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LEARNING LESSONS THROUGH DATA TRIANGULATION: VULNERABILITY OF SURAT CITY TO HIV EPIDEMIC

Anjali Modi[1], J K Kosambiya[2], H K Sondharwa[3], Manish Kumar[4]

Author's Affiliation:
[1]Assistant Professor; [2]Professor (Addl), Department of Community Medicine, Government Medical College, Surat; [3]Project Incharge, SMC STD care project; Health, Surat Municipal Corporation, Surat; [4]Medical officer, Health Department, Jila Panchayat, Surat

Correspondence
Dr Anjali Modi
dranjalimodi@gmail.com

ABSTRACT

Background: In context of increased data sources for monitoring the situation of HIV and decentralized planning, systemic appraisal is required by program managers to decide intervention strategies and formulate policies at the district and sub-district level.

Materials and methods: The data triangulation exercise was carried at the District AIDS Prevention and Control Unit (DAPCU) and Surat AIDS Prevention and Control Unit (SAPCU) with stakeholders. A twelve step approach to triangulation was followed which included identification and assessment of key questions, identification of data sources, refining questions, gathering data and reports, assessing the quality of those data and reports, formulating hypotheses to explain trends in the data, corroborating or refining working hypotheses, drawing conclusions, communicating results and recommendations and taking public health action.

Results: The prevalence of HIV among ANC clinic attendees in HIV Sentinel Surveillance (HSS) and PPTCT 2008 was 0.76% and 0.9%. The HSS 2008 showed 14.40%, 4.4% and 10.00% positivity among high-risk groups (HRG); STI Clinic attendees, Female Sex Workers (FSW) and Men having Sex with Men (MSM). The observation of yearly trends showed stable to declining trends among general population and HRGs. Service (41.75%) and Treatment (21.42%) gaps at the program level for identifying and treating PLHIVs were found.

Conclusion: The high HIV positivity of Surat city in comparison to the Gujarat state and India indicates its vulnerability towards HIV epidemic. The program officers and policy makers need to formulate special strategies to halt and reverse epidemic in Surat.

Key words: Data Triangulation, HIV Sentinel Surveillance, AIDS Prevention and Control Units.

BACKGROUND

After introduction of HIV sentinel surveillance (HSS) in 1998, it has remained mainstay for monitoring trends and estimates of HIV epidemic in India[1] However, the last few years have witnessed a systemic strengthening of the collection of data to track the epidemic of HIV.[1-2] Now in addition to HSS data, district level HIV prevalence among antenatal women and general population through Prevention of Parent to Child Transmission centers(PPTCT)and Integrated Counseling and Testing Centre (ICTC) is also available. Data on People Living with HIV/AIDS (PLWHA) and on ART is also available through Ante Retroviral Therapy (ART) centers. District AIDS Prevention and Control

Units (DAPCUs) have been established which utilize the Computerized Management Information System (CMIS) to ensure uniform and timely collection and compilation of data.[3]

While data collection has increased and improved, a gap remains between the accumulation of data and its collective use for evaluation, policy implementation and programmatic improvement especially at the district level. [1-4]An analytic approach known as "triangulation" integrates pre-existing multiple data sources to improve the understanding of a public health problem and to guide programmatic decision-making to address such problems. By examining information collected by different methods, by different persons, and in different populations, findings can corroborate each other and reduce the effect of both systemic bias and random error present in a single study. [2-6]

With this background of increased data sources and decentralized planning, the data triangulation exercise was performed to collate and interpret the data to determine prevalence, trends and programmatic gaps of HIV at the district level of Surat. The objective was to enhance evidence based programming and policy decision making for HIV epidemic control at the district level.

MATERIALS AND METHODS

Triangulation is an analytic approach that involves synthesis and integration of data from multiple sources through collection, examination, comparison and interpretation. It uses available diverse datasets to give timely results for policy and program evaluations and decision making as compared to traditional research. [2-5]

The exercise was carried out from September to December 2009 to determine the trends, prevalence of HIV epidemic and program gaps from delivery point of view. This involved the triangulation of the datasets available at District AIDS Prevention Control Unit (DAPCU) Surat district and Surat AIDS Prevention and Control Unit (SAPCU) for Surat city, as till July 2012 two management units, DAPCU and SAPCU were functioning for prevention and control of HIV/AIDS in Surat district (Rural) and Surat city (Urban) respectively. The study was carried out in collaboration with stakeholders (Program Officers, Monitoring and Evaluation Officers and Staff).The involvement of stakeholders is the key to success of process of triangulation as they provide the data on which the exercise is based. Monitoring and Evaluation Officers collect field level data every month from Targeted Interventions, ICTCs, PPTCTs, STI clinic, Blood Banks and ART Centre. Reporting units at the time of present study were 31 ICTC, 2 PPTCT and 29 STI clinics from Surat city (SAPCU) while 16 ICTC & PPTCT under DAPCU. HSS data collected as a part of nationwide exercise by NACO for monitoring trends and Programmatic data from DAPCU and SAPCU were used for data triangulation. The whole exercise was planned and executed according to 12 – step approach to triangulation. (Table 1) [3]

Table 1: The Twelve- step approach to triangulation[3]

Process	Steps involved	
Planning for triangulation	Q1.	Identify key questions.
	Q2.	Ensure that questions are important, actionable, answerable & appropriate for triangulation.
	Q3.	Identify data sources and gather background information
	Q4.	Refine questions
Conducting Triangulation	Q5.	Gather data / reports
	Q6.	Assess data reliability and make observations from each dataset
	Q7.	Note trends across datasets and hypothesize.
	Q8.	Check (corroborate, refute, modify) hypotheses
	Q9.	If necessary, identify additional data and return to step5
	Q10.	Summarize findings and draw conclusions
Communicating Triangulation	Q11.	Communicate results and recommendations
	Q12.	Outline next steps based on findings.

Initial stakeholder meeting of program managers and researchers was held to develop taskforce, identify the key questions and data sources and to gather background information.

The data fields were delineated from various data sources (HSS, ICTC, PPTCT, STI Clinic data, Blood Bank and ART registries) for each question selected. (table 2)

Table 2: Key questions and related data sources considered for triangulation

Key questions	Data fields	Data sources
What is the current level of HIV Positivity in the general population, among FSWs, MSMs, IDUs and STI patients in the district?	Number tested and total HIV tested positive in general population and high risk groups.	HIV Sentinel Surveillance (HSS); ICTC; PPTCT data; Blood Bank data
What is the trend of HIV prevalence in the general population, among FSWs, MSMs, IDUs and STI patients in the district?	Yearly prevalence of HIV in general population and high risk groups. (2003 to 2008)	HIV Sentinel Surveillance (HSS); ICTC; PPTCT data; Blood Bank data
What are the program gaps in HIV/AIDS response at district level? (care, support and treatment programs)	Total number of estimated PLWHA in the district and their proportion registered in care and support and treatment program.	ART centre; Blood Bank data

This was followed by collecting and collating existing data and conducting data quality and validation checks. For data outliers, correction, adjustment and imputation were done as per the requirement of situation. The data were analyzed to build hypothesis to answer specific questions. The hypothesis were further checked and corroborated with existing datasets to be accepted or refuted. The triangulation findings were accepted when multiple data show similar or consistent results. The interpretations thus made were inspected with additional datasets wherever required. The conclusions drawn were indicative of trends, prevalence and program gaps in epidemic of HIV. The triangulation process also helped in capacity building of program managers and data mangers.[2-3]

RESULTS

The data from HIV Sentinel Surveillance (HSS), PPTCT, ICTC and Blood Bank were collated to see the prevalence of HIV in different subgroups of population of Surat city and district in 2008.

Table 3: HIV Prevalence among Adult Population of Surat city and District in year 2008

Source of Data	Year	Population Group	Persons tested	Positive	Percentage (%) tested positive
SAPCU					
HSS	2008	ANC clinic attendees	394	3	0.76
HSS	2008	STD clinic attendees	242	32	13.2
PPTCT	2008	ANC clinic attendees	15749	143	0.91
ICTC	2008	General Population	16473	2743	16.65
Blood Bank	2008	General Population	79681	127	0.16
DAPCU					
PPTCT	2008	ANC clinic attendees	8938	19	0.21
ICTC	2008	General Population	4162	171	4.11
Blood Bank	2008	General Population	2656	12	0.45

Table 4: Trends in HIV prevalence in Surat city and District

Source of data	Population group	2003	2004	2005	2006	2007	2008	Trend#
SAPCU								
HSS	ANC	1.0	0.75	1.25	1.25	1.50	0.76	Stable
	STD	ND*	8.11	11.79	8.80	8.00	14.40	Increasing
	FSW	ND	ND	13.2	8.0	7.2	4.4	Declining
	MSM	ND	ND	15.6	12.8	7.6	10.00	Declining
PPTCT- CMIS	ANC clinic attendees	ND	ND	1.7	1.3	1.6	0.9	Declining
ICTC- CMIS	General Population	19.7	19.6	26.5	28.1	34.6	16.7	Declining
Blood Bank	General Population	0.38	0.33	0.27	0.20	0.20	0.16	Declining
DAPCU								
HSS	ANC clinic attendees	ND	ND	ND	0.5	1.0	0.0	Declining
HSS	STD Clinic Attendants	4.40	3.60	1.60	1.20	2.40	0.00	Declining
PPTCT	ANC - consistent sites)	ND	ND	0.2	0.2	0.3	0.2	Stable
	ANC - all sites)	ND	ND	0.2	0.2	0.3	0.2	Stable
ICTC	Consistent sites	13.1	14.8	13.8	15.7	12.7	6.3	Declining
	All sites	13.1	14.8	13.8	15.7	12.1	4.5	Declining
Blood bank	General Population	0.4	0.2	0.2	0.2	0.1	0.2	Stable

*ND= not done; #for HIV positivity)

The HIV positivitywas examined in datasets from HSS, PPTCT, ICTC and Blood Bank from year 2003 to 2008 to interpret the declining, stable or increasing trend of the epidemic.

The table 5 explains the gaps in service delivery for testing pregnant women and providing ART to PLHIV; against the yearly targets provided to DAPCU and SAPCU on the basis of National and State HIV estimates. [7]

Table 5: Program Gaps in HIV / AIDS Care Support and Treatment at District level (2008)

PPTCT	SAPCU (Surat City)	DAPCU (Surat District)
ANC registered	21242	9519
ANC tested	15749	8938
Percentage Gap of ANC tested	25.9	6.1
PLHIV data for the Surat district including city		
Number of Estimated PLHIV	22083	
Detected PLHIV	12873	
Percentage Gap in identification	41.75	
People in need of ART (15% of estimated PLHIV)	3312	
Alive and on ART	2603	
Percentage Gap for ART	21.42	

DISCUSSIONS

Data triangulations an exhaustive process; it reduces the risk of false interpretations by drawing upon multiple independent sources of information. Data triangulation of Surat yielded useful information on existing epidemiological profile of HIV in the area.

The table 4 shows the prevalence of HIV among pregnant women in HSS 2008 and PPTCT as 0.76% and 0.9% which is high compared to HSS positivity of 0.44% in Gujarat State and 0.49% in India. The HSS 2008 shows 14.40%, 4.4% and 10.00% positivity among high-risk groups (HRG) of STI Clinic attendees, Female sex workers (FSW) and Men having sex with men (MSM) respectively. HSS Gujarat 2008 shows 7.49%, 3.74% and 7.3% HIV positivity among STI clinic attendees, FSWs and MSMs respectively. [8] HSS India shows prevalence of 7.3% and 4.94% among FSW and MSM.[7-8] Thus Surat shows Higher HIV positivity among all HRGs when compared with State and national level. [8-10]

The year wise trend of HIV infection among population at lower risk (ANC) and High Risk Groups (STD, CSW, MSM) was analyzed (table 4). The HIV seropositivity among ANC clinic attendees at Surat consistent site during HSS remains stable and shows a prevalence near or ≥1%. The year wise ANC trend in HIV infection of Gujarat state is less than 1% . Thus the HIV levels among ANC in Surat remain consistently high as compared to state and national levels. [8-10]

The HIV prevalence among STD clientele has increased across the years in Surat city (table 4). The same trend is also seen at state and national level, though the increase in Surat is more and has crossed the >10% level in HSS 2008. The further analysis of increasing trend at consistent STD sites during HSS may also be due to selective referral bias of STD patients from ART centers. Thereforethis data need to be interpreted with caution. The FSW site of Surat city shows declining trends which is similar to state and national reports. The year wise trends among MSM in present study are stable. The national and state levels show declining trends among this group.[8-10]

The yearly trend of HIV positivity at ICTC (general) and PPTCT in Gujarat state is lower than the Surat district and city. The overall positivity in ICTC (general) in Gujarat State is 5.5% while in PPTCT it is 0.3% in year 2008 as compared to 16.7% and 0.9% in Surat respectively.[11]

Table 5 shows a service delivery gap of 25.9% and 6.1% among registered pregnant women for HIV testing at SAPCU and DAPCU. Among the total estimated PLHIVs, 41.75% could not be identified while a gap of 21.42% was observed for providing ART in Surat.

CONCLUSIONS

The consistent high HIV positivity remained in Surat city while Surat district shows low HIV positivity. The high prevalence of HIV in Surat as compared to the Gujarat state and India shows the high vulnerability towards the HIV epidemic.

RECOMMENDATIONS

The triangulation process helped in capacity building of program managers and data mangers. It was learnt that intervention/ policy decisions cannot be made with help of HSS data in isolation .The results of the present study were disseminated at district & state level which helped the program officers and policy makers to formulate special strategies to halt and reverse

epidemic in Surat district including city. It is our recommendation that this exercise should be done periodically to monitor and evaluate the program.

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