

VIRTUAL MAPPING

Mapping and Size Estimation of Men who have Sex with Men active on virtual platforms in Delhi

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Virtual Mapping - Estimating Men who have Sex with Men active on virtual platforms in Delhi

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उदित प्रकाश राय
भारतीय प्रशासनिक सेवा
परियोजना निदेशक

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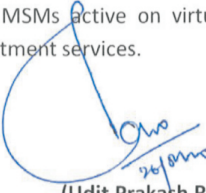
PREFACE

Delhi State AIDS Control Society (DSACS) has been implementing Targeted Intervention (TI) Program exclusively for Men who have Sex with Men (MSM) in Delhi since 2008 under the National AIDS Control Programme. Currently, 16052 MSMs are being reached through 11 TI Programs implemented through NGOs. Working with this marginalized group, with HIV positivity of 1.8% in Delhi (HIV Sentinel Surveillance 2017), require specific strategies to reach out to them with HIV prevention, care and treatment services.

A major change observed in the sex work dynamics of MSMs has been increased use of virtual platforms to approach sexual partners. The internet and digital revolution, penetration of smart phones and affordable communication technology has influenced the MSM community immensely. Virtual platforms have mushroomed across domains of society, and the MSM community is using a number of virtual platforms for solicitation of partners. TI programs for MSM have so far been designed to reach out to this target group through physical location-based mapping. Traditional Population size estimation method used by the TI may not be able to include those operating from the virtual space. In line with these experiences, Delhi State AIDS Control Society in collaboration with its Technical Support Unit - Delhi TSU (DL TSU), implemented by India Health Action Trust (IHAT), conducted a mapping exercise to estimate the population size of MSM active on virtual platforms in Delhi.

This size estimation has brought out some significant observations on number and characteristics of MSM active on virtual platforms. These findings are critical in order to plan and design appropriate interventions to connect to MSMs active on virtual platforms for delivery of HIV prevention, control and treatment services, especially those who might have been excluded through physical hotspot based mapping.

This document provides detailed insight into the process of virtual mapping for population size estimation of MSMs in Delhi active on virtual platforms. National AIDS Control Organisation (NACO), State AIDS Control Societies, State Technical Support Units, global programmes and key stakeholders can refer to these documents and also estimate the MSMs active on virtual platforms so as to reach out to them with HIV prevention, care and treatment services.


(Udit Prakash Rai)

Know AIDS, No AIDS
दिल्ली बोले एड्स नहीं



Message from the Managing Trustee



IHAT established a Technical Support Unit (TSU) in Delhi in the year 2014 to support the Delhi State AIDS Control Society (DSACS) to achieve a high level of coverage and ensure quality of its HIV prevention, treatment and care programs, delivered under NACO's Targeted Intervention (TI) Program. IHAT is committed to developing strategies, designing innovations and promoting knowledge translation with the vision of bringing equity and quality in public health and development.

Globally, HIV programming has undergone significant transformation to remain adept with the dynamic behaviour and soliciting patterns of the Key Population (KP). With the advent of the internet and exposure to smart phone technologies, more and more KPs are using virtual platforms like websites and social applications for solicitation. In Delhi, the coverage under TI programs has reflected this change; as the traditional approach of intervening with KPs at geographical hotspots may not be able to cover those active in the virtual space. Acknowledging this transformation, DSACS in collaboration with DL TSU, conducted a 'Virtual Mapping' exercise to generate estimates of the population size of Men who have Sex with Men (MSMs) active on virtual platforms in Delhi. Virtual Mapping has not been explored much as a method of size estimation in India and this document can be considered to be one of the initial published documents detailing out the method.

I appreciate the efforts of DSACS/DL TSU and TI partners in conceptualizing and undertaking this Virtual Mapping. I hope this method of size estimation becomes widely acceptable and is taken up by other state agencies dealing with KPs, thus adapting to the current trends and encompassing KPs active on virtual platforms in HIV interventions. I would also like to thank the Project Director and Additional Project Director, DSACS for their continued support to DL TSU.

Dr Shajy Isac
Managing Trustee, IHAT

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Abbreviations

ANC	Antenatal Care
CBO	Community Based Organization
DL TSU	Delhi Technical Support Unit
DSACS	Delhi State AIDS Control Society
GPS	Global Positioning System
HIV	Human Immunodeficiency Virus
IHAT	India Health Action Trust
KP	Key Population
MSM	Men who have Sex with Men
NACO	National AIDS Control Society
NACP	National AIDS Control Program
NASCOP	National AIDS and STIs Control Programme
NCT	National Capital Territory
NGO	Non-Governmental Organization
SACS	State AIDS Prevention and Control Societies
SPSS	Statistical Package for the Social Sciences
STI	Sexually transmitted infections
TI	Targeted Intervention
UNAIDS	Joint United Nations Programme on HIV and AIDS
VM	Virtual Mapper
WHO	World Health Organization

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INTRODUCTION

At a time when Information Technology and the rapid spread of smartphones has brought virtual platforms into every domain of modern society, a shifting paradigm is observed among Men who have Sex with Men (MSM) communities in the National Capital Territory of Delhi. New estimates reveal how a significant number of MSMs are on multiple virtual platforms. What is of even greater relevance is the fact that not many of them have been contacted by the conventional Targeted Intervention Program.

Background

According to UNAIDS global estimates, Men who have Sex with Men (MSMs) are 22 times more likely to contract HIV than the general population¹. In India too, the HIV epidemic continues to be concentrated, with relatively higher prevalence, among Key Populations (KPs) including MSM. National prevalence among MSM is 2.69%, which is much higher than prevalence among ANC clinic attendees, which is 0.28%². This signals the need to develop innovative strategies to address the HIV pandemic with focused efforts on reaching out to the MSM population with HIV care, prevention and treatment services. Within the various components of HIV programming, population size estimation forms the foundation for designing interventions to effectively cater to the population in need.

Mapping and Size Estimation

Establishing the size of KPs in a country is critical for its HIV intervention programs. While there are various methods available to estimate the size of a particular population, such as census-taking, capture–recapture, multiplier, network scale-up and geographical hotspot-based mapping among others, there remains enormous scope to develop novel methods that can further help in reaching most-at-risk populations.

The internet and smart phones have touched and transformed the fundamental fabric of social patterns and society. The way we communicate in public and personal spaces has seen radical transformation. The same shifts have been observed in communication patterns among MSMs, particularly impacting how they get connected for sexual solicitation. With advancements in technology and easy access to virtual platforms, MSMs are now using websites and mobile applications for solicitation. This is naturally a new trend in solicitation patterns, over and above the more traditional ways of finding sexual partners at geographical hotspots. As a result, the need to estimate population size of MSMs who are operating on virtual sites is an emerging one, critical to programming. The traditional methods of size estimation are dependent on venue-based/geographical mapping that provides estimates on the basis of the number of MSMs who visit physical hotspots for solicitation. However, mapping the population that is available on virtual sites needs a different strategy altogether.

Global efforts have delved into size estimation approaches that reach out to the MSM population active on virtual platforms. WHO and UNAIDS have come up with a guide for HIV programming in countries of the Middle East and North Africa that includes a recommendation to adapt size estimation methods to the virtual world³. Internet-based mapping conducted by the National AIDS and STIs Control Programme (NAS COP), Kenya, indicated that approximately 25% of MSM

¹Fact Sheet-World AIDS Day 2019, UNAIDS (https://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf)

²HIV Sentinel Surveillance 2017, NACO (http://naco.gov.in/sites/default/files/HIV%20SENTINEL%20SURVEILLANCE_06_12_2017_0.pdf)

³Estimating sizes of key populations: Guide for HIV programming in countries of the Middle East and North Africa, WHO & UNAIDS, 2016 (<https://rb.gy/wo99re>)

seeking sexual partners over the internet do not visit hotspots⁴. Size estimations of KPs conducted by the National AIDS Program, Ministry of Health and Population, Egypt found that the study resulted in a larger estimate for MSM compared to the previous round of size estimates and the difference was due to the inclusion of virtual mapping in addition to geographic mapping. The study further recommended that given the very large number of MSM on virtual sites, techniques for conducting size estimations of that group, and measuring their overlap across sites and with mapped sites, should be given greater focus and perhaps a larger share of the resources⁵.

While there have been a few efforts globally, focusing on developing clear estimates of KPs active on virtual platforms, this dimension of HIV programming remains largely unexplored in India. As per our knowledge, factual information on MSM active on virtual platforms, their population size estimates and several other visitation and solicitation characteristics have been gathered for the first time in Delhi.

The Scenario in Delhi (National Capital Territory)

The National Capital Territory of Delhi (Delhi NCT) covers an area of 1,484 km² with eleven districts and a population of about 16.8 million⁶. HIV prevalence among MSM in Delhi has declined from 5.34% in 2010-11 to 1.80% in 2017; however, it is much higher than the national average adult HIV prevalence of 0.30%⁷. India's National AIDS Control Organization (NACO) has been consistently working towards the prevention of new infections among KPs and implementing strategies to control the spread of HIV in India through the Targeted Intervention (TI) program. As per a site validation conducted in 2014, there are an estimated number of 18,145 MSMs in the state and NACO reaches out to 16,052 MSMs in Delhi through 11 TIs exclusively for MSMs⁸.

The TI program in Delhi NCT has observed change in solicitation patterns in MSM due to the availability of wide range of digital media. While current population size estimation methods are mapping those MSM who frequent physical locations; perhaps, more number of MSMs are operating through virtual platforms and to cover them under the program will require a different strategy. To understand MSM active on virtual platforms and estimate their numbers, a mapping exercise was conducted by DSACS in collaboration with DL TSU, which would act as an evidence and also as a base to design a virtual intervention to reach out to MSMs with HIV services.

About this Report

This is a process document that encapsulates the method used to map and estimate the size of the MSM population that is active on virtual platforms in Delhi NCT. This Virtual Mapping process report:

- Records and provides an in-depth sequential description of the process adopted to estimate the size of the MSM community active on virtual platforms in Delhi NCT
- Provides an estimated number of virtual sites (websites, social media platforms, dating applications) and the member profiling on these sites
- Provides a broad view on sex work solicitation patterns of the MSM population operating on virtual platforms
- Can be utilized by NACO, SACS, State Technical Support Units, global programmes and key stakeholders to include virtual mapping as a method for size estimation along with geographical mapping

⁴Virtual Mapping is a method for identifying and estimating the number of MSM, who use mobile and web based technology applications for discreet, social and sexual networking.

⁵Size Estimation in Egypt, 2014 (<https://rb.gy/3wtpu>)

⁶Delhi (India): Union Territory, Major Agglomerations & Towns-Population Statistics in Maps and Charts (<https://rb.gy/xfmqtc>)

⁷HIV Sentinel Surveillance 2017, NACO (http://naco.gov.in/sites/default/files/HIV%20SENTINEL%20SURVEILLANCE_06_12_2017_0.pdf)

⁸DSACS Program Data 2019 - 2020

VIRTUAL MAPPING

Virtual Mapping is a method for identifying and estimating the number of MSM, who use mobile and web based technology applications for discreet, social and sexual networking⁹.

Size estimation was carried out by mapping the number of MSMs active on virtual spaces like websites, social networking pages, messenger groups and various apps (applications).

Objectives

- ◉ To identify and map the various online virtual platforms and mobile apps where at-risk virtual sexual networks are formed and fostered
- ◉ To estimate the size of the MSM population in Delhi operating through different virtual networks
- ◉ To explore the overlapping of networks within and between virtual sites used by MSM
- ◉ To generate basic understanding about the level of exposure MSMs active on virtual platforms have as regards the current TI-based program

Geography

All the eleven districts of Delhi NCT, namely, North Delhi, North East Delhi, North West Delhi, South Delhi, South East Delhi, West Delhi, Central Delhi, New Delhi, South West Delhi, Shahadra and East Delhi were included in the mapping.

Population

MSMs, aged 18 years and above, operating through virtual platforms and acknowledging having exchanged sex in return for material or cash and having agreed to participate in the mapping process with consent.

Method

Virtual mapping was carried out in three stages (Figure 1):

Stage 1: Listing of virtual sites

Stage 2: Profiling and estimating the size of MSMs on virtual sites

Stage 3: Quantitative Interviews with MSMs

⁹Evidence Brief: Virtual Mapping, harnessing online social networks to reach men who have sex with men in Kenya, 2018 (<https://rb.gy/sikyay>)

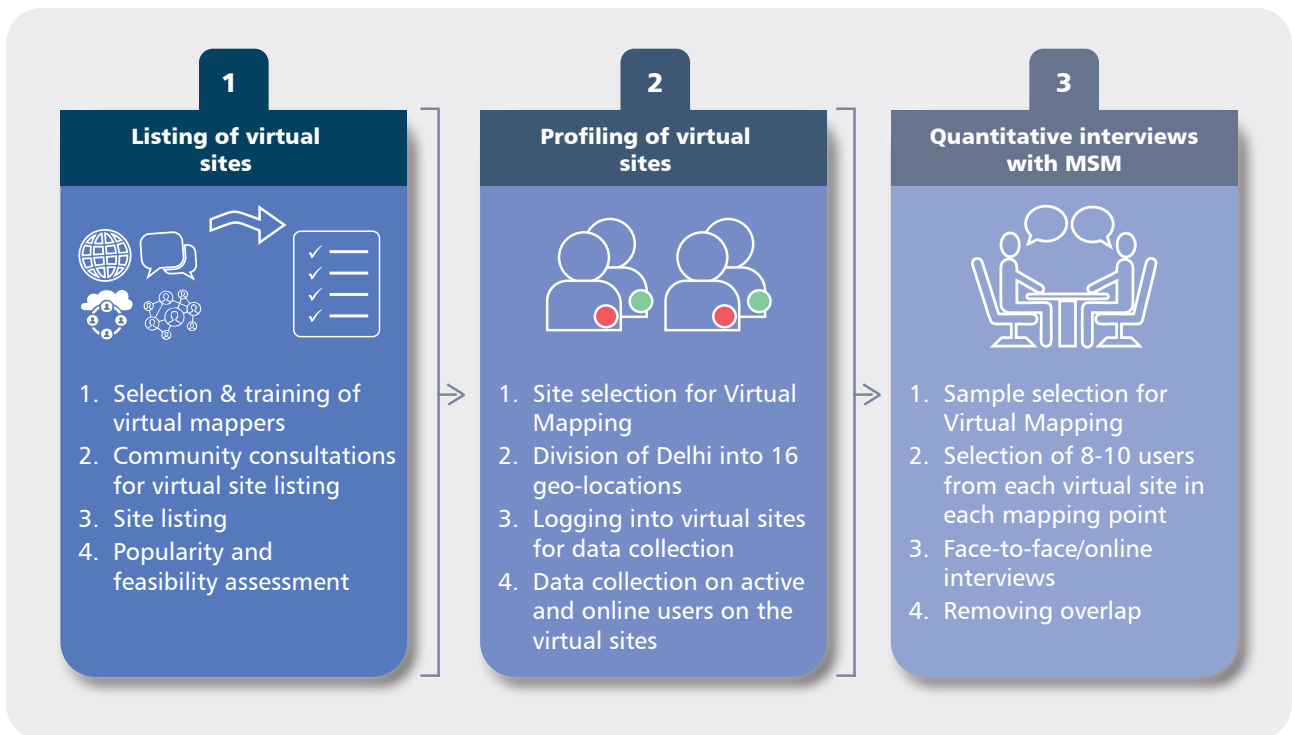


Figure 1: Stages of Virtual Mapping

Stage 1: Listing of virtual sites (Figure 2)

Objective: To develop a comprehensive list of all the virtual sites used by MSM

Job Aids: Form (A) Virtual site listing

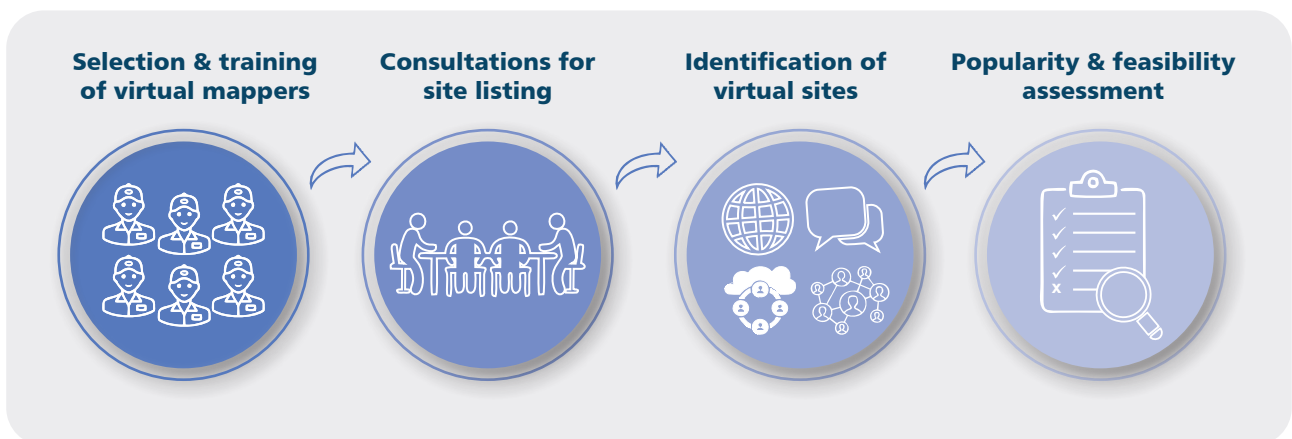


Figure 2: Listing of virtual sites

A team of community members with extensive knowledge of virtual sites and using virtual platforms was selected to conduct the mapping. They were trained and mentored as Virtual Mappers (VMs). They were provided with onsite and offsite training to learn and understand different aspects of virtual mapping. Capacity building sessions included training on virtual site listing, tools, interview techniques, ethics and completeness of data. Further, they were trained on usage of virtual applications and their features in order to ensure quality during data collection. The virtual mapping process was initiated once VMs developed the required skills and knowledge.

VMs conducted intensive discussions and consultations with the community members active on virtual platforms and developed a list of all the virtual sites/platforms used by MSM to meet their sexual partners. A pre-structured format was used to collect the information (Form A), which included name and type of virtual site, features such as being GPS-enabled, websites being local or global and requirement of payment for registration, among other facets.

The site listing revealed that there are 14 MSM specific virtual sites in all, 14 general virtual sites, 19 social networking pages exclusive for MSM and 112 messenger groups.

Size estimation was carried out by counting the number of active and online users on the virtual sites. In this case, popularity and feasibility of the sites played a very important role in determining the sites to be mapped, as some sites may not have features that permit or have scope for mapping. To filter out the suitable sites, popularity and feasibility assessment was carried out through community consultations.

The VMs conducted detailed discussions with the community members to understand which sites were preferred, and derived a list from this exercise. This was followed by a feasibility assessment. The team (VMs, TI staff and community members) revisited the popular sites by logging into each site to examine their features and characteristics to determine the feasibility of their use in the mapping process. They created their own accounts to understand the functioning of the sites (applications and websites).

Feasibility Assessment

A total of 30 sites were considered for the feasibility assessment, out of which social networking pages and messenger groups were considered as one single platform each and the remaining 27 were mobile applications. The filtering of sites to assess their suitability for mapping was determined based on the following criteria: (i) MSM-specific sites, (ii) Availability of information on active and online users, and, (iii) An identifiable geo-location. These three benchmarks formed a strong basis for selecting sites appropriate for mapping. As the mapping of MSM community was the focus, the sites that operate exclusively for MSM were significant for conducting the size estimation. Secondly, the sites should have the information on number of members/users and whether they are active and online at the time of mapping. Thirdly, geo-location was considered mandatory so as to reduce any scope of duplication as well as to reach saturation in counting the number of MSMs in the state (Figure 3).

In order to maintain confidentiality, we have abstained from mentioning names of the virtual sites used by the MSM community. Five sites - Virtual Site (VS) 1, VS 2, VS 3, VS 4, and VS 5 were found to be popular as well as feasible for mapping. Selecting websites for mapping was not viable as websites may have registration of a single profile through different email addresses. Moreover, it is not possible to track the active/inactive/online status of an individual visiting a website. Further, geographical location

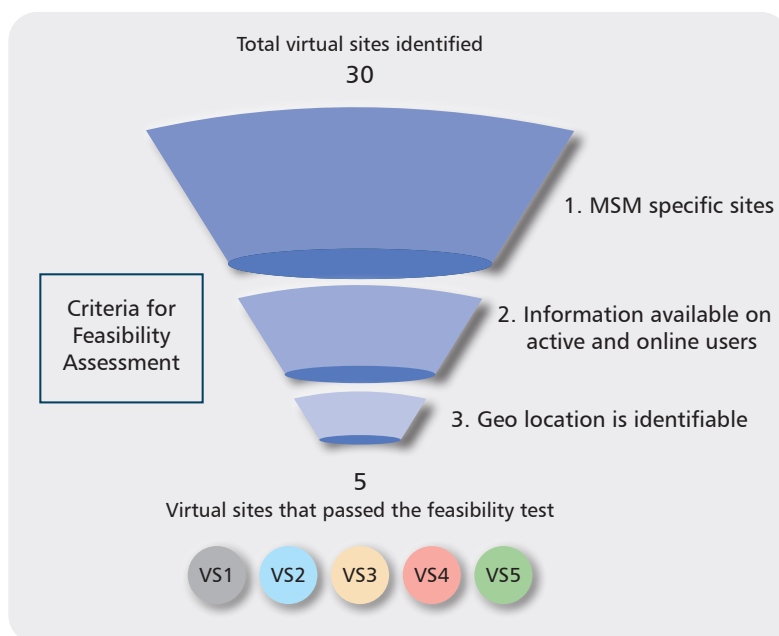


Figure 3: Feasibility assessment of virtual sites

of the individual/user cannot be determined from the websites. There were some other social applications too, but these were live video calling apps and counting the number of profiles was not possible. Some advertising sites could not pass the feasibility test as information on number of members and/or enumerating profiles was not possible.

Stage 2: Profiling of virtual sites (Figure 4)

Objective: To estimate the size of the MSM populations active on the virtual sites listed

Job Aids: Form (B) Profiling of virtual sites, Daily log sheet

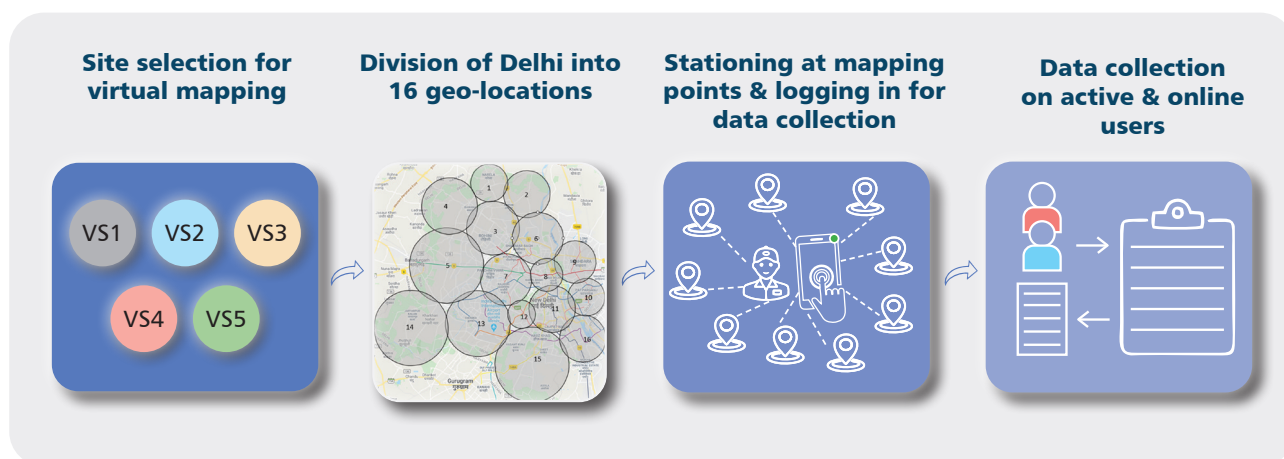
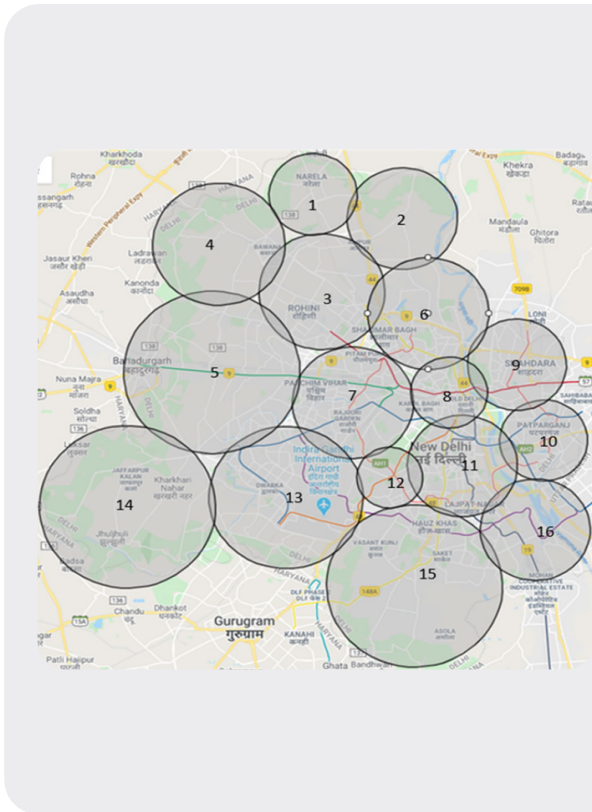


Figure 4: Profiling of virtual sites

The second stage of mapping involved profiling of the selected virtual sites/applications and estimating the population size of MSM through them. The sites, social apps in this case, were used for virtual mapping. Being GPS-enabled, these apps provided information on the number of users registered as well as those who are online at a point of time in the particular geographical location. At this stage, the VMs were trained on the mapping process, tools and interview techniques. Using mock interviews, their skills to conduct effective interviews were built up and they were given essential exposure to the field scenario.

For the purpose of mapping, Delhi was divided into data collection units referred to as geo-locations. As per the radius fixed for each area, a central location was decided where the mapping exercise had to be conducted, which was termed as the Mapping Point. The mapping point can be defined as a focal point/central location in the proximity of which the concentration of MSM population is high. With the help of a map developer tool, the map of Delhi NCT was divided into 16 geo-locations in such a way that the entire map was covered and overlap was minimum (Figure 5). Estimation of the MSM population on the virtual sites was done through manual counting of the profiles on the virtual sites as consolidated information was not available on these sites. To bring efficacy in enumerating the profiles, the radius was decided with respect to the density of the population and concentration of MSM population in the proximity of the mapping point. The area which had high population density as well as higher concentration of MSM population had smaller radius as compared to the area that had low population density as well as MSM population concentration. The VMs were provided the exact mapping point where they collected data on each selected app.



Sr. No.	District	Virtual Mapping Site	Mapping Point (Latitude & Longitude)	Geo-Focus/cluster	Key Interview/Cluster
1	North	Narela, New Delhi	28.842159,77.090462 Radius: 4000.00 Meters	24	48
2	North	Nirmal Hospital, New Delhi	28.820810,77.173317 Radius: 5000.00 Meters	24	48
3	North	Sai Nath Park, Near SBI Bank Bawana road	28.756337,77.098602 Radius: 5700.00 Meters	24	48
4	North West	Dera Sacha Sauda Bajitpur	28.798232,77.002846 Radius: 6000.00 Meters	24	48
5	West	Ghevara Metro Station	28.684994,76.996413 Radius: 8000.00 Meters	24	48
6	Central	Burari Police Station	28.736971,77.197291 Radius: 5500.00 Meters	24	48
7	West	ESI-Basaidarapur Metro Station	28.658136,77.127379 Radius: 5500.00 Meters	24	48
8	Central	Tis Hazari Metro Station	28.667046,77.216707 Radius: 3500.00 Meters	24	48
9	Shahdara	Maunjpur- Babarpur Metro Station	28.691748,77.279727 Radius: 4500.00 Meters	24	48
10	East	Mandawali- West Vinod Nagar	28.624715,77.304548 Radius: 4000.00 Meters	24	48
11	South East	Khan market	28.602108,77.229065 Radius: 5000.00 Meters	24	48
12	New Delhi	Dhaura Kuan	28.591842,77.161690 Radius: 3000.00 Meters	24	48
13	South West	Dawarka Sector-9	28.574227,77.065251 Radius: 7000.00 Meters	24	48
14	South West	Bank of Baroda (Ujwa), Najafgarh	28.565921,76.918163 Radius: 8000.00 Meters	24	48
15	South	Chhatarpur	28.495878,77.184633 Radius: 8000.00 Meters	24	48
16	South East	Jasola Vihar (Shaheen Bagh)	28.545839,77.296639 Radius: 5000.00 Meters	24	48

Figure 5: Geo-locations in Delhi NCT

VMs created their own profile on each selected virtual site. In each defined geographic area (geo-focus area), they logged into the virtual sites to collect information during specific time periods through the day: morning (before 12 noon), afternoon (12 noon to 5 pm), evening (5 pm to 8 pm) and night (after 8 pm). The information on active and online users on the virtual sites/apps was collected using Form B, which had details like site name, district name, date and time of mapping, radius of the location selected and the number of active and online users. VMs monitored/recorded name of the site, day and time of visit, total number of registered users, number of users online during the visit time, and location of the site or users in Form B. A log sheet was used to cross-check accuracy of data and immediately guide VMs in case any modification was required. The log sheet was a summary of the data collected by VMs in each time period, which helped in real time monitoring and assured quality in data collection.

Stage 3: Quantitative interviews with MSM

Objective: To profile MSMs on virtual sites and to understand the overlap

Job Aids: Form (C) Profiling of MSMs active on virtual platforms

This was the last and the most critical stage of virtual mapping, as it provided data on exposure of MSMs to the TI program and their characteristics. Also significant was the information that was collected during this stage regarding the presence of MSMs on multiple sites as well as multiple profiles of an individual on the same site. This could further help rule out any overlap.

The list of virtual sites from stage 1 and the number of online MSMs derived during stage 2 formed the sampling frame of the size estimation. Thus, in each of the five virtual applications selected and in each geo-focus area, a random sample of 8-10 MSMs was selected for interviewing. The respondent universe for size estimation was 565 MSMs who were interviewed face-to-face or

online by the VMs across 16 different mapping locations in Delhi. This number was arrived at after the random selection of 128 MSMs from each of the five virtual sites identified for the size estimation (a total of 640 individuals). These were individuals who were online at the time of mapping. Interviews could be conducted with 565 of them. Information was collected on the usage of virtual platforms for solicitation, presence on multiple virtual sites, characteristics and exposure to the TI program (Figure 6).

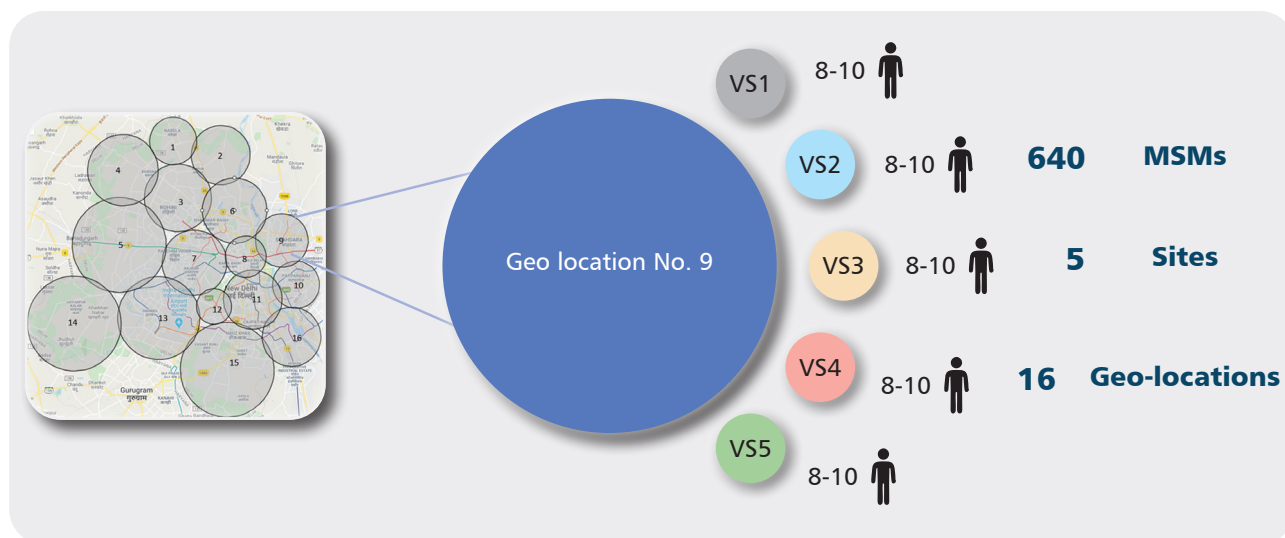


Figure 6: Sampling method

$$16 \text{ Geo Locations} \times 5 \text{ Selected Virtual Sites} \times 8 \text{ MSMs} = 640 \text{ Respondents}$$

VMs were assigned to conduct interviews for all respondents derived from all sites of designated geo-locations. The respondents were oriented to the purpose and objectives of the mapping exercise and process and mutual agreement regarding the time and place (in case of face-to-face interviews) for the interview was finalized. Consent was taken for the interviews. Refusal was accounted for and a new respondent was identified and approached. Non response and incomplete interviews were captured in the log sheet.

Data management and Analysis

Data were collected using a structured questionnaire in hard copy. Cross checking of data was done at every level by the field monitoring team for the correctness and consistency. All data were entered into the database developed for the size estimation and analysis was done in Excel and SPSS 25.0.

Estimation Approach

Data analysis consisted of a series of steps and accounted and adjusted the MSMs for overlaps of use of virtual sites as well as day and time variations. These adjustments accounted multiple profiles on a particular site as well as use of different virtual sites by the MSMs as well as MSMs using virtual sites by day and time.

Stage 2 provided the number of MSMs active on each of the virtual sites. In this stage, the number of active users on each virtual site was captured by directly counting the members on the sites.

Each virtual site was visited on different days/time of day to understand the number of active users. It was observed that the maximum number of MSMs were active on Sunday night. Therefore, rolling up of the number of active MSMs on Sunday night for all the virtual sites and geo-focus provided the first level of estimate of MSMs.

Stage 3 data from the sample MSMs allowed to adjust these duplications/day and time variations.

Stage 1 listed the prominent virtual sites used by the MSMs to solicit for sexual partners.

Stage 2 data provided the number of the MSMs using virtual platforms.

Stage 3 data provided overlap or duplication of MSM likely to be using multiple virtual sites and may have multiple profiles on the same virtual site. This overlap/duplication is accounted for adjusting the estimates.

Adjustment for day and time variation

Considering that not all MSMs operate all the time and every day, and since profiling of virtual sites estimated the aggregate number of MSM on these points, it requires to adjust the duplication. Using the information of stage 3 data, the analysis allowed to estimate a correction factor of what percent of all MSMs interviewed operate on Sunday (peak day) and at night (peak time). These correction factors were used on the crude estimate arrived on Sunday night to adjust the estimate to account for days and times.

$$E = \frac{\sum_{i=1}^n E_i}{p_1 * p_2}$$

Where E be adjusted estimate of all MSM active accounting for day and time; E_i be the unadjusted number of MSMs active on virtual site i ; p_1 and p_2 be the proportions of all interviewed MSM active on Sunday and night respectively and $i=1 \dots n$ be the number of virtual sites.

Adjustment of overlap

The second level of adjustment is to account for the overlap of profiles in the same or multiple virtual sites. That is, an MSM may have multiple profiles within a virtual site and have profiles on different virtual sites. Therefore, in this stage, we accounted the percent of MSMs having more than one profile and the mean number of profiles an MSM have to adjust the duplication and arrived at the unique number of active MSMs using the formula:

$$E_f = E * (1 - p) + E * \frac{p}{m}$$

Where;

E_f be adjusted estimate of individual MSM active on the virtual sites accounting day, time and multiple profiles;

E be the number of MSM active on all virtual sites adjusted for day and time variations.

p be the proportion of MSMs using more than one virtual sites,

m be the mean number of virtual site an MSM use if MSM has more than one profiles

Further, we used the 95% confidence interval of the mean, 'm' to estimate the lower and upper estimate of MSM. Let m being the mean number of profiles, and let SEM be the standard error of the mean, then the lower and upper limit of mean number of profiles are derived as below:

$$\text{Lower limit (ml)} = m - Z_a * \text{SEm} \quad \text{Upper limit (mu)} = m + Z_a * \text{SEm}$$

Where, $Z_a = 1.96$ is the Z value at 95% confidence level

Then, the final adjusted lower and upper estimates of MSM in virtual sites are estimated as;

$$\text{Lower estimate of MSM (E}_l\text{), } E_l = E * (1 - p) + E * \left(\frac{p}{m_u}\right)$$

where m_u be the upper confidence limit of mean number of profiles.

Similarly, the upper estimate of MSM (E_u), $E_u = E * (1 - p) + E * \left(\frac{p}{m_l}\right)$, where m_l be the lower confidence limit of mean number of profiles.



FINDINGS

The findings from Virtual Mapping and the new estimates can be used to improve planning and target-setting for KP interventions, and more importantly, providing effective service coverage to all MSMs operating through virtual platforms.

Size estimation and use of virtual sites

The size estimation found that virtual sites are popular meeting places for a significant number of the MSMs in Delhi. A total of 28,058 MSM are using virtual sites to find other MSMs/partners in a range of 26,000 to 30,000 MSM (Figure 7).

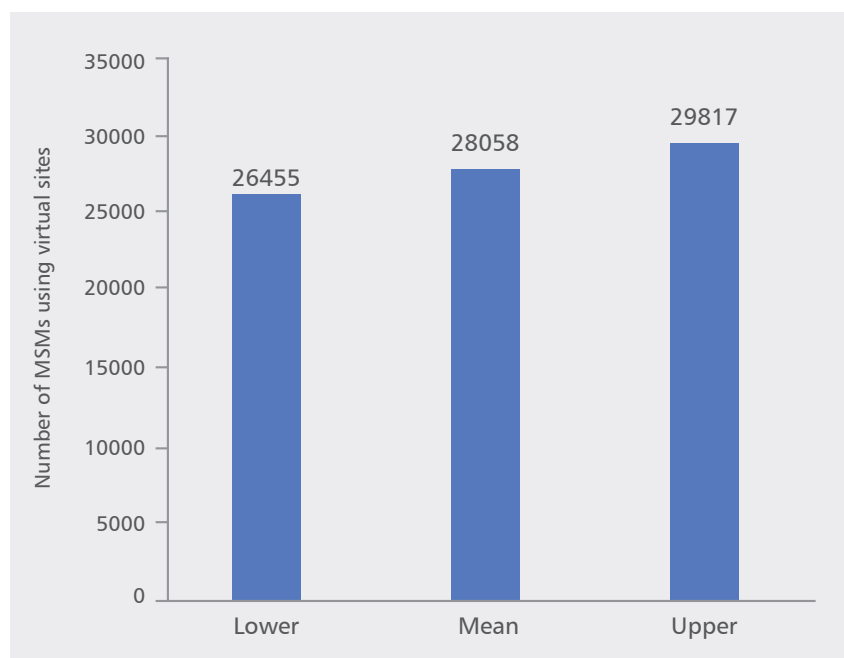


Figure 7: MSMs using virtual sites (VS)

A total of 14 MSM-specific virtual sites, 14 general virtual sites, 19 social networking pages exclusive for MSM and 112 messenger groups were listed in Delhi by VMs. It was observed that a notable percentage (51%) of MSM were using more than one virtual platform for solicitation and have more than one profile on different virtual sites. It was also found that some of the virtual sites were more popular among MSMs as compared to others (Figure 8).

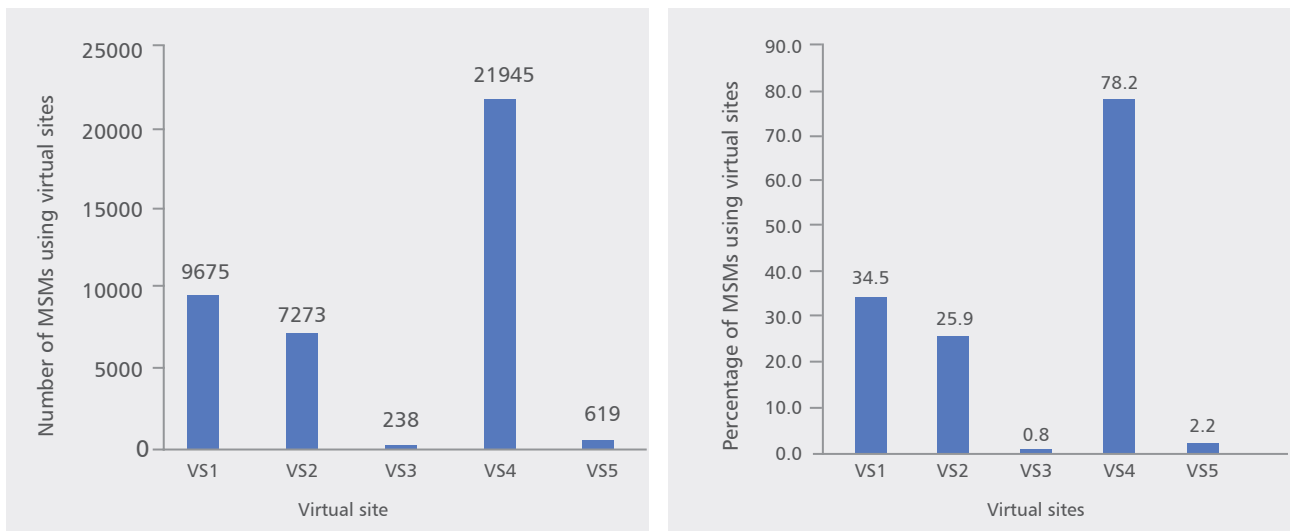


Figure 8: MSMs using various virtual sites

The analysis of usage of virtual sites by time and day revealed that majority of the MSMs preferred to be active during night-time (81%) and on Sundays (94%) (Figure 9).

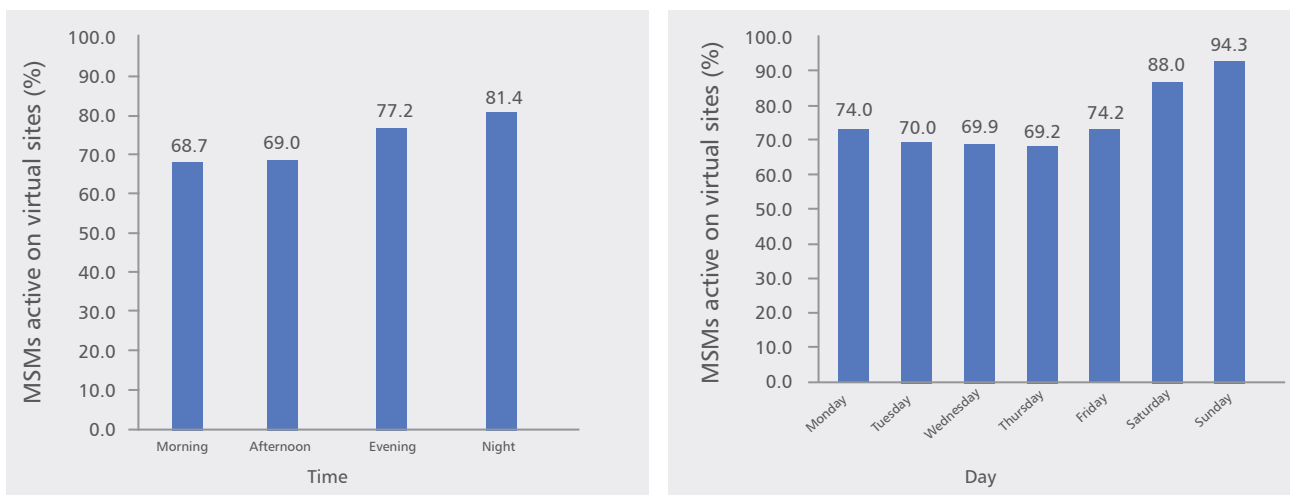


Figure 9: MSMs using virtual sites - time and day wise

Sub-groups of MSM active on virtual platforms

A large proportion of MSM on virtual sites are “Panthi”⁹ and double decker⁹. 30% of the MSMs identified themselves as “Panthi” (those who prefer to be on top) while 26% as “double decker” and 20% as bisexuals (Figure 10).

⁹Panthi is the masculine insertive male partner or anyone who is masculine and seems to be a potential sexual (insertive) partner. Double Decker is the male who both insert and receive during penetrative sexual encounters (anal or oral sex). - Targeted Interventions under NACP III: Operational Guidelines, 2007 (<http://naco.gov.in/sites/default/files/NACP-III.pdf>)

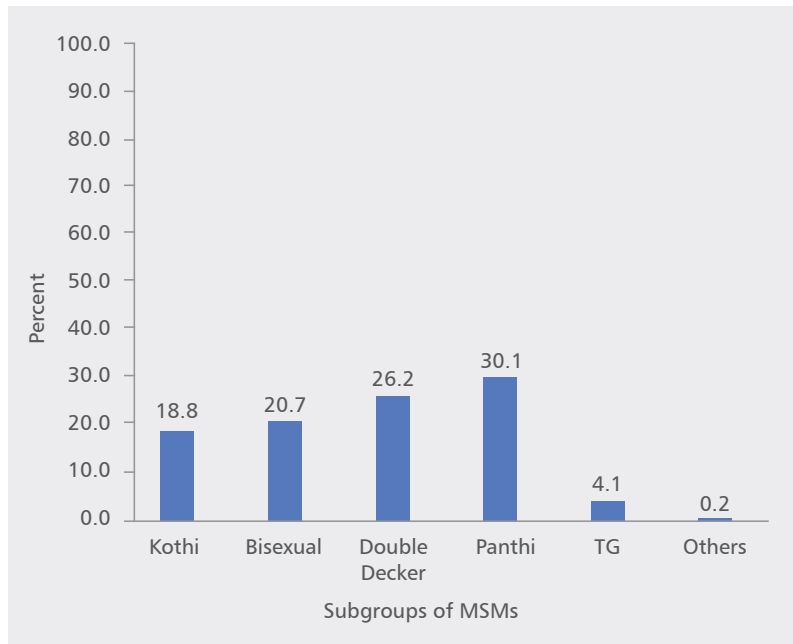


Figure 10: Subgroups of MSMs active on virtual platforms

Program Exposure of MSMs active on virtual sites

It was observed that two-fifths (42%) of the MSMs in Delhi visited any physical location for solicitation in the month prior to the mapping. Considering the present program’s focus on physical hotspots, all or a large proportion of MSMs do not visit the hotspots and might not have been reached by the program.

Moreover, only 15% have heard about NGOs/organisations providing HIV prevention and treatment services, and out of these, only 7% have been contacted by peer educators in the last three months before the mapping exercise. The awareness of MSMs on the NGOs/organizations providing HIV services was low across all the mapped virtual sites. This indicates that the TI program with its physical hotspot-based mapping approach might be missing out on covering this population active on virtual platforms (Figure 11).

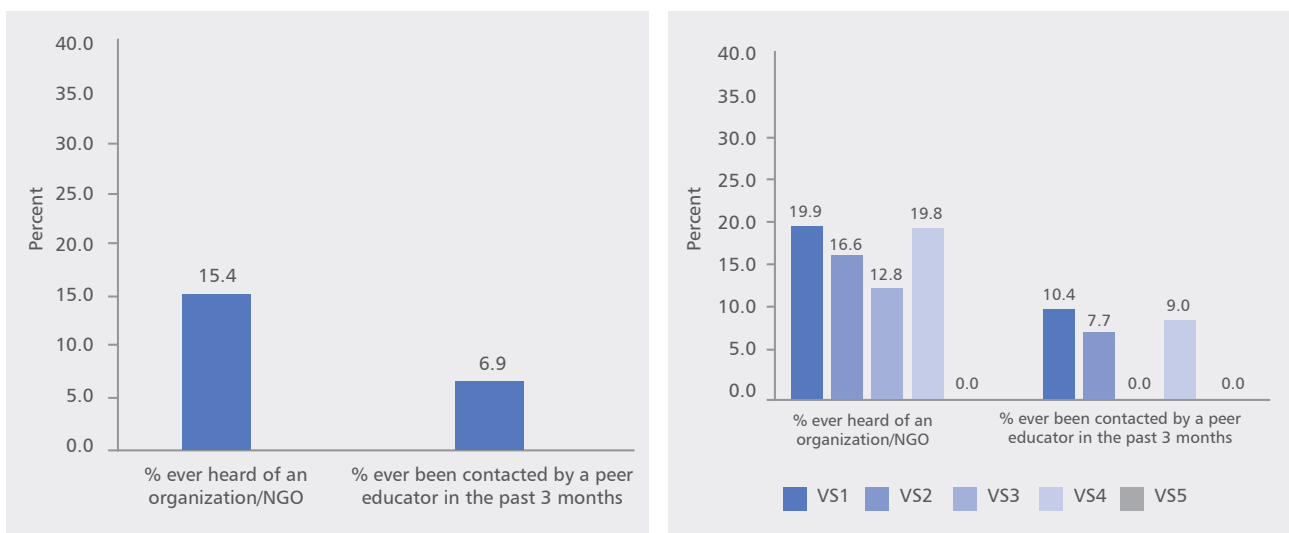


Figure 11: MSMs on virtual platforms who have heard of NGOs/CBOs and have been contacted by the TI program

POLICY AND PROGRAM RELEVANCE & IMPLICATIONS

With modern societal trends shaped significantly by digital media and latest communication technology, it is critical to design and deliver novel research and evidence related to the use of these technologies. This is particularly important when it comes to sexual solicitation by MSMs through virtual networks and platforms, and the impact of these newer patterns on the HIV response in India.

The size estimation has captured information about MSMs who use virtual platforms for solicitation, their population size estimates and their solicitation patterns on virtual platforms. This information is critical to design effective HIV intervention programs. As the size estimation indicated, a significant number of MSMs are active through virtual sites and only two-fifths visit physical hotspots, it is evident that the conventional TI approach with the focus on physical hotspots may not be able to reach all MSMs. Since reaching all MSMs is critical to program effectiveness, size estimations that leave out virtual platforms may lead to under-estimation of the MSM population in the state and thereby lead to lower target-setting and gaps in coverage of the programme.

The size estimation also provided information on usage patterns through the day and time of day, with the finding that there is greater activity during the night and on Sundays. So, outreach activities can be planned based on availability of the population and their solicitation patterns. Further, the MSM population in Delhi that is primarily active on virtual platforms seems to have very low awareness about organizations working on HIV; exposure to current TI programs is quite low among these groups which signals a clear program gap.

Virtual Mapping can become the foundation to strategize and develop a comprehensive HIV intervention encompassing the population on virtual platforms. The size estimates and related findings can be utilized to improve planning and effectiveness of service delivery and strengthen outreach to MSMs in Delhi NCT through the TI program.



RECOMMENDATIONS

This Virtual Mapping has provided fresh estimates on the MSM population that is active on virtual platforms in Delhi, data and related information that can be utilized to strategize HIV interventions with MSM. The method can be adopted by other states across India and a national estimate can be derived. This can further lead to developing virtual programs that can nurture an enabling environment for the MSM in experiencing HIV prevention and care services at their convenience with dignity and impartiality.

1. Virtual Mapping to be undertaken state-wise to derive national level estimates

It is recommended that Virtual Mapping be considered as a key activity across the country; it would be useful in generating national estimates for effective HIV programming. National as well as state agencies could consider integrating virtual mapping along with physical hotspot-based mapping, so as to gather a total estimate of MSM operating through virtual as well as physical locations for solicitation. This will bring efficiency into planning and allocation of resources for HIV prevention and treatment services.

2. Designing an exclusive virtual intervention to reach out to MSMs active on virtual platforms

This data from virtual mapping may be utilized to design innovative strategies to cover the population that is operating through virtual platforms. Initiating an innovative outreach program using internet-based platforms and mobile phones by actively involving the community can aid in linking the population with HIV services and health facilities.

3. Capacity Building of the TI teams to identify and reach out to MSMs active on virtual platforms

It is recommended that human resource capacity be built keeping in mind knowledge and skills required to operate the virtual platforms. This will enhance outreach and bring credibility and reliability in data collection, management and analysis.

4. Designing online outreach activities to mobilize the MSM community active on virtual platforms

The findings have suggested that awareness of the MSM community active on virtual platforms as regards the availability of HIV services/organizations delivering HIV services is quite low. And a significantly low number of MSMs could be contacted by the TI three months prior to the mapping. This identified a clear gap between service delivery and need of the beneficiaries of the program. Online outreach activities may be designed to mobilize the MSM community operating on virtual platforms. This will increase the reach of the program and cover the population that might be hidden and unavailable at the physical hotspots.

5. Deriving more out of virtual mapping besides size estimation

The Virtual Mapping method could be used not only to derive the population size estimate of MSMs who are active on virtual platforms, but also to develop an understanding on the distribution of the population in the virtual space and their characteristics. It is also recommended that some significant aspects like risk and behavioural patterns should also be analyzed during the process. For instance, the interviews may accommodate questions on the sexual practices, health seeking behaviour and their unmet needs related to HIV care, prevention and treatment. This will provide insights into their behavioural tendencies and accordingly interventions for behaviour change can be developed.

Way Forward

Acknowledging the findings and the subsequent evidence on the need for incorporating MSM population that is active on virtual platforms in HIV interventions, the program further seeks to design a virtual intervention that can reach out to the population through the virtual space and provide possible online services pertaining to HIV prevention and link them to the health facilities as per their requirement.





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