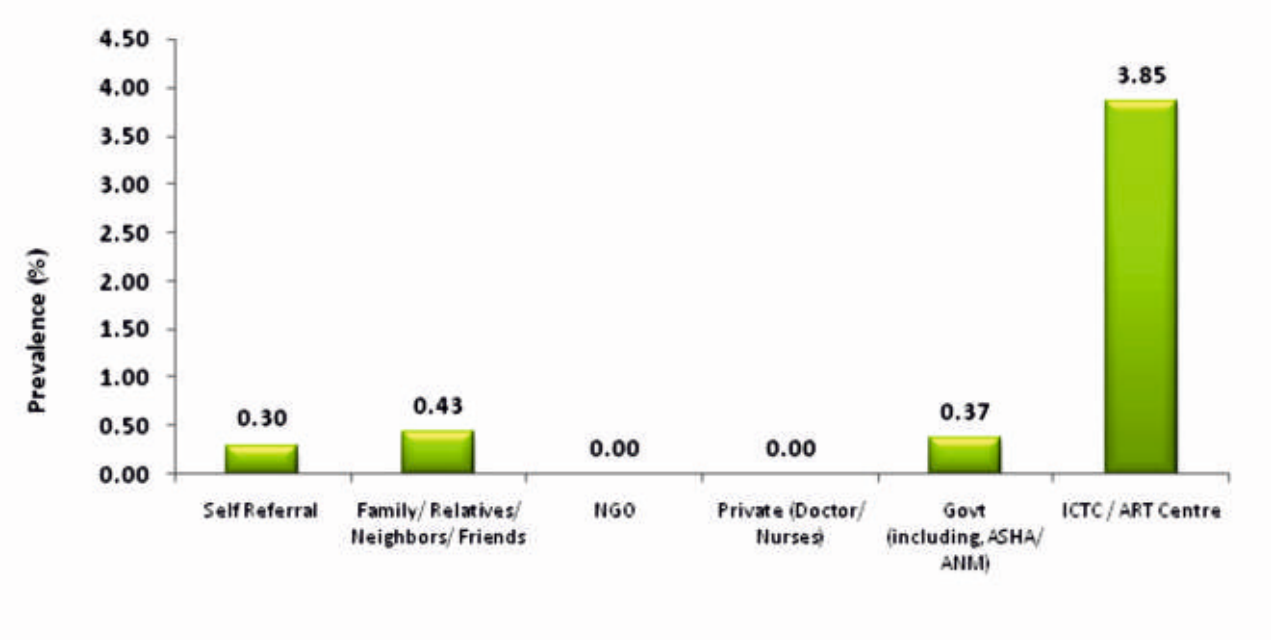


Table 25: HIV Prevalence (%) among ANC Clinic Attendees by Source of Referral, HSS 2016-17, Andhra Pradesh

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	
Andhra Pradesh	0.30	2364	0.43	3942	0.00	4	0.00	550	0.37	8536	3.85	52	15448
Anantapur	0.15	664	0.29	343	0.00	1	0.00	10	0.86	580	0.00	1	1599
Chittoor	0.65	155	0.00	3			0.00	398	0.47	643			1199
Cuddapah	33.33	3	0.00	5			0.00	24	0.00	768			800
East Godavari	1.40	286	0.47	632	0.00	2	0.00	3	0.00	276			1199
Guntur	0.00	324	0.23	432			0.00	65	0.27	377			1198
Krishna	0.00	162	0.00	638					1.25	399	100.00	1	1200
Kurnool	0.00	83	0.93	431			0.00	3	0.59	683			1200
Nellore	0.00	78	1.20	415			0.00	6	0.31	650	2.00	50	1199
Prakasam	0.00	262	0.36	563	0.00	1			0.00	374			1200
Srikakulam	0.00	6	0.00	91					0.43	700			797
Visakhapatnam	0.00	246	0.67	150			0.00	38	0.29	1025			1459
Vizianagaram	0.00	17	0.00	62			0.00	2	0.45	1118			1199
West Godavari	0.00	78	0.00	177			0.00	1	0.11	943			1199

5.7 HIV Prevalence among ANC Clinic Attendees by Place of Residence

Figure 22: HIV Prevalence (%) among ANC Clinic Attendees by Place of residence, HSS 2016-17, Andhra Pradesh

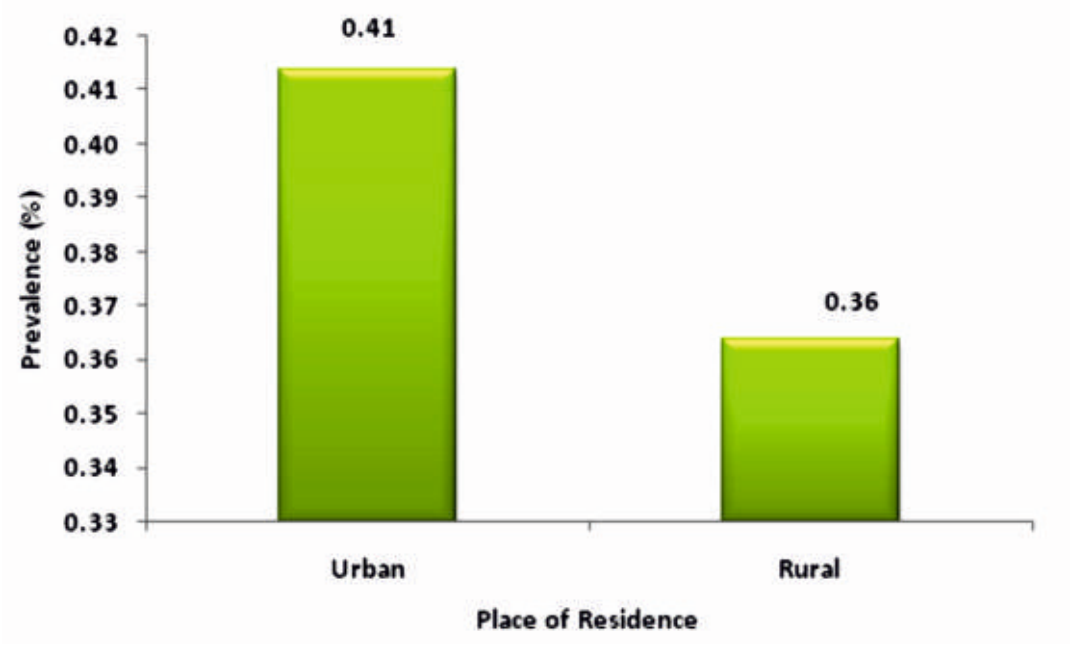


Table 26: HIV Prevalence among ANC Clinic Attendees by Place of Residence and district, HSS 2016-17

State/District	Urban		Rural		Total
	%	N	%	N	
Andhra Pradesh	0.41	4108	0.36	11273	15381
Anantapur	0.70	426	0.34	1170	1596
Chittoor	0.23	439	0.40	751	1190
Cuddapah	0.00	305	0.20	493	798
East Godavari	0.57	176	0.59	1019	1195
Guntur	0.42	240	0.11	949	1189
Krishna	0.23	441	0.66	757	1198
Kurnool	0.99	404	0.51	788	1192
Nellore	1.59	314	0.34	883	1197
Prakasam	0.00	268	0.22	929	1197
Srikakulam	1.15	87	0.28	705	792
Visakhapatnam	0.00	539	0.44	911	1450
Vizianagaram	0.00	272	0.54	923	1195
West Godavari	0.00	197	0.10	995	1192

5.8 HIV Prevalence among ANC Clinic Attendees by Current Occupation of Respondent

Figure 23: HIV Prevalence (%) among ANC Clinic Attendees by Current Occupation of Respondent, HSS 2016-17, Andhra Pradesh

Table 27: HIV Prevalence among ANC Clinic Attendees by Current Occupation of Respondent, HSS 2016-17

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	
Andhra Pradesh	0.30	2009	0.65	617	0.00	22	0.00	114	0.00	75	0.00	41	0.30	332	1.06	94	0.00	4	0.00	2	0.00	214	0.39	11919	15443
Ananta pur	0.43	234	0.97	207			0.00	25	0.00	8	0.00	12	0.00	35	0.00	9	0.00	1			0.00	8	0.38	1059	1598
Chittoor	1.28	78	0.00	12	0.00	1	0.00	9	0.00	10	0.00	2	0.00	30	0.00	6					0.00	6	0.29	1044	1198
Cuddap ah	0.00	121	0.00	19			0.00	12	0.00	1	0.00	8	0.00	6							0.00	1	0.16	631	799
EastGodavari	2.94	34	0.00	13			0.00	3	0.00	1	0.00	1	0.00	8	0.00	2					0.00	8	0.53	1127	1197
Guntur	0.37	273	0.00	57	0.00	5	0.00	16	0.00	6			20	0.00	9						0.00	27	0.13	786	1199
Krishna	0.00	6	0.00	3			0.00	2	0.00	4	0.00	2	0.00	46	0.00	5			0.00	1			0.53	1130	1199
Kurnod	0.50	199	0.00	52	0.00	5	0.00	8	0.00	8	0.00	2	0.00	15	0.00	3					0.00	107	0.88	800	1199
Nellore	0.39	255	0.00	44	0.00	7	0.00	13	0.00	13			0.00	31	0.00	5							0.84	830	1198
Prakasam	0.00	219	0.00	41	0.00	3	0.00	10	0.00	6	0.00	11	0.00	23	0.00	9	0.00	2			0.00	1	0.23	875	1200
Srikakulam	0.00	51	2.04	98	0.00	1	0.00	2					0.00	6							0.00	2	0.16	639	799
Visakh apatnam	0.00	252	0.00	30			0.00	5	0.00	15	0.00	3	1.33	75	0.00	29			0.00	1	0.00	27	0.29	1021	1458
Vizianagaram	0.00	115	0.00	21			0.00	6	0.00	3			0.00	22	6.67	15					0.00	27	0.40	990	1199
West Godavari	0.00	172	0.00	20			0.00	3					0.00	15	0.00	2	0.00	1					0.10	987	1200

5.9 HIV Prevalence among ANC Clinic Attendees by Current Occupation of Spouse

Figure 24: HIV Prevalence among ANC Clinic Attendees by Current Occupation of Spouse, HSS 2016-17

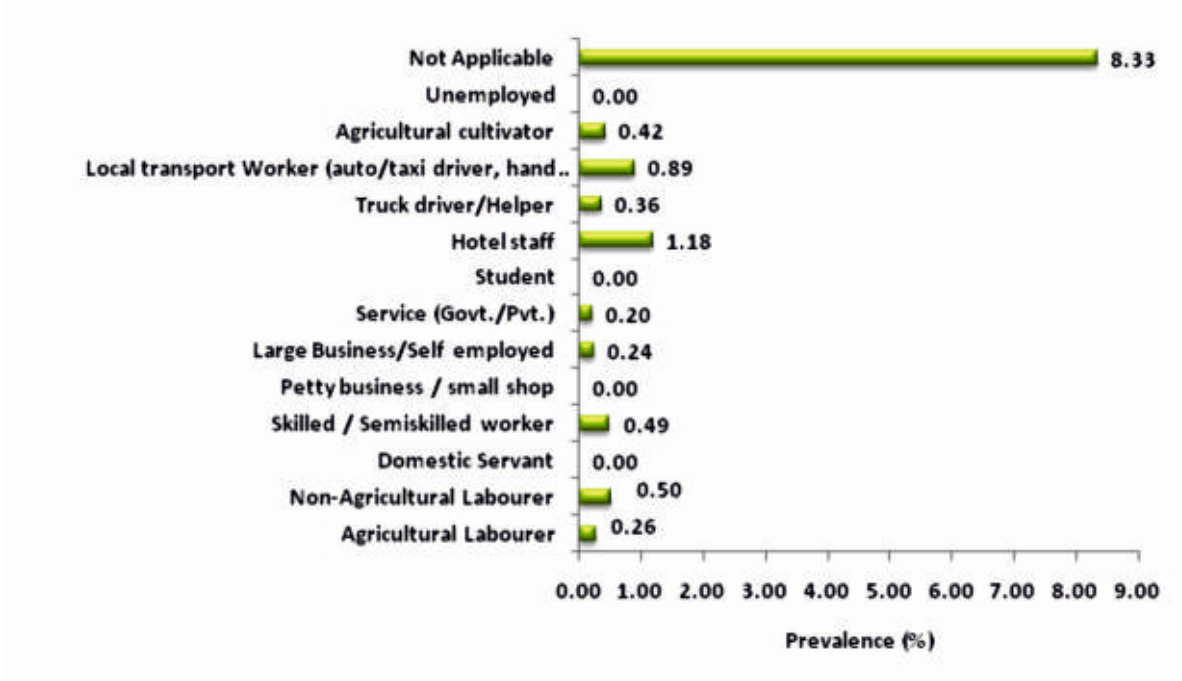


Table 28: HIV Prevalence among ANC Clinic Attendees by Current Occupation of Spouse, HSS 2016-17

State/District	Agricultural Labourer		NonAgricultural Labourer		Domestic Servant		Skilled / Semiskilled worker		Petty business / small shop		Large Business/Self		Service (Govt./Pvt.)		Student		Hotel staff		Truck driver/Helper		Local transport Worker		Agricultural cultivator		Unemployed		Not Applicable	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Andhra Pradesh	**0.26**	**4594**	**0.50**	**2798**	**0.00**	**9**	**0.49**	**2038**	**0.00**	**739**	**0.24**	**415**	**0.20**	**2492**	**0.00**	**33**	**1.18**	**85**	**0.36**	**557**	**0.89**	**899**	**0.42**	**713**	**0.00**	**63**	**8.33**	**12**
Anantapur	0.35	572	0.78	383			0.74	136	0.00	46	1.92	52	0.00	182	0.00	2	0.00	16	0.00	55	0.00	81	0.00	66	0.00	6		
Chittoor	0.77	261	0.00	68	0.00	2	0.45	222	0.00	103	0.00	57	0.00	245	0.00	4	0.00	7	0.00	77	0.00	76	0.00	75	0.00	1		
Cuddapah	0.00	225	0.83	121			0.00	149	0.00	10	0.00	62	0.00	60			0.00	1	0.00	35	0.00	109	0.00	27				
East Godavari	0.41	486	1.33	150	0.00	1	0.00	207	0.00	41	0.00	21	0.67	149	0.00	1	0.00	11	0.00	33	1.33	75	0.00	20	0.00	2	100.00	1
Guntur	0.00	306	0.00	317			0.67	150	0.00	43	0.00	25	0.00	171	0.00	4	0.00	3	0.00	29	1.19	84	0.00	54	0.00	11	0.00	2
Krishna	0.00	351	1.10	91	0.00	2	0.95	210	0.00	68	0.00	30	0.64	313	0.00	6	6.67	15	0.00	10	0.00	100	0.00	2	0.00	1	0.00	1
Kurnool	0.54	185	0.00	200	0.00	4	1.74	172	0.00	52	0.00	38	0.66	151	0.00	5	0.00	5	0.00	17	0.00	117	1.21	248	0.00	6		
Nellore	0.24	422	0.72	279			0.80	125	0.00	50	0.00	13	0.00	134			0.00	7	0.00	59	4.71	85	0.00	24	0.00	1		
Prakasam	0.31	325	0.27	368			0.00	177	0.00	49	0.00	33	0.00	134	0.00	4	0.00	8	0.00	29	0.00	60	0.00	7	0.00	3	0.00	2
Srikakulam	0.26	384	1.42	141			0.00	90	0.00	73	0.00	1	0.00	82					0.00	24	0.00	1	0.00	2				
Visakhapatnam	0.00	323	0.52	194			0.00	55	0.00	130	0.00	55	0.21	476	0.00	4	0.00	6	2.35	85	0.00	29	0.00	80	0.00	23		
Vizianagaram	0.53	187	0.49	205			0.54	184	0.00	61	0.00	21	0.00	293	0.00	1	0.00	6	0.00	49	2.63	76	0.00	107	0.00	7	0.00	3
West Godavari	0.18	567	0.00	281			0.00	161	0.00	13	0.00	7	0.00	102	0.00	2			0.00	55	0.00	6	0.00	1	0.00	2	0.00	3

5.10 HIV Prevalence among ANC Clinic Attendees by Migration Status of Spouse

Figure 25: HIV Prevalence among ANC Clinic Attendees by Migration status of Spouse, HSS 2016-17

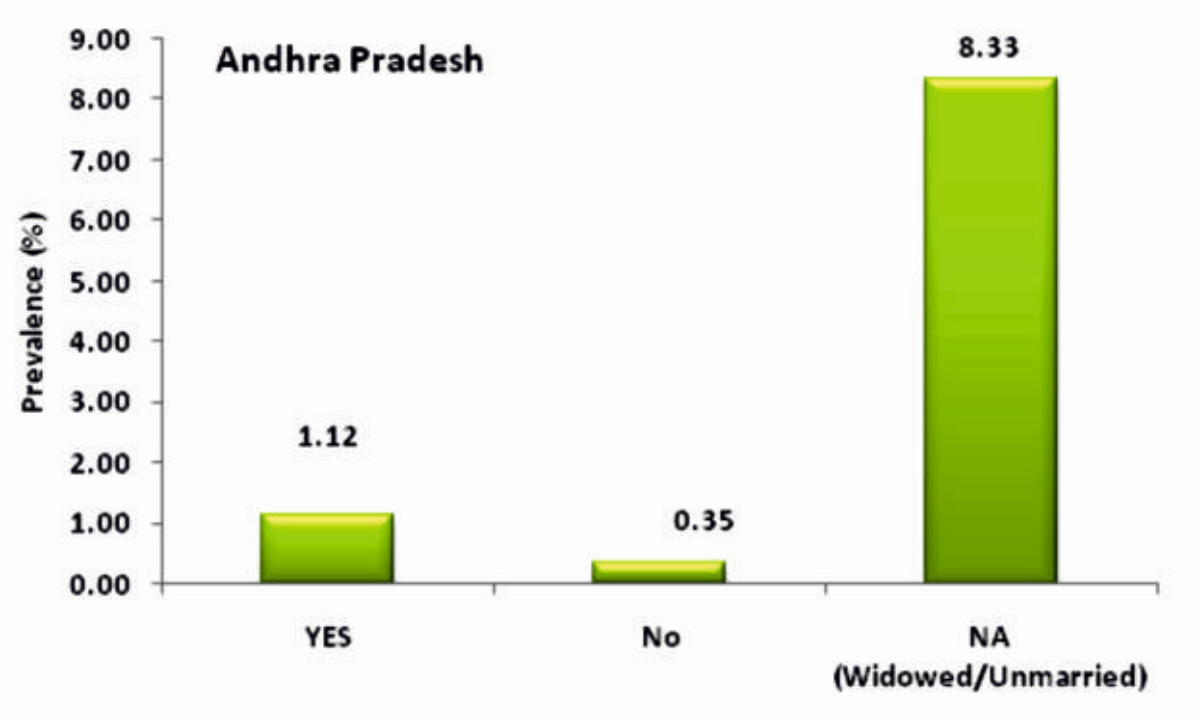


Table 29: HIV Prevalence among ANC Clinic Attendees by Migration status of Spouse, HSS 2016-17

State/District	Yes		No		Not Applicable		Grand Total
	%	N	%	N	%	N	
Andhra Pradesh	1.12	358	0.35	15078	8.33	12	15448
Anantapur	1.08	93	0.40	1506			1599
Chittoor	0.00	43	0.35	1152			1195
Cuddapah	0.00	28	0.13	772			800
East Godavari	0.00	21	0.51	1178	100.00	1	1200
Guntur	0.00	23	0.17	1175	0.00	2	1200
Krishna	0.00	7	0.50	1190	0.00	1	1198
Kurnool	7.69	13	0.59	1187			1200
Nellore	8.33	24	0.51	1175			1199
Prakasam	0.00	66	0.18	1132	0.00	2	1200
Srikakulam	0.00	2	0.38	798			800
Visakhapatnam	0.00	8	0.28	1450			1458
Vizianagaram	0.00	21	0.43	1176	0.00	3	1200
West Godavari	0.00	9	0.08	1187	0.00	3	1199

CHAPTER 6

HIV PREVALENCE TREND AMONG ANC CLINIC ATTENDEES

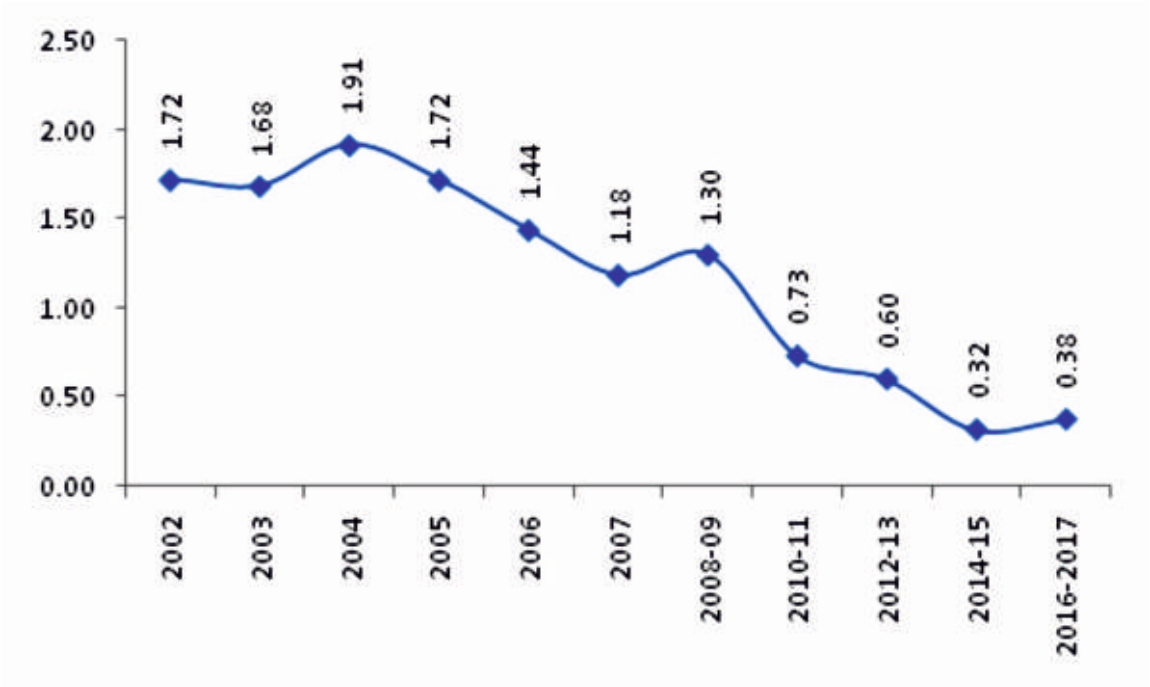
6.1 HIV Prevalence trend at State and District Level

The primary objective of HIV Sentinel Surveillance is to generate data on trends of HIV prevalence among various population groups in the country and state. 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 has been a critical input to the strategic planning efforts under the National AIDS Control Programme and contributed to shaping the strategies for prevention and control of HIV/AIDS in the state. This chapter presents the trends of HIV prevalence among ANC clinic attendees at state and district levels. 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. Further, in order to smoothen the sampling variations in HIV prevalence due to small sample size at sentinel site level, a three-year moving average was calculated at state/district levels and trends have been analysed using this data. All the invalid sites i.e. sites where sample size was less than 75% (300) of the target sample size of 400, were excluded from trend analysis for that year.

Though there was a clear declining trend seen in Andhra Pradesh, within the state, there are variations in HIV prevalence among the districts. District level information on HIV is essential for planning district strategies in HIV prevention and control. District wise trend analysis was performedon surveillance data collected during the year 2002-2017 using moving average technique

Figure 26: HIV prevalence trend at Andhra Pradesh



6.2 HIV Prevalence trend at district level

Figure 27

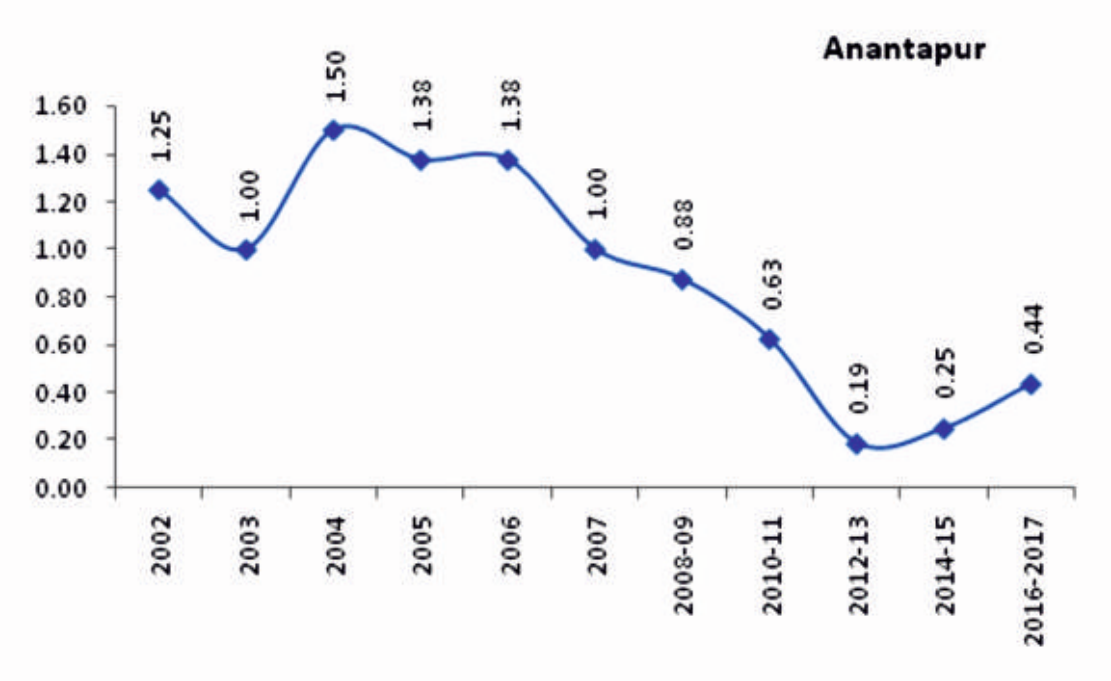


Figure 28

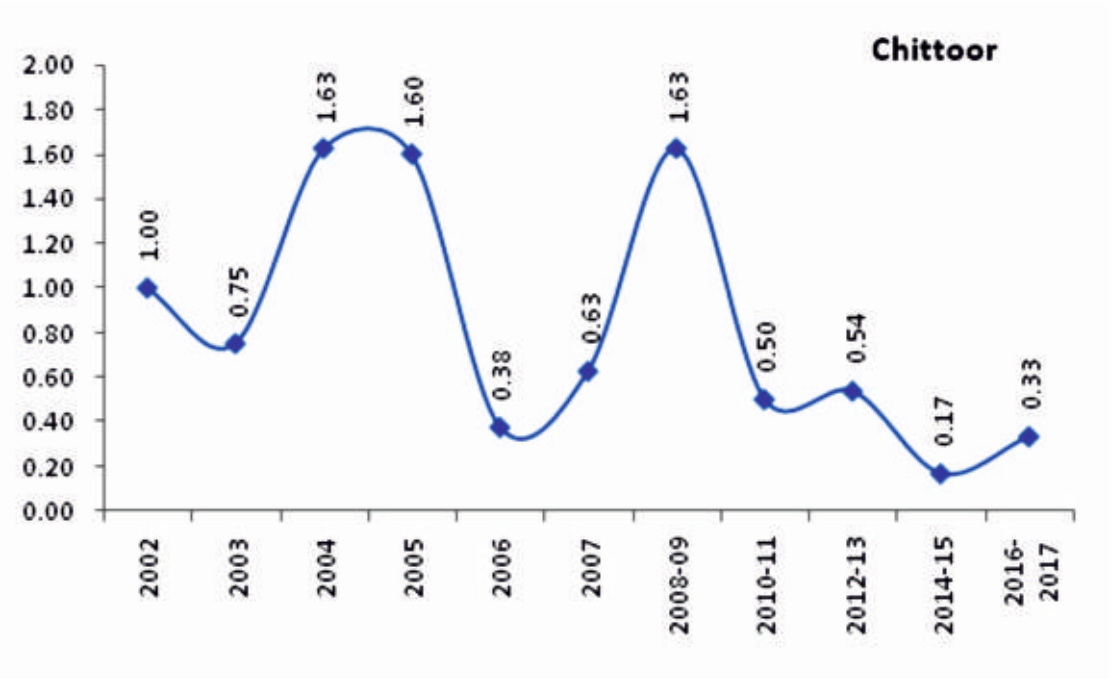


Figure 29

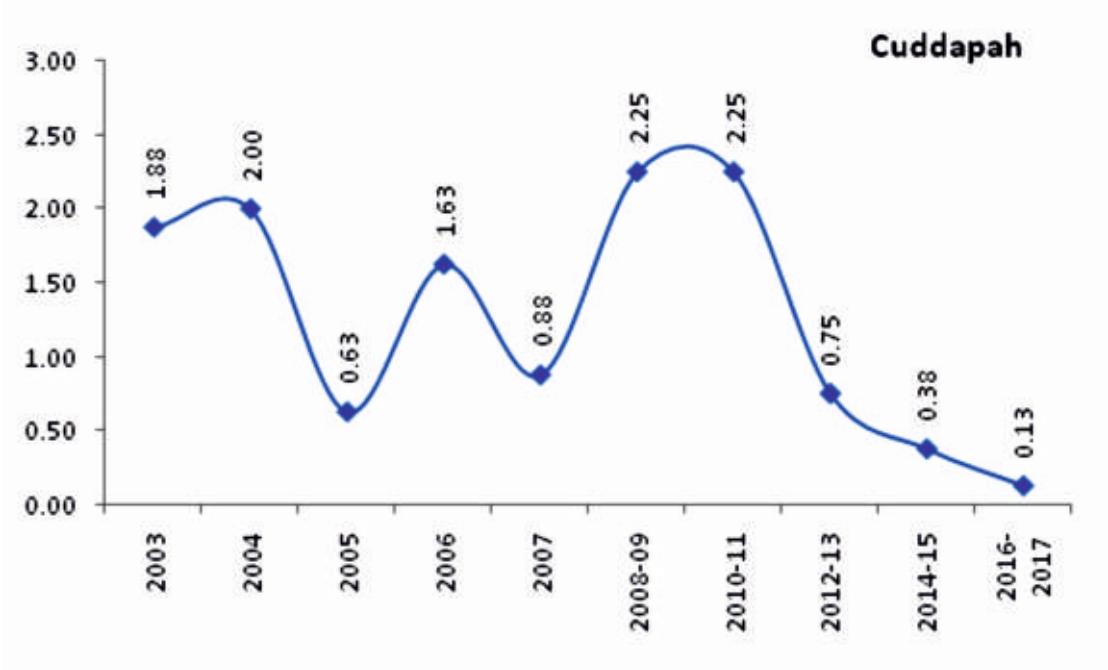


Figure 30

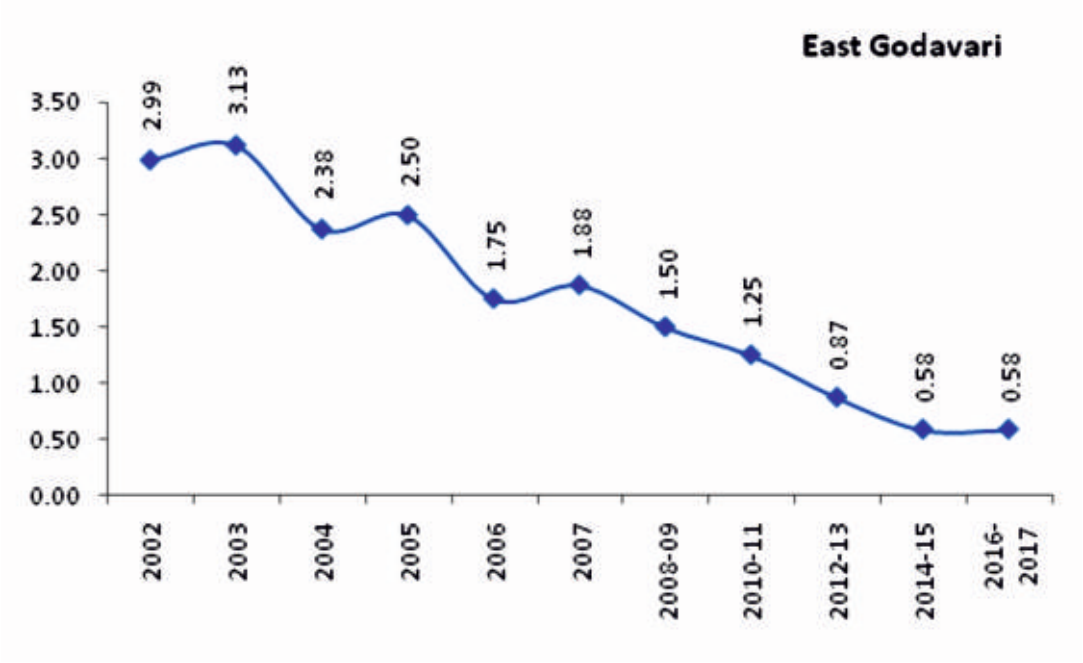


Figure 31

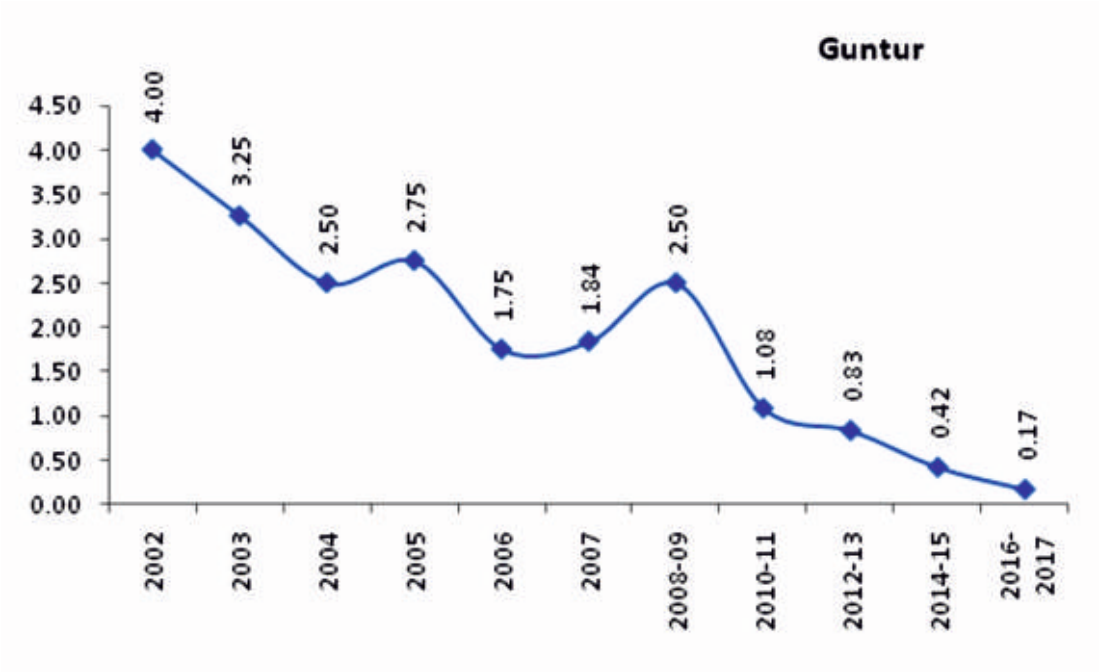


Figure 32

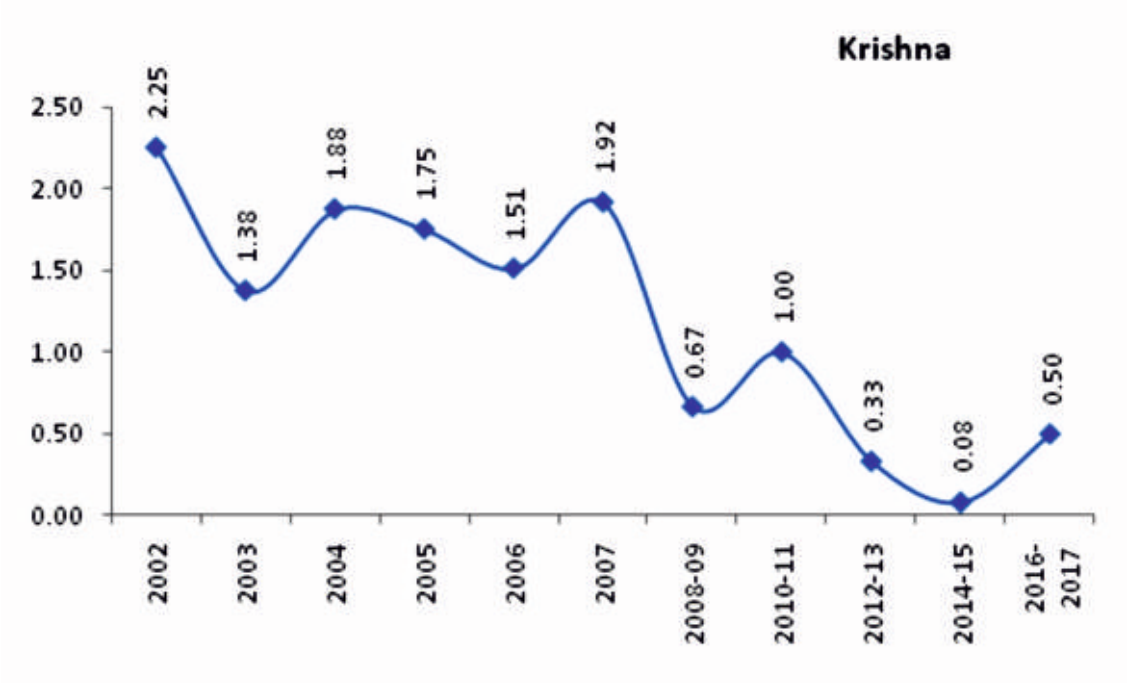


Figure 33

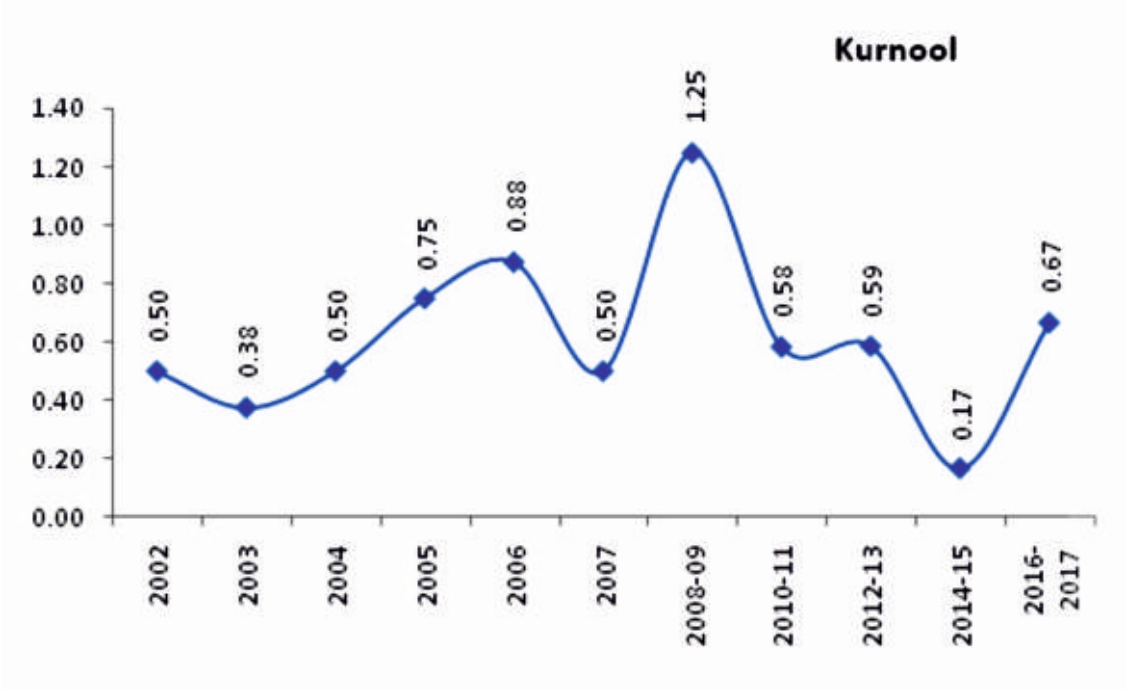


Figure 34

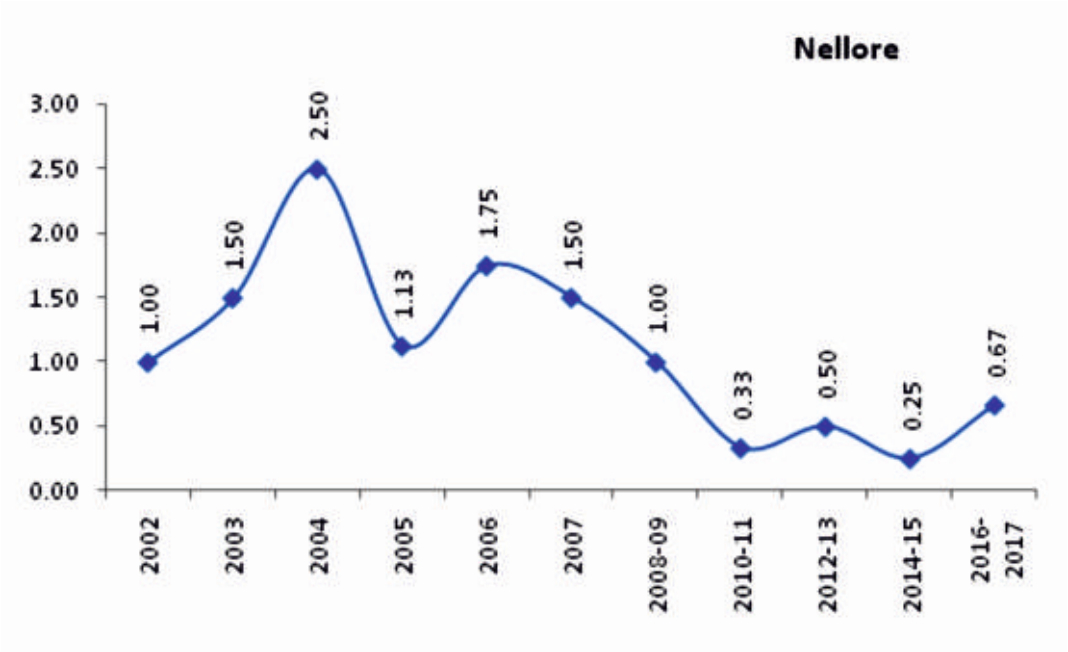


Figure 35

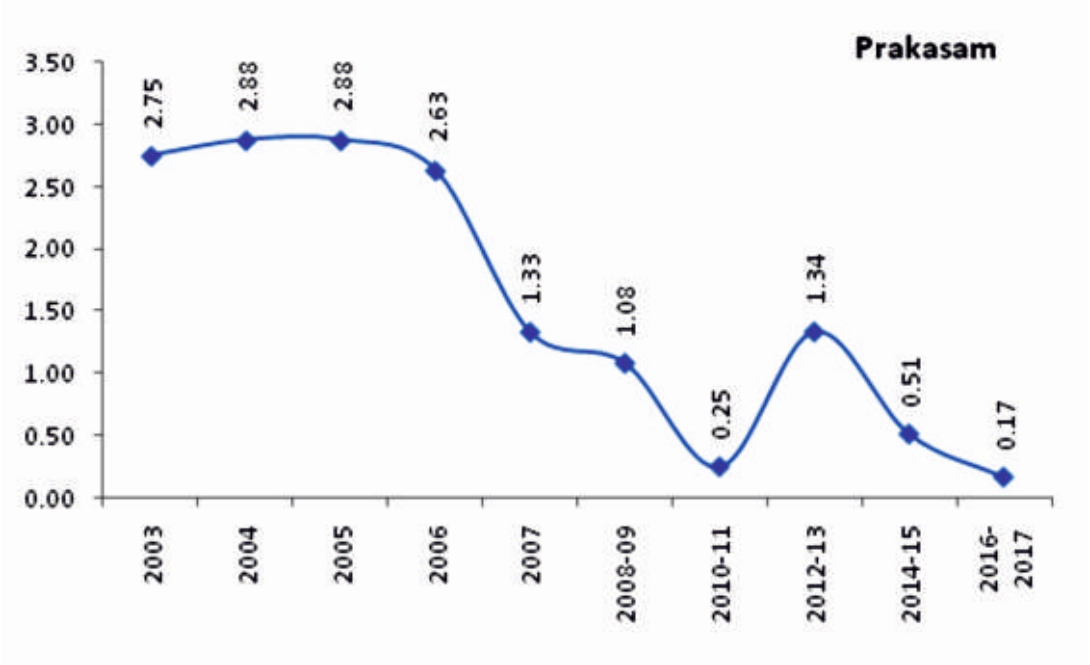


Figure 36

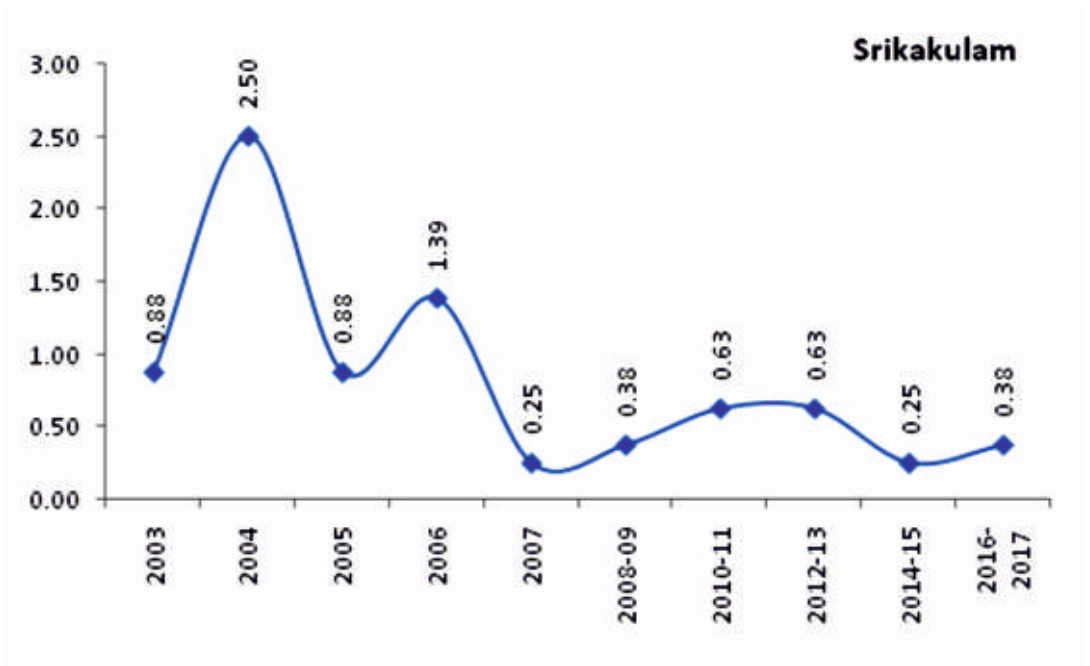


Figure 37

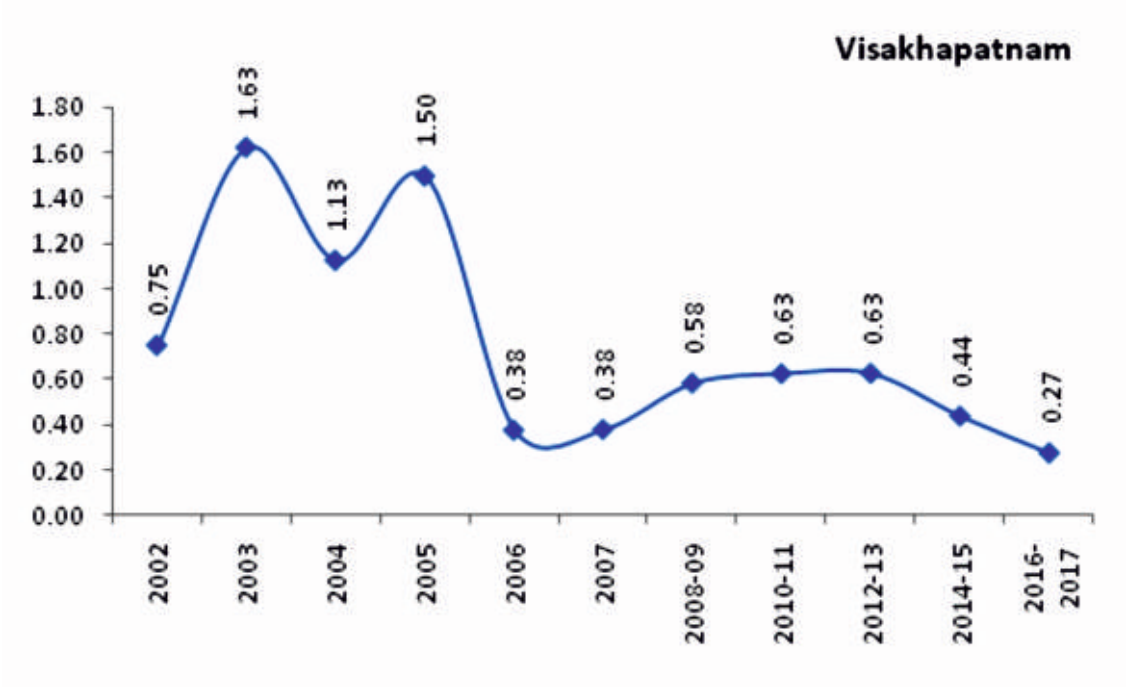


Figure 38

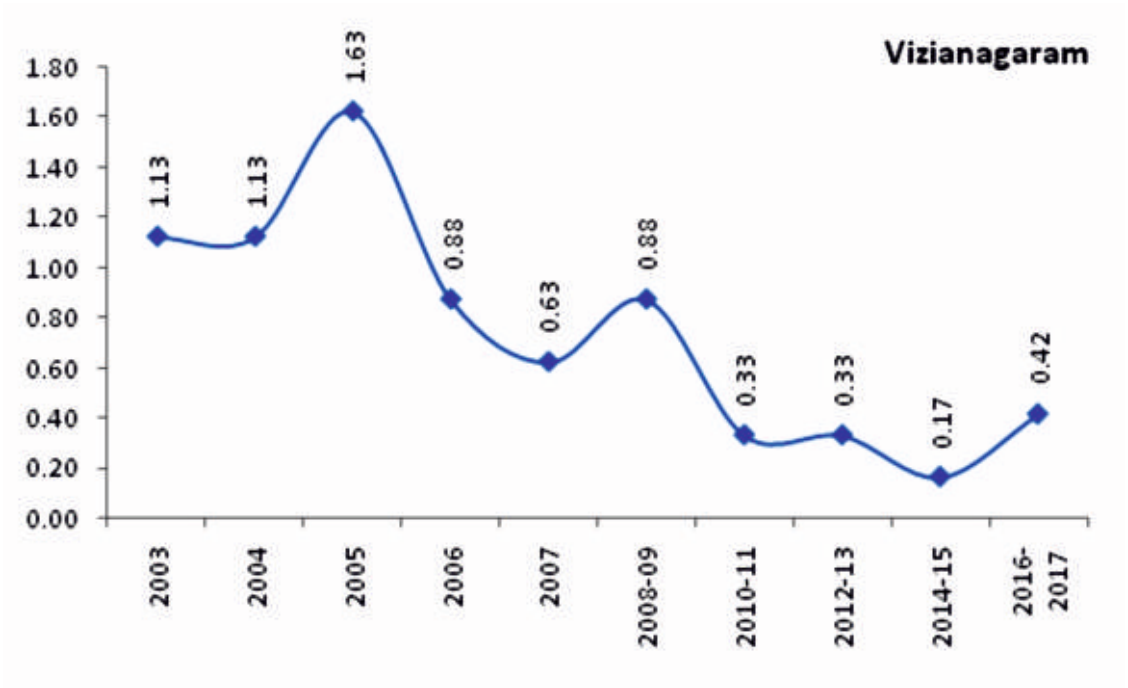
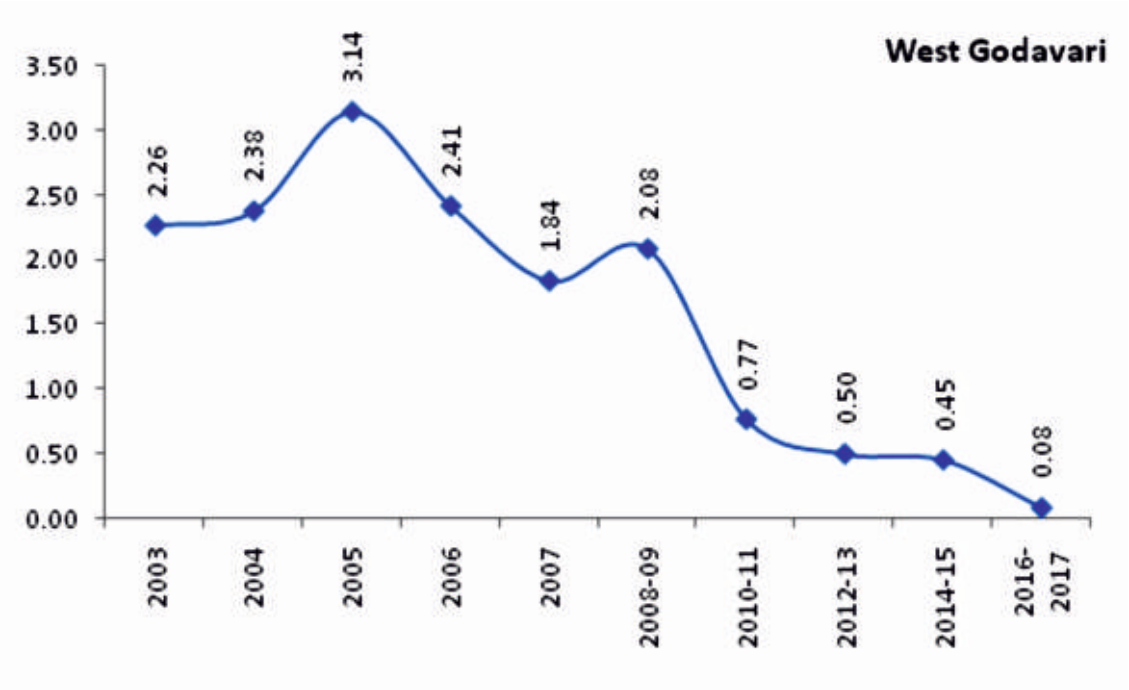


Figure 39


West Godavari
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
2.26
2.38
3.14
2.41
1.84
2.08
0.77
0.50
0.45
0.08
2003
2004
2005
2006
2007
2008-09
2010-11
2012-13
2014-15
2016-2017

CHAPTER 7

SUMMARY

- The total sample of ANC analysed was 15460across 13 districts in Andhra Pradesh. The median age of respondents, were 22 years in the state and ranged between 16 and 42 years across different districts.
- State level HIV prevalence among ANC respondents (n=15460) was 0.38%.
- HIV Prevalence among the age group of 15-24was 0.38%, followed by the age group of 25-34 (0.365). Whereas remaining age groups (35-44, 45-49) showed zero prevalence at the state level.
- The proportion of illiterate ANC was 13% at the state level and the HIV prevalence among them was 0.60%. Whereas majority of respondents were falls under the category of 6th to 10th standard and the HIV prevalence among them was 0.42%.
- At the state level, 42.85% of the respondents reported being pregnant for the first time and 44.29% of respondents were reported as second time pregnancy.
- The state level HIV prevalence among ANC clinic attendees in primi-gravida was 0.50%, second gravida was 0.25%, third gravida was 0.43% and in fourth gravida it was 0.29%.
- At the state level, 16% of the respondents belonged to the First trimester followed by 40% were belonged to the second trimester and 44.1% of respondents were belonged to the Third trimester.
- Highest HIV prevalence (0.53%) was seen in respondents with first trimester.
- At the state level, 74.5% of the respondents reported that they received ANC services during their current pregnancy.
- At the state level, Govt. service providers (including ASHA/ANM) was identified as the major source of referral to ANC clinics, accounting for 55.3% of respondents, followed by family /relatives/neighbor/friends (25.5%) and self referral (15%).
- Highest HIV prevalence (3.85%) was seen in people referred by ICTC/ART Centre followed by family/relatives/neighbor/friends (0.43%).
- At the state level, 73.3% of respondents reported to be currently residing in rural areas.
- The HIV Prevalence in Urban was 0.41% and Rural was calculated as 0.36%.
- At the state level, the majority of the respondents (77.2%) were housewives, and 13% of respondents reported to be agricultural labourer and non-agricultural labourer were accounted for 4% of respondents followed by Service (Govt./Pvt.) (2.1%) and Agricultural cultivator (1.4%).
- Highest HIV prevalence (1.06%) was seen in student category, followed by non-agricultural labourer (0.65%), and housewives (0.39%).
- At the state level, the spouses of ANC attendees accounting for 29.7% were in agricultural labourer, 18.1% were in non-agricultural labourer and 16.1% were in service (Govt./Pvt.).
- HIV Prevalence was high in the category of never married/ widowed/ divorced/ separated woman (8.33%), followed by Hotel staff (1.18%) andLocal transport worker (0.89%).
- At the state level, 2.3% of respondents reported that their spouses were migrants. HIV Prevalence among migrant was 1.12% and among non-migrants was 0.35%.
- At the state level, 34.2% of respondents were tested for HIV during current pregnancy,whereas, 23.7% were tested before current pregnancy and 42.1% were never tested for HIV previously

Annexure 1 Sitewise HIV Prevalence in Andhra Pradesh from the year 2002-2017

S.No.	State	District_name	Site_Type	Sentinel Site	2002 (%)	2003 (%)	2004 (%)	2005 (%)	2006 (%)	2007 (%)	2008 09 (%)	2010 11 (%)	2012 13 (%)	2014 15 (%)	2016-2017 (%)
1	Andhra Pradesh	Anantapur	ANC	Ananthapur_Medical College	1.25	1.25	1.75	1.75	2.25	1.75	1.50	1.25	0.25	0.75	0.75
2	Andhra Pradesh	Anantapur	ANC(R)	Area Hospital, Guntakal		0.75	1.25	1.00	0.50	0.25	0.25	0.75	0.25	0.00	0.50
3	Andhra Pradesh	Anantapur	ANC(R)	CHC- MADAKASIRA (ANC PHC/CHC) New10								0.00	0.25	0.00	0.50
4	Andhra Pradesh	Anantapur	ANC	Rural Development Trust (RDT) PPP FI ICTC, Kalyandurg (ANC Pvt) New10								0.50	0.00	0.25	0.00
5	Andhra Pradesh	Chittoor	ANC	Chittor_District HQ. Hospital	1.00	0.00	1.25	1.25	0.25	1.00	1.50	0.50	1.25	0.50	0.75
6	Andhra Pradesh	Chittoor	ANC(R)	Area Hospital, Srikalahasti		1.50	2.00	2.00	0.50	0.25	1.75	0.50	0.00	0.00	0.25
7	Andhra Pradesh	Chittoor	ANC	DESAI HOSPITAL, MADANAPALLY (ANC-Pvt) New10								0.50	0.31	0.00	0.00
8	Andhra Pradesh	Cuddapah	ANC	Cuddapah_Distt. Hospital		2.50	2.75	0.75	1.50	1.25	2.00	4.00	1.50	0.50	0.25
9	Andhra Pradesh	Cuddapah	ANC(R)	Area Hospital, Rajampeta		1.25	1.25	0.50	1.75	0.50	2.50	0.50	0.00	0.25	0.00
10	Andhra Pradesh	East Godavari	ANC	Kakinada_Rangaraya Medical College	2.99	2.50	3.00	2.75	1.25	2.00	2.50	0.50	1.00	0.75	1.25
11	Andhra Pradesh	East Godavari	ANC(R)	Area Hospital, Ramachandrapuram		3.75	1.75	2.25	2.25	1.75	0.50	2.00	0.50	0.75	0.50
12	Andhra Pradesh	East Godavari	ANC	PHC-Addatheegala (New12)									1.15	0.25	0.00
13	Andhra Pradesh	Guntur	ANC	Guntur_Guntur Medical College	4.00	3.75	3.50	3.00	2.25	1.75	3.75	2.00	1.75	0.75	0.00
14	Andhra Pradesh	Guntur	ANC(R)	Area Hospital, Narsorapet		2.76	1.50	2.50	1.25	2.25	2.50	0.75	0.75	0.25	0.25
15	Andhra Pradesh	Guntur	ANC(R)	PHC, Pedanandipadu						1.52	1.25	0.50	0.00	0.25	0.25
16	Andhra Pradesh	Krishna	ANC	Machilipatnam_District Hospital	2.25	1.75	2.25	2.00	1.75	2.25	1.25	1.25	0.25	0.00	1.50
17	Andhra Pradesh	Krishna	ANC	St.Anns Hospital/ American Hospital (New 07)						0.00	0.25	0.25	0.00	0.25	0.00
18	Andhra Pradesh	Krishna	ANC(R)	Area Hospital, Nuzividu		1.00	1.50	1.50	1.27	3.50	0.50	1.51	0.75	0.00	0.00
19	Andhra Pradesh	Kurnool	ANC	Kurnool_Kurnool Medical College	0.50	0.50	0.75	1.50	0.75	1.00	1.50	1.00	0.50	0.50	0.75
20	Andhra Pradesh	Kurnool	ANC(R)	Women & Child Hospital, Adoni		0.25	0.25	0.00	1.00	0.00	1.00	0.00	0.25	0.00	0.50
21	Andhra Pradesh	Kurnool	ANC(R)	CHC Allgada (ANG- PHC /CHC) New10								0.75	1.01	0.00	0.75
22	Andhra Pradesh	Nellore	ANC	Nellore_GMH Hospital	1.00	2.50	2.75	1.50	2.00	2.25	0.50	0.25	0.75	0.50	1.25

23	Andhra Pradesh	Nellore	ANC(R)	Area Hospital, Kavali		0.50	2.25	0.75	1.50	0.75	1.50	0.25	0.25	0.25	0.75
24	Andhra Pradesh	Nellore	ANC(R)	CHC Sullurpeta (ANC-PHG/CHC) New10								0.50	0.50	0.00	0.00
25	Andhra Pradesh	Prakasam	ANC	Ongole_Maternal & child Health Hospital		3.00	4.00	2.50	3.02	1.75	1.50	0.25	1.75	0.25	0.25
26	Andhra Pradesh	Prakasam	ANC(R)	Area Hospital, Chirala		2.50	1.75	3.25	2.25	1.25	1.00	0.25	0.75	1.00	0.25
27	Andhra Pradesh	Prakasam	ANC(R)	PHC, Santhanuthalapadu						1.00	0.75	0.25	1.50	0.27	0.00
28	Andhra Pradesh	Srikakulam	ANC	Srikakulam_Distt. Hospital		1.00	4.00	1.50	1.75	0.25	0.75	0.75	0.75	0.00	0.25
29	Andhra Pradesh	Srikakulam	ANC(R)	CHC, Tekkali		0.75	1.00	0.25	1.02	0.25	0.00	0.50	0.50	0.50	0.50
30	Andhra Pradesh	Visakhapatnam	ANC	Ankapalli_Distt. Hospital	0.75	1.00	1.50	2.50	0.50	0.25	1.00	1.75	0.75	1.00	0.25
31	Andhra Pradesh	Visakhapatnam	ANC	Apurva Hospital, Seetaampeta (New 07)						0.39	0.25	0.00	0.50	0.00	0.00
32	Andhra Pradesh	Visakhapatnam	ANC(R)	CHC, Aganampudi		2.25	0.75	0.50	0.25	0.50	0.50	0.75	1.01	0.00	0.25
33	Andhra Pradesh	Visakhapatnam	ANC(R)	CHC Paderu (ANC-PHC/CHC) New10								0.00	0.25	0.75	0.50
34	Andhra Pradesh	Vizianagaram	ANC	Vizianagaram_Distt. Hospital		1.25	1.75	1.25	1.25	1.00	1.25	0.50	0.25	0.25	0.75
35	Andhra Pradesh	Vizianagaram	ANC(R)	Area Hospital, Parvathipuram		1.00	0.50	2.00	0.50	0.25	0.50	0.00	0.25	0.00	0.00
36	Andhra Pradesh	Vizianagaram	ANC(R)	CHC Bhogapuram (ANC PHC/CHG) New10								0.50	0.50	0.25	0.50
37	Andhra Pradesh	West Godavari	ANC	Eluru_Distt. Hospital		2.00	2.75	3.25	3.08	2.01	1.75	1.00	0.50	0.75	0.25
38	Andhra Pradesh	West Godavari	ANC(R)	CHC, Bhimavaram		2.53	2.00	3.00	1.76	1.25	3.75	1.00	1.00	0.25	0.00
39	Andhra Pradesh	West Godavari	ANC(R)	PHC, Ganapavaram						2.25	0.75	0.27	0.00	0.33	0.00

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