NPCB & VI
National Trachoma Prevalence Survey, India 2014-2017

National Program for Control of Blindness and Visual Impairment,
Directorate General of Health Services,
Ministry of Health & Family Welfare, Government of India, New Delhi

SURVEY CONDUCTED BY
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National Trachoma Prevalence Survey, India
2014-2017

A Report

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KEY FINDINGS OF THE NATIONAL TRACHOMA PREVALENCE SURVEY 2014-17

Districts included in survey	10 districts from 7 states and union territories
Households visited	13802
Total population examined and coverage	
1-9 years	19662 (93.9%)
15+ years	44135 (84.9%)
Prevalence of Active Trachoma Infection (TF+TI) in population aged 1-9 years	141 (0.7%)
Age-sex standardized prevalence of Trachomatous Trichiasis (TT) in populationaged 15+ years	140 (3.5 per 1000)
Prevalence of Unclean faces in in population aged 1-9 years	3089 (15.7%)
Prevalence of Water Source unavailable within 30-minute walkingdistance from households	343 (2.5%)
Prevalence of Solid waste/animal present within 20 meters among visited households	7647 (55.4%)
Prevalence of absent functional latrine among visited households	4516 (32.7%)

Executive Summary

INTRODUCTION

Trachoma is an ancient scourge of mankind and was considered the most important cause of blindness at the time of Indian independence. The National Trachoma Control Program was among the initial national disease control programs launched by the Indian government in 1960s. Much has been achieved in terms of control of this blinding disease, since then. In the initial surveys(1950-60), then states of Punjab, Uttar Pradesh, Bihar, Rajasthan and Gujarat were identified as hyper-endemic for trachoma (prevalence of active trachoma infection >50%). The Trachoma Rapid Assessment (TRA) survey of 2006 had shown considerable decline in the burden of the disease in the surveyed districts of these states. At the same time, the Car Nicobar island, a tribal reserve area in the union territory of Andaman &Nicobar Islands, was identified as a hotspot for the disease in 2010 in a rapid assessment survey and led to mass drug administration of azithromycin for three consecutive years for the very first time in India as well as implementation of other SAFE interventions. The results of the intervention showed positive results in trachoma prevalence reassessment done in 2013 in the Car Nicobar island.

On the global front, WHO launched the Global Elimination of Trachoma by 2020 (GET2020) in the year 1999. As part of this initiative, India too is targeting trachoma elimination. Population based prevalence surveys are considered the gold standard to assess true prevalence. Therefore, to assess the present status of trachoma in India, the NPCB National Trachoma Prevalence Survey was planned and implemented in the known hyperendemic districts where previous trachoma rapid assessments had been conducted in 2006.

METHODS

Prevalence surveys were conducted in ten districts representing seven states of the country. The survey followed standard WHO recommended methodologies. Participants were eligible for inclusion if they had completed one year of age and were usual residents of the survey area during the previous six months. The surveys were conducted using compact segment sampling technique in 20 clusters in each district. In each cluster, 100 children aged 1-9 years were enrolled and all adults in the enumerated households were examined. Total sample size per district was 2000 children aged 1-9 years. The sample size in Car Nicobar island was 800 children selected across 8 clusters. All households in the selected compact segment were visited and all residents were examined, including those residing in households where no eligible child was present. Revisits of locked households and individuals not available in first visit were done to maximize coverage.

Data collection included information about the household composition, education, occupation, assessment of overcrowding, access to water and functional latrine, presence of solid waste or animal pens, and cleanliness of faces in examined children. Examination of the eyes was done to assess trachomatous trichiasis (TT) and trachomatous corneal opacities (CO) among participants aged 10+ years and to check for follicular inflammation (TF) or intense trachomatous inflammation (TI) among children aged 1-9 years. In case a person with CO was identified, visual acuity was measured. Additionally, environmental risk factors were also assessed. Though population aged 10-14 years were examined in the survey, the analysis of data for TT and CO was restricted to individuals aged 15+ years as per WHO standard guidelines and age-sex standardized prevalence rates were calculated among 15+ year old population.

RESULTS

The trachoma prevalence survey was conducted across ten districts in seven states/union territories. These districts were Mahendragarh, Mewat, Tonk, Dholpur, Bikaner, Pauri Garhwal, East Delhi, Hoshiarpur, Banaskantha and Nicobar. A total of 81363 eligible individuals were enumerated in 13,802 households - of which 59251 were aged 10 years or above, 51992 were aged 15+ years, and 20929 were children 1-9 years of age. The number of participants examined was 19662 among children 1-9 years, 50603 among 10+ years old participants and 44135 among 15+year old participants with coverage rates of 93.9%, 85.4% and 84.9% respectively. Among the examined 1-9 yr. children, 139 were identified with TF, and two children with TI grade

of active trachoma infection were identified yielding aprevalence of active trachoma infection to be 0.7% (95% CI 0.59%-0.83%) overall. The district with highest prevalence of active trachoma infection was Dholpur (2.2%) followed by Car Nicobar (1.6%), Mewat (1.2%), and Hoshiarpur (1.0%). Other six districts had prevalence of less than1%. A total of 140 cases of trachomatous trichiasis (TT) were identified among population aged 15 years and above, yielding an age-sex standardized prevalence of 3.5 per 1000 population aged 15+ years. The highest TT prevalence was observed in Car Nicobar (24.0 per 1000) followed by Hoshiarpur (6.6 per 1000), Dholpur (4.5 per 1000), Tonk (3.8 per 1000), East Delhi (2.1 per 1000) and Bikaner (2.1 per 1000) among 15+ population. Rest of the districts had age-sex standardized TT prevalence of under 2/1000 in the 15+ age group. Access to trichiasis surgery was poor in one district ie. Pauri Garhwal with 90% clusters located beyond 2 hours travel from surgical facility. Overall, 15.7% children had unclean faces, prevalence being highest in Mewat (39.8%) and Dholpur (31.8%), while prevalence of under 10% was observed in Banaskantha, Hoshiarpur, Car Nicobar and East Delhi. In 2.5% households, water source was located beyond 30 minutes walking distance. More than half (55%) of the surveyed households had solid waste or animal pens within 20 metres of the household premises and functional latrines were absent in 33% households.

CONCLUSIONS AND RECOMMENDATIONS

A low 0.7% prevalence of active trachoma infection was observed. None of the surveyed districts reported more than 5% prevalence of active trachoma. Age and sex standardized prevalence of trachomatous trichiasis was 3.5 per 1000, and high levels of TT were observed in Nicobar district. Our results suggest that active trachoma is no longer a public health problem in India and that India has met the goal of trachoma elimination. TT continues to be common in certain pockets and surgical interventions are required especially in Car Nicobar, Rajasthan (Dholpur, Tonk, Bikaner), Punjab (Hoshiarpur) and Haryana (Mahendragarh), and Delhi (East Delhi). Since not all previously hyperendemic districts were studied, the TT surgical interventions must be implemented in not just the surveyed districts but in all previously hyperendemic districts of these states. Also, it is important that adequate surveillance for trachoma must be initiated in these districts to ensure that active infection and its sequelae, is kept under check and our country meets the elimination target.

Table 1:Active Trachoma Infection indicated by Prevalence of Follicular Trachoma (TF) and Trachomatous inflammation (TI), and Unclean Faces among Participants aged 1-9 years

District	Examined	TF n(%)	TI n(%)	TF+TI n(%)	Unclean face n(%)
Banaskantha	2,058	9 (0.4)	0 (0)	9 (0.4)	114 (5.5)
Bikaner	2,101	2 (0.1)	0 (0)	2 (0.1)	297 (14.1)
Car Nicobar	831	12 (1.4)	1 (0.12)	13 (1.6)	53 (6.4)
Dholpur	2,129	45 (2.1)	1 (0.05)	46 (2.2)	676 (31.8)
East Delhi	2,090	11 (0.5)	0 (0)	11 (0.5)	206 (9.9)
Hoshiarpur	2,086	21 (1.0)	0 (0)	21 (1.0)	122 (5.8)
Mahendragarh	2,119	2 (0.1)	0 (0)	2 (0.1)	221 (10.4)
Mewat	2,113	25 (1.2)	0 (0)	25 (1.2)	841 (39.8)
PauriGarhwal	2,068	3 (0.1)	0 (0)	3 (0.1)	236 (11.4)
Tonk	2,067	9 (0.4)	0 (0)	9 (0.4)	323 (15.6)
Total	**19,662**	**139 (0.7)**	**2 (0.01)**	**141 (0.7)**	**3089 (15.7)**

Table 2: Prevalence of Trachomatous Trichiasis (TT), and Trachomatous Corneal Opacity (CO) among participants aged 15 years and older

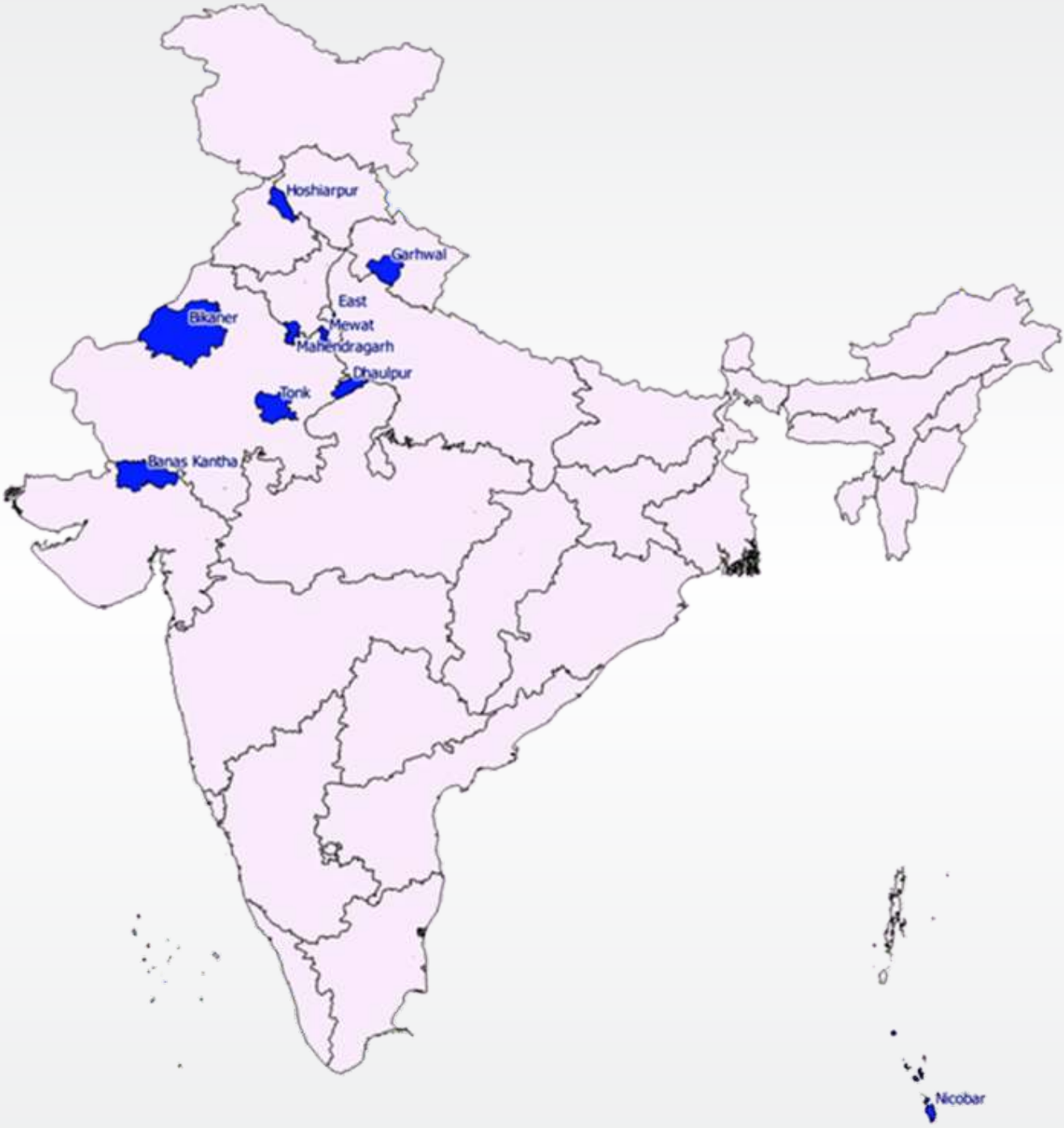
District	Examined	TT without Co N (Prevalence per 1000)	TT with CO N (Prevalence per 1000)	Total N (Prevalence per 1000)	Total TT Adjusted* N (Prevalence per 1000)
Banaskantha	4397	3 (7.5)	2 (0.5)	5 (1.1)	1.1
Bikaner	4914	6 (1.2)	2 (0.4)	8 (1.6)	2.1
Car Nicobar	1561	39 (25.0)	6 (3.8)	45 (28.8)	24.0
Dholpur	4337	7 (1.6)	11 (2.5)	18 (4.2)	4.5
East Delhi	4466	5 (1.1)	1 (0.2)	6 (1.3)	2.1
Hoshiarpur	4468	11 (2.5)	8 (1.8)	19 (4.3)	6.6
Mahendragarh	5427	2 (0.4)	6 (1.1)	8 (1.5)	1.3
Mewat	4252	2 (0.5)	3 (0.7)	5 (1.2)	1.2
Pauri Garhwal	4901	3 (0.6)	1 (0.2)	4 (0.8)	1.0
Tonk	5412	17 (3.1)	5 (0.9)	22 (4.1)	3.8
Total	**44135**	**95 (2.2)**	**45 (1.02)**	**140 (3.2)**	**3.5**

**Age-sex standardized prevalence figures per 1000 population for TT among 15+year population*

Table3: - Environmental Risk Factors for Trachoma among Visited Households

District	Households visited	Water Source unavailable within 30-minute walking distance N (%)	Solid waste/ animal present within 20 meters N (%)	Functional latrine absent N (%)
Banaskantha	1465	0 (0.00)	470 (32.08)	633 (43.21)
Bikaner	1432	0 (0.00)	791 (55.24)	103 (7.19)
Car Nicobar	446	30 (6.73)	356 (79.82)	11 (2.47)
Dholpur	1336	123 (9.21)	1171 (87.65)	975 (72.98)
East Delhi	1526	0 (0.00)	783 (51.31)	494 (32.37)
Hoshiarpur	1473	0 (0.00)	434 (29.46)	143 (9.71)
Mahendragarh	1624	4 (0.25)	1097 (67.55)	465 (28.63)
Mewat	1202	127 (10.57)	751 (62.48)	579 (48.17)
PauriGarhwal	1700	45 (2.65)	674 (39.65)	283 (16.65)
Tonk	1598	14 (0.88)	1120 (70.09)	830 (51.94)
Total	**13802**	**343 (2.48)**	**7647 (55.41)**	**4516 (32.72)**

Figure 1: Sites of Trachoma Prevalence Surveys -2014-17



Survey Activities

Meeting and orientation of Local Teams

Enumeration

Taking Written Informed Consent

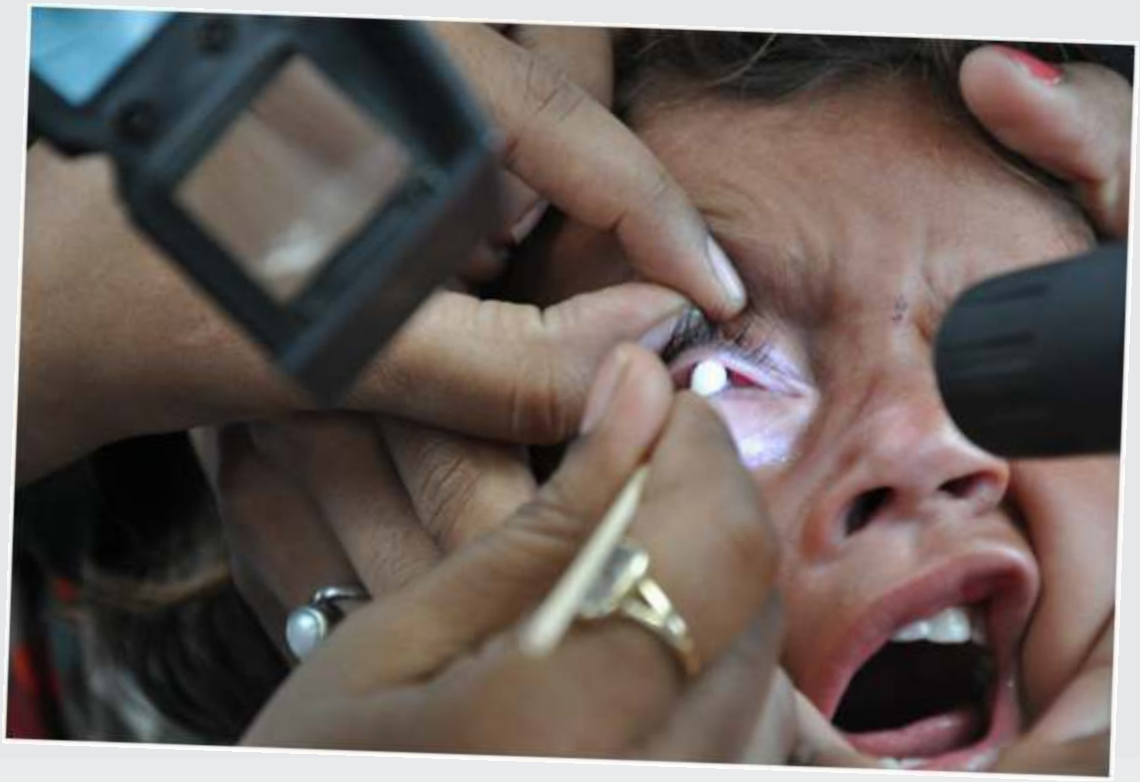
Environmental Conditions

Enumeration

Examination of Adults for Corneal Opacities and Trachomatous Trichiasis

Assessment of faces of children

Eye Examination among Children

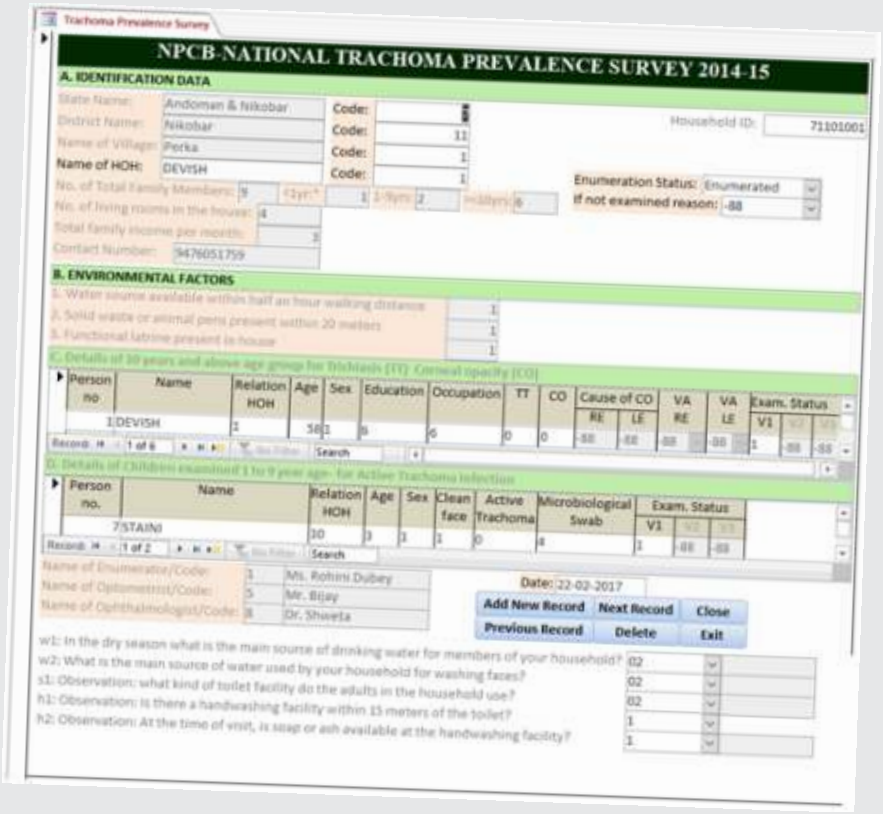


Collection of Conjunctival Swabs for microbiological analysis

Fixation of microbiological Slides in Field

Administration of oral Azithromycin Tablets

Data Entry



Survey Monitoring

Completion of Survey

Abbreviations

NPCB	National Programme for Control of Blindness
ASHA	Accredited Social Health Activist
AIIMS	All India Institute of Medical Sciences
RPC	Rajendra Prasad Centre for Ophthalmic Sciences
DGHS	Directorate General of Health Services
IAS	Indian Administrative Service
ANM	Auxiliary Nurse Midwife
TF	Trachoma Follicular
TI	Trachoma Inflammation
TT	TrachomatousTrichiasis
CO	Corneal Opacity
SAFE	Surgery, Antibiotics, Facial cleanliness, Environmental modification
WHO	World Health Organization
TRA	Trachoma Rapid Assessment
MDA	Mass Drug Administration
PHC	Primary Health Centre
OR	Odds Ratio
A&N	Andaman and Nicobar
NCT	National Capital Territory

1 Introduction and Background

It is estimated that more than 80% of blindness is avoidable with an effective solution either preventive or curative, which will improve socio-economic burden related to blindness. Trachoma is a priority eye condition, responsible for maximum blind persons attributable to infectious blindness worldwide. The disease is still endemic in certain countries globally. Trachoma is a chronic inflammatory disease of the eye caused by Chlamydia trachomatis serotypes A, B, Ba and C. It is the most common cause of infectious blindness globally. Despite worldwide implementation of World Health Organization (WHO) recommended SAFE strategy for elimination of trachoma, it is still endemic in 57 countries of the world. India is one of the five countries which contribute to approximately half of the global burden of active trachoma.

Trachoma is a common disease in certain developing countries. Close to150 million people world-wide suffer from active disease while around6 million are blind or at risk of visually disabling complications. Trachoma is found in underprivileged communities with poor living conditions. The disease is found in remote rural areas. The presence of trachomais closely related to living conditions and hygiene. Trachoma is endemic in several Asian countries including China and India. The severity of trachoma and thus its blinding potential varies from region to region and community to community.

India is committed for elimination of trachoma related blindness by2020 as partner to the alliance for the Global Elimination of Trachoma (GET) launched by the World Health Organization in the year 1997. In order to achieve this goal, remote, poor and marginalized populations of the country with poor socio-developmental indicators where trachoma is likely to be endemic, need to be surveyed for prioritizing interventions to eliminate trachoma.

Trachoma Surveys are essential for quantifying the burden of disease, assessing if it is a public health problem and for planning interventions required to eliminate blinding trachoma. Also, repeat assessments are required to ascertain the status of the improvements after years of interventions to ascertain whether it still prevails as an endemic infection.

1.1 Classifying Trachoma: The WHO Simplified Grading System (FISTO)

In epidemiological surveys, the recommended classification for grading trachoma is the Simplified WHO Grading Scheme. The scheme is described below

Table 4: WHO Simplified Trachoma Grading Scheme (FISTO)

TF-Trachomatous Inflammation-Follicular	Active disease (predominantly follicles)-At least 5 or more follicles on upper palpebral conjunctiva that are at least 0.5mm in size
TI- Trachomatous Inflammation-Intense	Inflammatory thickening of upper palpebral conjunctiva that obscures at least 50% of the deep tarsal vessels
TS- Trachomatous Scarring	Presence of scarring in upper tarsal conjunctiva
TT- Trachomatous Trichiasis	Presence of at least one eyelash rubbing the ocular surface or a history of removal of inturned eyelash
TT-Trachomatous Corneal Opacity	Corneal opacity present in pupillary area

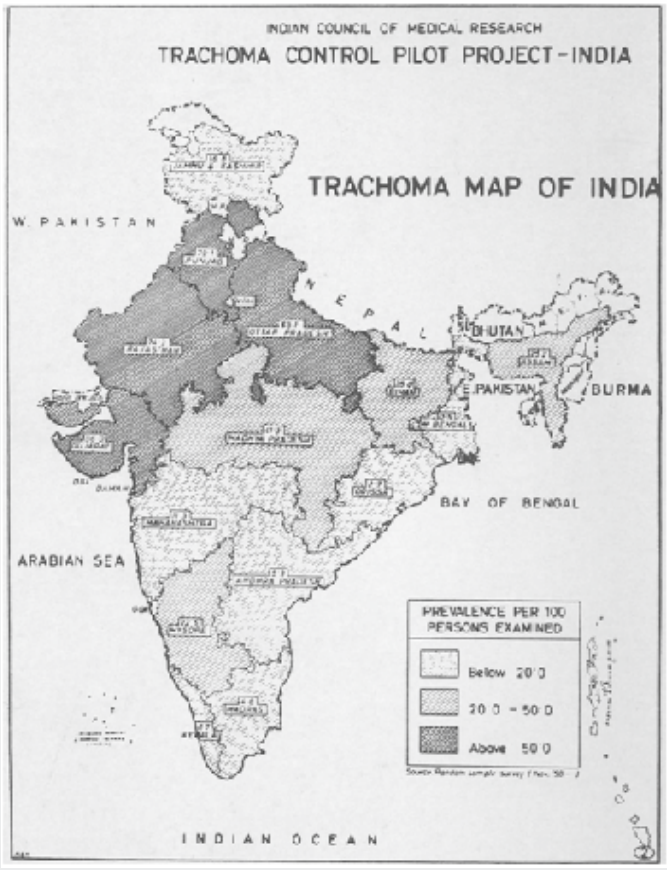
1.2 Assessment of Trachoma Burdenusing Trachoma Prevalence Surveys

Trachoma Prevalence Surveys are the "gold standard" for estimating the prevalence of trachoma within a target population. The most commonly used population-based survey design for trachoma prevalence estimation is cluster random sampling (CRS). The sample size for CRS is calculated by defining parameters which include: expected prevalence estimates, error margin or precision, confidence level, level of significance and design effect. In CRS, non-overlapping sub-populations (clusters) usually based on geographical or political boundaries are selected and then eligible participants are selected within each cluster. Commonly, a two-stage design is used comprising selection of villages (clusters) at the first stage and selection of households at the second. CRS samples can be used for multiple indicators at the same time, e.g. assessment of active trachoma, trichiasis and community risk factors.

1.3 Magnitude of Trachoma in India

Trachoma was considered the most important cause of blindness in the country at the time of Indian independence (1947) but there was no real evidence from the ground about its exact burden. With the support of the World Health Organization, under the Trachoma Control Pilot Project, the ICMR conducted multiple surveys in India during the period 1959-63, in 15 major states. This survey reported high prevalence of trachoma in many states. Six states were identified as hyper-endemic with prevalence of active infection among children more than 50% (Figure 2).

Figure 2: Trachoma Map of India, 1959-63



Source: Gupta U C, Preobragenski V V. Trachoma in India - Endemicity and epidemiological study. Indian J Ophthalmol 1964;12:39-49

The National Survey of Blindness conducted in 1986-89 yielded prevalence of trachoma as 5.2%, which translated to approximately 42 million Indian population at that time. This was a nationwide survey conducted in 30 states/ UTs, from which 117 districts were covered. There were newer areas of endemicity identified by this survey, such as the Andaman and Nicobar Islands (prevalence of 44.54%), Chandigarh (24.35%), Delhi (9.5%), Lakshadweep islands(11.36%). Rest of the states that had high prevalence of the disease were Punjab (21.79%), Rajasthan (17%), Haryana (15%), Uttar Pradesh (11.73%), and Gujarat (10.24%). Though there was a decline of prevalence of trachoma in these areas but still the transmission was of endemic type in these states. Slightly higher prevalence of trachoma was noted in rural areas(5.31%) as compared to urban areas (4.70%). Amongst the states that had a higher prevalence (>10%), age of onset was lower and the disease was present even in the age group 0-1 years. Older ages had evidence of healed stages of infection. The contribution of trachoma to blindness was only 0.39% yet the survey also pointed out the disease contributed highly to absolute blindness in states of Haryana, Madhya Pradesh, Maharashtra and Rajasthan. Of the total ocular morbidity found in 1986-89 survey, 17% was attributed to trachoma.

Subsequently, two rapid assessments have been undertaken with support from Ministry of Health and Family Welfare, Government of India. The first rapid assessment survey was undertaken in 2006. A total of 101 villages spread across 10 districts from 6 North Indian states that were previously labeled as hyperendemic, were included in this assessment. This national survey on trachoma conducted in 2006, revealed that trachoma had ceased to be a public health problem, though active transmission still occurred in the areas covered. All the districts included in the survey provided evidence of active trachoma infection. The range of prevalence of active infection (TF/ TI) across districts was from 0.6% in Kutch, Gujarat to15.2% in Pauri Garhwal, Uttarakhand. Bikaner in Rajasthan also reported a high prevalence of 11.4%. One of the study villages in Bikaner district had prevalence of TF/TI more than 30%. The assessment pointed out the need for interventions directed to curb the ongoing active transmission of trachoma. The load of trachomatous trichiasis was low and no association between TF / TI and TT was found. This survey was focused on 6 previously endemic states and did not cover the entire country.

Table 5: States and Districts where previous TRAs were conducted and Survey Results

District and State		Year	Magnitude of active infection TF/TI (%)	Magnitude of TT load (%)
Hoshiarpur	Punjab	2006	5.5	0.2
Mewat	Haryana	2006	5.8	0.5
Mahendragarh		2006	2.2	0.1
Pauri Garhwal	Uttaranchal	2006	15.2	0.05
Bulandshahar	Uttar Pradesh	2006	5.9	0.3
Bikaner	Rajasthan	2006	11.4	0.1
Tonk		2006	5.0	0.03
Dholpur		2006	6.3	0.3
Banaskantha	Gujarat	2006	1.1	0.04
Kutch		2006	0.6	0.03

The focus was placed on Car Nicobar Island in Jan 2010 (Table 6), when an alarming number of trachoma cases were reported from this region in the era when we are striving to eliminate trachoma by 2020.Moreover, availability of ophthalmic services was extremely limited in Car Nicobar. Given the lack of control measures, it was most likely an important, but hidden public health problem. This survey was done to establish the pattern of the problem in this tribal population. According to the report, maximum magnitude of active trachoma in children was found in Kinyuka village (73%) and maximum magnitude of trachomatous trichiasis was found in Tamaloo village (2.14%).

Table 6: Distribution of Active Trachoma Infection and Trichiasis in Car Nicobar Island in 2010

Villages	No of children examined	Children with TF/TI (%)	TT load in adults (%)
Kinyuka	52	73	1.82
Chukchuka	54	44.45	1.04
Arong	50	46	0.16
Tamaloo	52	44.23	2.14
Kakana	53	45.28	0.55
Big Lapathy	50	58	1.0
Tapoiming	52	51.92	1.19
Small Lapathy	52	59.6	0.21
Mus	48	37.5	1.57
Kinmai	53	47.17	0.63
Total	**516**	**50.8**	**(1.0)**

In view of very high active trachoma magnitude noted in 2010, SAFE interventions including mass drug administration were conducted in the district and a repeat trachoma prevalence survey was conducted in 15 villages of Car Nicobar island (Table 7). According to the report, maximum magnitude of active trachoma in children was found in Small Lapathy village (23.1%) and maximum magnitude of trichiasis was found in Tamaloo village (8.3%).

Table 7:Distribution of Active Trachoma Infection and Trichiasis in Car Nicobar Island in 2013

Cluster	Children 1-9 year examined	Prevalence of active infection (%)	Prevalence TT in adults (%)
Kinyuka	53	7.5	3.8
Perka	54	22.2	2.3
Tamaloo	58	5.2	8.3
Malacca	54	0.0	4.5
Small Lapathy	52	23.1	0.7
Kinmai	50	4.0	3.8
Mus	57	0.0	4.8
Teetop	51	11.8	2.7

Sawai	54	1.9	1.3
Big Lapathy	49	0.0	3.3
Kakana	54	9.3	3.5
Kimious	52	7.7	0.7
Arong	54	5.6	2.4
Tapoiming	57	1.8	7.7
Chukchuka	60	3.3	3.9
Total	**809**	**6.8**	**3.9**

One major limitation of the 2006 and 2010 surveys was that these surveys were based on the Trachoma Rapid Assessment Methodology. While the TRA methodology enables identification of endemic pockets of trachoma in a district, the results cannot be generalized to the entire district since the sampling is optimally biased towards maximum identification of trachoma. Thus, the TRA method is likely to result in an overestimation of trachoma burden. To monitor progress towards trachoma elimination and to generate representative results, conduct of Trachoma Prevalence surveys is recommended.

1.4 Need for the Current Survey

Considering the findings of previous and latest assessments, a nationwide population based survey was planned to assess status of trachoma. The National Trachoma Prevalence Survey was conducted to assess the prevalence of trachoma in already established hyperendemic districts and to study if trachoma is a public health problem in other areas where it was not previously studied or where conditions favor its presence.

2 National Trachoma Prevalence Survey

2.1 Objectives

- To estimate the prevalence of active trachoma infection (TF & TI) in selected study districts of known hyperendemic states where rapid assessment was previously conducted.
- To estimate the prevalence of trachomatous trichiasis (TT) and trachomatous corneal opacity (CO) in selected study districts.
- To study the association of social and environmental factors and facial cleanliness on prevalence of active trachoma.
- To recommend future course for trachoma prevention and control in India.

2.2 Methodology

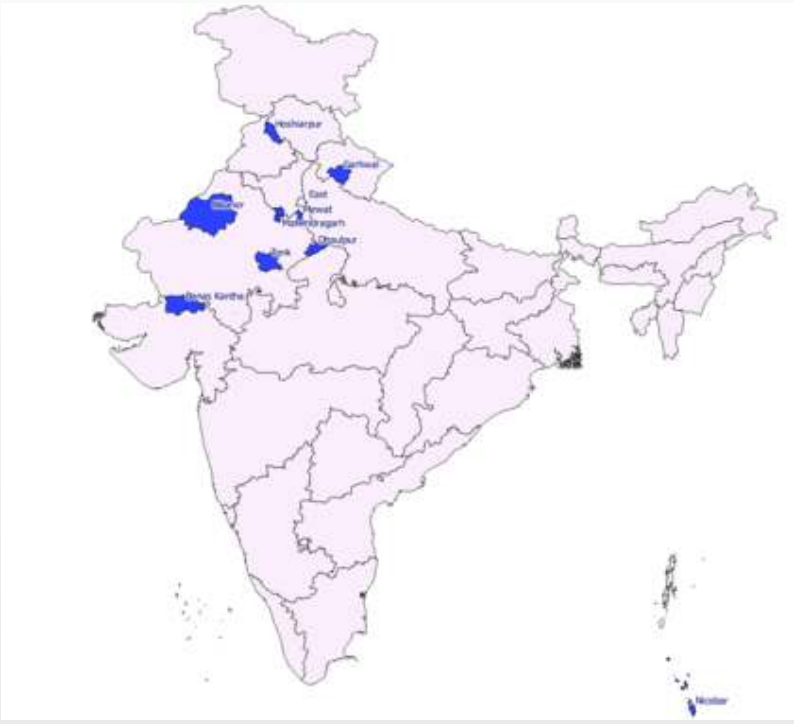
2.2.1 Study Design

Population based door to door prevalence survey

2.2.2 Study Area

The Trachoma Prevalence Surveys were conducted in those districts, which have been marked as endemic by earlier population based surveys and where Trachoma Rapid Assessment has already been conducted in 2006-2007. In addition, prevalence survey was also done in Car Nicobar Island since this was a new area identified as endemic in a Rapid Assessment conducted in 2010. A total of ten districts were included in the National Trachoma Prevalence Survey, 2014-17.

Table 8: Districts included in Trachoma Prevalence Survey



S. No.	State/ UT	No. of districts	Name of Districts
1	Gujarat	01	Banaskantha
2	Haryana	02	Mahendragarh, Mewat
3	Punjab	01	Hoshiarpur
4	Rajasthan	03	Tonk, Dholpur, Bikaner
5	Uttarakhand	01	PauriGarhwal
6	Andaman and Nicobar Islands	01	Car Nicobar
7	Delhi	01	East Delhi
	Total	**10**	

2.2.3 Sample Size

Considering the operational definition for trachoma elimination, we take the prevalence of active trachoma (TF/TI) as 5%, absolute precision 2%, design effect of 4 and response rate of 90%, sample size per district is calculated as 2,000 subjects in age group of 1- 9 years to be selected across 20 clusters in the district. Taking the population of children aged 1-9 years as roughly 25% of the general population, total cluster population size of 400 will yield nearly 100 children. Thus, with 20 clusters selected in a district, each of population size 400, the total population coverage is estimated as 8000 individualsin one survey district.

The sample size for Car Nicobar district was calculated as 800, taking prevalence of Active Trachoma (TF/TI) as 3%, absolute precision 2%, design effect of 3 and response rate of 90% while accounting for a finite population correction of 6500 children 1-9 years of age in entire Car Nicobar island.

2.2.4 Sampling Methods

The survey methodology adhered to standard cluster random sampling approach as recommended by World Health Organization for conducting trachoma prevalence surveys. As already stated, district selection was done randomly from the selected states based on prior trachoma rapid assessment survey being conducted in the same district.

Total of 20 clusters per district were included and 100 children aged 1-9 years per cluster were covered. The sampling frame for selection of clusters was the list of villages selected randomly using PPS approach-probability proportion to size, so that villages of equal population will have same chance of being chosen to provide a cluster, while villages with larger populations will have a proportionally greater chance and contribute more number of clusters.

Once the number of villages and the number of clusters to be selected in a village was known, Compact Segment Sampling technique was used. Within each village, using compact segment sampling, one contiguous segment was selected to yield 100 children and 400 overall population after mapping and dividing the village into roughly equal sized segments. From the identified and randomly selected segment in village, 100 children were covered using compact cluster sampling technique and a total of 400 population were targeted.

The sampling methodology in Car Nicobar was modified in view of the fewer number of villages and population size. The fifteen villages were combined to form eight clusters and 100 children were examined in each cluster.

2.2.5 Team Composition

The team members for the survey included Ophthalmologist, Ophthalmic Assistants, two field supervisors and two field workers. Two such teams were involved in the survey in each district. Two local volunteers were also involved with each team.

Both the teams covered one cluster per day. Total 10 clusters were covered by each team, thereby collecting data for entire district in 10-12working days.

2.2.6 Survey Instruments

The study instruments included a structured questionnaire and observation of environmental risk factors. (Annexure) The different components of the study tool were:

A. Identification data for the cluster and household

B. Observation of environmental risk factors

C. Examination details of household members of 10 years and above age for trachoma sequelae.

D. Examination details of children aged 1-9 years for active trachoma

E. Village Facility Assessment form

The Equipment and logistics used by the survey team included

- Loupes (x 2.5 magnification)
- Torches and batteries
- Record forms
- Drugs such as tetracycline 1% ointment, if applicable azithromycin.
- Stationary
- Means of transport
- Accommodation facilities for the teams in field.

2.2.7 Training of Teams for the Trachoma Survey

The training took place for three days and essentially equipped survey teams about methodology and operational aspects related to population based survey. The training also guided participants in WHO Trachoma Grading score and agreement analysis between observers was done as per WHO guidelines. Agreement of the graders with the WHO slide set was conducted and inter-observer agreement analysis was done and Kappa values calculated. The minimum acceptable value was kept 0.8 between examiners from a training team. Training also included a field visit to orient the survey leads in field based work. The trained participants from survey teams, further imparted training locally to their team members before initiating community based survey. Total five training workshops were organized at Dr. RP Centre, AIIMS to cover all the survey teams.

2.2.8 Field Survey Procedures

The district administration and the District Program Manager for Control of Blindness in the district were informed in advance of the team visit and were also asked to provide local logistic support including the services of the health centre staff for identification of the villages and for helping in the rapport building exercise.

The survey activities in each cluster were conducted over two days, enumeration and clinical examination days.

One day before the clinical examination, two members of the team i.e. Field supervisor and a Field worker visited the selected village for compact segment identification with the help of Village Pradhan or local leaders. They were responsible for household mapping and numbering the households. All the village panchayats were informed about the survey schedule and date and time of survey in their villages. The local volunteers, ASHA and Anganwadi worker of the village were identified and trained. Maps of the villages were prepared with the help of local volunteers, ASHA and Anganwadi workers. The team took a round of the entire village and randomly selected a segment of approximately 400 people in the village. The village leaders, local volunteers, ASHA and Anganwadi workers were requested to inform all the people in that cluster to be available in their households on the day of survey to ensure a good coverage.

On the day of clinical examination, the team consisted of ophthalmologist, field supervisor, ophthalmic assistant and a field worker. Field supervisor and field worker took written informed consent from one adult member of the household and completed the household enumeration section of the proforma. In each household, the members aged 1-9 years and those aged 10 years and above were enumerated. Data collected included information on total household size, demographic details on enumerated members(name, age, gender, education, occupation, relationship with head of household), total family income, number of living rooms, and environmental factor assessment. The environmental risk factors assessed were, (i) distance of the water source, (ii) presence of solid waste & animals around the household, and (iii) absence of functional sanitary latrine in the house. In villages with scattered houses, the distance criteria of 20 metres as recommended by WHO was followed. Household survey in the cluster continued till a minimum 100 children aged 1-9 years were examined in that cluster.

Data on water, sanitation and hygiene were also inquired from each household. This included information on (i) main source of drinking water in dry season, (ii) main source of water for washing faces, (iii) type of toilet in household, (iv) presence of hand washing facility within 15 metres of toilet, and (v) availability of soap or ash at hand washing facility.

All the clusters were assessed for facilities like availability of primary health centre, trichiasis surgical facility, village pharmacy, market & schools in terms of the distance of these facilities as per a Village Facility Form.In recording the distance to a facility like PHC/trichiasis facility, it was decided that distance to all facilities within the village would be recorded in walking time while for all facilities outside the village it would be recorded in time taken by public transport. For identifying a market, respondents were queried about the distance to shops selling groceries, vegetables and other items for daily living.

2.2.9 Clinical Assessments

All the available household members above one year of age were examined by the ophthalmologist. The Ophthalmologist, ophthalmic assistant and a local volunteer was involved in ocular examination. Ocular examination for ascertaining signs of trachoma on upper tarsal conjunctiva was performed with the help of 2.5x binocular corneal loupe and torch light. The simplified trachoma grading scheme (FISTO) recommended by the WHO was used.

All children from 1-9 years of age in a cluster underwent ophthalmic examination by an ophthalmologist for

prevalence of Active Trachoma (TF and/or TI).Observation of facial hygiene was done on all children 1-9 years. Unclean faces was defined as:

- Presence of discharge from the eyes / nose.
- Crusting of discharge around the eye or nose.
- Presence of flies on the discharge around eye / nose.

All members aged 10 years and above were examined for presence of trichiasis (TT), trachomatous scarring (TS) and corneal opacity (CO) as per WHO Simplified Grading Scheme for Trachoma. In case a corneal opacity was present, the cause of corneal opacity (eye-wise) and Snellen's 6 metre distance visual acuity for each eye was assessed. It is pertinent to note here that while we examined all household members aged 1 year or older, for purposes of data analysis, only data for 15+ years old and 1-9 years old members was used for active trachoma infection and trachomatous trichiasis respectively, as per WHO guidelines.

2.2.10 Microbiological investigations

Conjunctival swabs were taken by the ophthalmologists from all the children found to be positive for clinical trachoma. On completion of the compact segment cluster in each village, all children detected with trachoma infection on clinical examination, were brought to a nearby health centre for sample collection. After thorough swabbing and rolling of the entire upper conjunctival surface by a sterile swab stick, a smear was prepared on a clean teflon-coated glass slide marked with a unique identification number. All the slide specimens were air dried, fixed in acetone for ten minutes and stored in an ice box for maintaining the cold chain. The samples were stored and frozen in the refrigerator (at a temperature of zero degree celsius). On completion of the survey in the district, the samples were transferred in an ice box with the survey team to Ocular Microbiology department at Dr. Rajendra Prasad Centre for Ophthalmic Sciences, AIIMS, New Delhi for further analysis.

Direct Immunofluorescence assay was performed using the MicroTrak Chlamydia Trachomatis Direct Specimen Kit procured from M/s Trinity Biotech, Ireland® for detection of Chlamydia antigen using the standard protocol. A positive control and a negative control, as provided by the supplier, were processed along with each set of specimens to ensure reliability of the reagents. Morphology for positive specimens was confirmed at a magnification of 1000x. All slides were screened for a minimum of 100 high power fields. Specimens were considered positive only if a minimum of 10 smooth elementary bodies (apple green, regular, refractile and fluorescent indicative of Chlamydia trachomatis) were observed.

2.2.11 Data entry, Data analysis and Report Writing

The data was collected in the standard proformas. The field survey team submitted the forms to R.P. Centre. The data entry system was designed in MS Access TM. The system had in built consistency checks and 10% of all data was again verified. After verification, the data was exported as CSV files to and analyzed using the Stata 14 software. Descriptive analysis using frequency distribution was performed.

The key assessment indicators used were in accordance with the recommended WHO indicators for assessment of trachoma and were as follows:

- Prevalence of active infection TI, TF and TI+TF in population aged 1-9 years
- Age-gender standardized prevalence of TT and TT with CO among population aged 15+ years.

- Prevalence of facial cleanliness in population aged 1-9 years
- Prevalence of environmental risk factors among enumerated households
- Access to treatment facilities among study clusters in the ten districts

In addition, the proportion of eligible enumerated household members who were examined was also calculated as a quality assessment parameter of the survey. While we had examined all household members aged 1 year or older, for purposes of data analysis, only data for 15+ years old and 1-9 years old members was used. This is in line with the WHO recommendation of reporting age-sex standardized prevalence of trachoma sequalae (TT, CO) in 15+ aged population.

2.2.12 Quality Assurance

All the surveys were directly supervised by faculty from Dr RP Centre, AIIMS. Daily reporting and checking of survey form for correctives and incomplete entries was done in the field. The data entry system was designed to have in-built consistency checks to minimize transcription errors. Repeat training of the survey team were done whenever new ophthalmologists or other staff joined survey team. Orientation meetings of the survey team were done prior to each district survey. After completion of each survey, the findings of the supervising faculty were discussed with the survey team to ensure proper feedback.

3 Results: Trachoma Prevalence Survey

3.1 District covered

The trachoma prevalence survey was conducted across ten districts in seven states. These districts were Mahendragarh, Mewat, Tonk, Dholpur, Bikaner, Patri Garhwal, East Delhi, Hoshiarpur, Banaskantha and Nicobar. The population of these districts ranges from 36842 of Nicobar Island to 3.12 million of Banaskantha. Majority of the population is rural except in East Delhi district. (Table 9)

Table 9: Population of the districts included in the National Trachoma Prevalence Survey

Name of State and District		Total Population of the district (Census 2011)	Rural Population
Punjab	**Hoshiarpur**	1,586,625	1,251,656 (78.9)
Haryana	**Mewat**	1,089,263	965,157 (88.6)
	Mahendragarh	922,088	789,233 (85.2)
Uttaranchal	**Pauri Garhwal**	687,271	574,568 (83.6)
Rajasthan	**Bikaner**	2,363,937	1,563,553 (66.1)
	Tonk	1,421,326	1,103,603 (77.6)
	Dholpur	1,206,516	959,066 (79.5)
Gujarat	**Banaskantha**	3,120,506	2,705,591 (86.7)
Andaman &Nicobar	**Nicobar**	36,842	36,842 (100)
NCT Delhi	**East Delhi**	1,709,346	3,530(0.2)

3.2 Population covered

A total of 81363 eligible individuals were enumerated in 13,802 households of which 51992 were aged 15+ years, and 20929 were children 1-9 years of age. The number of participants examined was 19662 (93.9%) among children 1-9 years and 44135 (84.9%) among 15+year old participants.

Table 10: Study Population for the National Trachoma Prevalence Survey

District	Total Enumerated	1-9 years		15+ years	
		Enumerated	Examined (%)	Enumerated	Examined (%)
Banaskantha	8068	2186	2058 (94.1)	5173	4397 (85)
Bikaner	9042	2290	2101 (91.7)	5762	4914 (85.3)
Car Nicobar	3252	889	831 (93.5)	2146	1561 (72.7)
Dholpur	8452	2293	2129 (92.8)	5090	4337 (85.2)
East Delhi	8361	2210	2090 (94.6)	5212	4466 (85.7)
Hoshiarpur	8083	2212	2086 (94.3)	5240	4468 (85.3)
Mahendragarh	9309	2185	2119 (97)	6384	5427 (85)
Mewat	8140	2240	2113 (94.3)	4748	4252 (89.6)
Pauri Garhwal	8768	2157	2068 (95.9)	5745	4901 (85.3)
Tonk	9888	2267	2067 (91.2)	6492	5412 (83.4)
Total	**81363**	**20929**	**19662 (93.9)**	**51992**	**44135 (84.9)**

In terms of gender distribution, we observe that at enumeration, the male and female population were fairly equally distributed in both the age groups i.e. 1-9 years and 15+ years. Overall in the population aged 15+ years, 50.7% were males at enumeration which reduced to 45.9% males at examination. In the population aged 1-9 years, 53.2% were males at enumeration and a similar 53.1% were males among examined. The examination rate in population aged 15+years among males is 76.8 % (20249/26359) and among females is 93.2% (23886/25633).The examination rate in population aged 1-9 years among males is 93.9% (10444/11124) and among females is 94.0% (9218/9805).The most important reason for lower proportion of males among examined 15+ year population is the non-availability of adult males during the survey, since majority of them were working. The impact of this differential non-response among 15+ year males has been accounted for by performing age-sex standardized analysis when calculating prevalence rates of various indicators in this age group.

Table 11: Gender wise distribution of total enumerated and examined population in the National Trachoma Prevalence Survey

Districts	Enumerated				Examined			
	1-9 year		15+ year		1-9 year		15+ year	
	Male	Female	Male	Female	Male	Female	Male	Female
Banaskantha	1171 (53.6)	1015 (46.4)	2537 (49.0)	2636 (51.0)	1104 (53.6)	954 (46.4)	1883 (42.8)	2514 (57.2)
Bikaner	1162 (50.7)	1128 (49.3)	3017 (52.4)	2745 (47.6)	1062 (50.5)	1039 (49.5)	2345 (47.7)	2569 (52.3)
Car Nicobar	456 (51.3)	433 (48.7)	1009 (47.0)	1137 (53)	421 (50.7)	410 (49.3)	629 (40.3)	932 (59.7)
Dholpur	1230 (53.6)	1063 (46.4)	2682 (52.7)	2408 (47.3)	1131 (53.1)	998 (46.9)	2058 (47.5)	2279 (52.5)
East Delhi	1129 (51.1)	1081 (48.9)	2753 (52.8)	2459 (47.2)	1074 (51.4)	1016 (48.6)	2177 (48.7)	2289 (51.3)
Hoshiarpur	1197 (54.1)	1015 (45.9)	2582 (49.3)	2658 (50.7)	1128 (54.1)	958 (45.9)	2026 (45.3)	2442 (54.7)
Mahendragarh	1210 (55.4)	975 (44.6)	3245 (50.8)	3139 (49.2)	1171 (55.3)	948 (44.7)	2458 (45.3)	2969 (54.7)
Mewat	1197 (53.4)	1043 (46.6)	2459 (51.8)	2289 (48.2)	1131 (53.5)	982 (46.5)	2099 (49.4)	2153 (50.6)
Pauri Garhwal	1165 (54)	992 (46.0)	2789 (48.5)	2956 (51.5)	1117 (54.0)	951 (46.0)	2139 (43.6)	2762 (56.4)
Tonk	1207 (53.2)	1060 (46.8)	3286 (50.6)	3206 (49.4)	1105 (53.5)	962 (46.5)	2435 (45.0)	2977 (55.0)
Total	**11124 (53.2)**	**9805 (46.8)**	**26359 (50.7)**	**25633 (49.3)**	**10444 (53.1)**	**9218 (46.9)**	**20249 (45.9)**	**23886 (54.1)**

3.3 Active trachoma and facial hygiene among population aged 1-9 years

A total of 19662 children were examined. It was observed that 15.7% of all children had unclean faces. The prevalence of unclean faces was highest in Mewat (39.8%) and in Dholpur (31.8%). Excellent facial hygiene was observed in Banaskantha (5.5% unclean faces), Hoshiarpur (5.8%) and in Car Nicobar (6.4% unclean faces). A total of 141 children were observed to have active trachoma infection (TI or TF) of which 139 children had TF grade infection and 2 children had TI grade infection. The overall prevalence of active trachoma infection in population aged 1-9 years is 0.7% across all survey districts. The maximum prevalence observed was 2.2% in Dholpur followed by 1.6% in Car Nicobar, 1.2% in Mewat and 1.0% in Hoshiarpur. Lowest prevalence of active trachoma infection (TI+TF) was observed in Bikaner, Mahendragarh, and Pauri Garhwal districts.

Table 12:Active Trachoma Infection indicated by Prevalence of Follicular Trachoma (TF) and Trachomatous inflammation (TI), and Unclean Faces among Participants aged 1-9 years

District	Examined	TF n(%)	TI n(%)	TF+TI n(%)	Unclean face n(%)
Banaskantha	2,058	9 (0.4)	0 (0)	9 (0.4)	114 (5.5)
Bikaner	2,101	2 (0.1)	0 (0)	2 (0.1)	297 (14.1)
Car Nicobar	831	12 (1.4)	1 (0.12)	13 (1.6)	53 (6.4)
Dholpur	2,129	45 (2.1)	1 (0.05)	46 (2.2)	676 (31.8)
East Delhi	2,090	11 (0.5)	0 (0)	11 (0.5)	206 (9.9)
Hoshiarpur	2,086	21 (1.0)	0 (0)	21 (1.0)	122 (5.8)
Mahendragarh	2,119	2 (0.1)	0 (0)	2 (0.1)	221 (10.4)
Mewat	2,113	25 (1.2)	0 (0)	25 (1.2)	841 (39.8)
PauriGarhwal	2,068	3 (0.1)	0 (0)	3 (0.1)	236 (11.4)
Tonk	2,067	9 (0.4)	0 (0)	9 (0.4)	323 (15.6)
Total	**19,662**	**139 (0.7)**	**2 (0.01)**	**141 (0.7)**	**3089 (15.7)**

3.4 Trachoma sequelae among 15+ year old population

A total of 44135 individuals aged 15+ year were examined across all the districts. This included 20249 males and 23886 females. Among the examined individuals, 140 had trachomatous trichiasis (TT) and 45 of them had trachomatous corneal opacities (TT with CO). The age-sex standardized prevalence rates per 1000 population in each district were calculated by direct standardization against the 2011 census age-sex distribution of the 15+ population within the district. WHO has recommended TT prevalence threshold of < 1/1000 total population or and <2 /1000 population aged 15+ years in each formerly endemic district as one of the elimination criteria for trachoma. We observed an age-sex standardized prevalence of TT ranging from a high of 23.99 per 1000 in Car Nicobar to a low of 1.03 per 1000 in Pauri Garhwal. The districts of Bikaner, Car Nicobar, Dholpur, East Delhi, Hoshiarpur, and Tonk had a prevalence rate over the elimination threshold of 2/1000 population aged 15+ years while Banaskantha, Mahendragarh, Mewat and Pauri Garhwal had prevalence under the elimination threshold.

Table 13: Prevalence of Trachomatous Trichiasis (TT), and Trachomatous Corneal Opacity (CO) among participants aged 15 years and older

District	Examined	TT without Co N (Prevalence per 1000)	TT with CO N (Prevalence per 1000)	Total N (Prevalence per 1000)	Total TT Adjusted* N (Prevalence per 1000)
Banaskantha	4397	3 (7.5)	2 (0.5)	5 (1.1)	1.1
Bikaner	4914	6 (1.2)	2 (0.4)	8 (1.6)	2.1

Car Nicobar	1561	39 (25.0)	6 (3.8)	45 (28.8)	24.0
Dholpur	4337	7 (1.6)	11 (2.5)	18 (4.2)	4.5
East Delhi	4466	5 (1.1)	1 (0.2)	6 (1.3)	2.1
Hoshiarpur	4468	11 (2.5)	8 (1.8)	19 (4.3)	6.6
Mahendragarh	5427	2 (0.4)	6 (1.1)	8 (1.5)	1.3
Mewat	4252	2 (0.5)	3 (0.7)	5 (1.2)	1.2
Pauri Garhwal	4901	3 (0.6)	1 (0.2)	4 (0.8)	1.0
Tonk	5412	17 (3.1)	5 (0.9)	22 (4.1)	3.8
Total	**44135**	**95 (2.2)**	**45 (1.02)**	**140 (3.2)**	**3.5**

**Age-sex standardized prevalence figures per 1000 population for TT among 15+year population*

3.5 Environmental risks factors for trachoma among visited households

Safe water (S) and environmental hygiene (E) are two major components of the SAFE intervention package for trachoma elimination. Assessment of these factors was therefore done in the current survey. During the trachoma prevalence survey, a total of 13802 households were assessed by the survey teams for environmental risk factors for trachoma namely access to water source, presence of solid wastes and animals within 20 metres of the household, and absence of functional latrine in the house. It was observed that non-availability of water source within 30-minute walking distance was a major risk factor in Mewat with nearly 10.57% households affected, Dholpur (9.2% households) and in Car Nicobar (6.7%) while excellent access was observed in Banaskantha, Bikaner, East Delhi, Hoshiarpur, Mahendragarh, Pauri Garhwal and Tonk. Poor environmental hygiene was observed across all the districts with overall 55.4% households having solid waste or animal present within 20 metres of the household. The worst affected district included Dholpur, Car Nicobar, Tonk and Mahendragarh. Almost one-third households lacked access to a functional latrine. In Dholpur, 73% households lacked access to a functional latrine, and a poor status was also observed in Tonk (51.9%), Mewat (48.2%), and Banaskantha (43.2%). Good access to functional latrine was observed in Car Nicobar (2.5% lacking access), Bikaner (7.2% lacking access), and Hoshiarpur (9.7%).

Table 14: - Environmental Risk Factors for Trachoma among Visited Households

District	Households visited	Water Source unavailable within 30-minute walking distance N (%)	Solid waste/ animal present within 20 meters N (%)	Functional latrine absent N (%)
Banaskantha	1465	0 (0.00)	470 (32.08)	633 (43.21)
Bikaner	1432	0 (0.00)	791 (55.24)	103 (7.19)
Car Nicobar	446	30 (6.73)	356 (79.82)	11 (2.47)
Dholpur	1336	123 (9.21)	1171 (87.65)	975 (72.98)
East Delhi	1526	0 (0.00)	783 (51.31)	494 (32.37)
Hoshiarpur	1473	0 (0.00)	434 (29.46)	143 (9.71)
Mahendragarh	1624	4 (0.25)	1097 (67.55)	465 (28.63)
Mewat	1202	127 (10.57)	751 (62.48)	579 (48.17)
PauriGarhwal	1700	45 (2.65)	674 (39.65)	283 (16.65)
Tonk	1598	14 (0.88)	1120 (70.09)	830 (51.94)
Total	**13802**	**343 (2.48)**	**7647 (55.41)**	**4516 (32.72)**

3.6 Access to Treatment facilities, market and primary school among visited clusters

It was observed that a primary health care facility was located within 30-minute local travel time across all clusters surveyed in Tonk, East Delhi and Hoshiarpur while 15% clusters were located at over 2-hour travel time from a primary health care centre in Pauri Garhwal. Access to trichiasis surgery facilities was particularly lacking in visited clusters Pauri Garhwal while in Mewat, 80% clusters were located at 30 minute to less than 2 hour travel time from a trichiasis surgery facility. In Dholpur as well, 50% clusters were located at 30 minute to less than 2 hour travel time from a trichiasis surgery facility. All the visited clusters had access to a primary school in under 30 minutes. The access to market was also very good in all districts except Mewat.

Table 15: Access to Primary Health Care Facility among clusters in the National Trachoma Prevalence Survey

District	Primary Health Care Facility		
	<30 min	30 min- <2 hours	>=2 hours
Mahendragarh	85%	15%	0%
Mewat	75%	25%	0%
Tonk	100%	0%	0%
Dholpur	70%	30%	0%
Bikaner	95%	0%	5%
Pauri Garhwal	65%	20%	15%
East Delhi	100%	0%	0%
Hoshiarpur	100%	0%	0%
Banaskantha	70%	30%	0%
Nicobar	88%	12%	0%

Table 16: Access to Trichiasis Surgery Facility among clusters in the National Trachoma Prevalence Survey

District	Trichiasis Surgery		
	<30 min	30 min- <2 hours	>=2 hours
Mahendragarh	75%	25%	0%
Mewat	20%	80%	0%
Tonk	75%	25%	0%
Dholpur	50%	50%	0%
Bikaner	80%	15%	5%
Pauri Garhwal	5%	5%	90%
East Delhi	100%	0%	0%
Hoshiarpur	55%	45%	0%
Banaskantha	70%	30%	0%
Nicobar	75%	12.50%	12.50%

Table 17: Access to a market among clusters in the National Trachoma Prevalence Survey

District	Primary Health Care Facility		
	<30 min	30 min- <2 hours	>=2 hours
Mahendragarh	95%	5%	0%
Mewat	60%	40%	0%
Tonk	100%	0%	0%
Dholpur	95%	5%	0%
Bikaner	100%	0%	0%
Pauri Garhwal	90%	10%	0%
East Delhi	100%	0%	0%
Hoshiarpur	100%	0%	0%
Banaskantha	100%	0%	0%
Nicobar	87.50%	12.50%	0%

Table 18: Access to a Primary School among clusters in the National Trachoma Prevalence Survey

District	Trichiasis Surgery		
	<30 min	30 min- <2 hours	>=2 hours
Mahendragarh	100%	0%	0%
Mewat	100%	0%	0%
Tonk	100%	0%	0%
Dholpur	100%	0%	0%
Bikaner	100%	0%	0%
Pauri Garhwal	100%	0%	0%
East Delhi	100%	0%	0%
Hoshiarpur	100%	0%	0%
Banaskantha	100%	0%	0%
Nicobar	100%	0%	0%

3.7 Microbiological Investigations

Conjunctival swabs were collected from 132 children (93.6%) aged-1-9 years with a TF or TI grade trachoma infection. These samples were transported to Dr RP Centre under cold chain for assessment of Chlamydia Trachomatis. A total of 35 (26.5%) samples were positive.

Table 19: Microbiological investigation among the trachoma active infection cases

District	Number of Children Examined	Number of Children identified with TF/TI	Cases taken Microbiological samples	Cases positive as per microbiological tests (%)
Mahendragarh	2119	2	2	0
Mewat	2113	25	22	14 (63.6)
Tonk	2067	9	8	1 (12.45)
Dholpur	2129	46	43	4 (9)
Bikaner	2101	2	2	0
Pauri Garhwal	2068	3	2	1 (50)
East Delhi	2090	11	11	7 (63.6)
Hoshiarpur	2086	21	21	8 (38.1)
Banaskantha	2058	9	8	0
Nicobar	831	13	13	0
Total	**19662**	**141**	132	35 (26.5)

4 Detailed Results: Trachoma Prevalence Survey

4.1 Punjab

Figure 3: District Hoshiarpur, Punjab

On random selection of previously hyperendemic districts, Hoshiarpur district from Punjab was selected. Ward no 25 yielded two clusters. The numbers enumerated in age groups 1-9 years and 15+ years were 2212 and 5240 respectively. In 1-9 years age group 94.3% and in the 15+ years age group 85.3% individuals were examined.

Table 20: Age-wise distribution of enumerated and examined population of Hoshiarpur, Punjab

District	Enumerated 1-9 years	Examined (%)	Enumerated 15+ years	Examined (%)
Bajraur	107	103 (96.3)	258	240 (93)
Bajwara	112	106 (94.6)	211	178 (84.4)
Bassi babu khan	119	112 (94.1)	231	187 (81)
Chebewal	107	101 (94.4)	150	133 (88.7)
Dhaliwal	109	102 (93.6)	395	320 (81)
Dholanwal	111	100 (90.1)	224	209 (93.3)
Dudiana	112	109 (97.3)	195	173 (88.7)
Ghagial	108	104 (96.3)	246	199 (80.9)
Hariana (U) ward no.-5	114	109 (95.6)	279	248 (88.9)
Hoshiarpur (U) ward no.-3	108	100 (92.6)	281	226 (80.4)
Hoshiarpur (U) ward no.-9	113	109 (96.5)	255	229 (89.8)
Hoshiarpur (U) ward no.-12	106	103 (97.2)	246	205 (83.3)

Hoshiarpur (U) ward no.-25 (two clusters)	217	201 (92.6)	660	558 (84.5)
Lalpur	114	108 (94.7)	182	144 (79.1)
Naushehra	114	104 (91.2)	198	176 (88.9)
Pajjodeota	115	108 (93.9)	312	268 (85.9)
Pandori	108	101 (93.5)	277	227 (81.9)
Saido Patti	112	104 (92.9)	290	241 (83.1)
Sherpur Pukhta	106	102 (96.2)	350	307 (87.7)
Total	**2212**	**2086 (94.3)**	**5240**	**4468 (85.3)**

4.1.1 Trichiasis Load

Total 19 cases of trichiasis were identified, out of which 8 even had corneal opacity. Ten clusters did not have a single case of trichiasis. The overall age-sex standardized prevalence of Trichiasis was 6.64/1000.

Table 21: Crude and Age-Sex Standardized Prevalence of Trachomatous Trichiasis (TT) and Trachomatous Corneal Opacity(CO) among population aged 15+ years in District Hoshiarpur, Punjab

Cluster Name	Examined (15+ yr)	Trichiasis (per 1000)	TT with CO (per 1000)	Total (per 1000)
Bajraur	240	1 (4.2)	1 (4.2)	2 (8.3)
Bajwara	178	0 (0)	0 (0)	0 (0)
Bassi Babu Khan	187	0 (0)	0 (0)	0 (0)
Chebewal	133	0 (0)	0 (0)	0 (0)
Dhaliwal	320	1 (3.1)	0 (0)	1 (3.1)
Dholanwal	209	1 (4.8)	1 (4.8)	2 (9.6)
Dudiana	173	0 (0)	1 (5.8)	1 (5.8)
Ghagial	199	0 (0)	0 (0)	0 (0)
Hariana (Mci)Ward No.-0005	248	0 (0)	1 (4.0)	1 (4.0)
Hoshiarpur(Mci)Ward No. 0003	226	0 (0)	0 (0)	0 (0)
Hoshiarpur(Mci)Ward No. 0009	229	0 (0)	0 (0)	0 (0)
Hoshiarpur(Mci)Ward No. 0012	205	0 (0)	0 (0)	0 (0)
Hoshiarpur(Mci)Ward No. 0025 (two clusters)	558	1 (1.8)	1 (1.8)	2 (3.6)
Lalpur	144	0 (0)	0 (0)	0 (0)
Naushehra	176	0 (0)	0 (0)	0 (0)
Pajjodeota	268	1 (3.7)	0 (0)	1 (3.7)
Pandori	227	3 (13.2)	0 (0)	3 (13.2)
Saido Patti	241	2 (8.2)	1 (4.1)	3 (12.4)
Sherpur Pukhta	307	1 (3.3)	2 (6.5)	3 (9.8)
Total	**4468**	**11(2.5)**	**8 (1.8)**	**19 (4.3)**
Age-sex Standradized TT Prevalence per 1000 persons aged 15+ years				**19 (6.64)**

4.1.2 Active Infection

Out of 2086 children (1-9years) examined, 5.85% had unclean faces and 1.01% had active infection. However, all the cases of active infection had trachomatous folliculitis and not a single case of trachomatous inflammation was seen. Eight out of twenty clusters did not have any active infection.

Table 22:Presence of Active Trachoma in Hoshiarpur, Punjab among population aged 1-9 years

Cluster Name	Examined	Unclean face (%)	Active infection		TF+TI
			TF (%)	TI (%)	
Bajraur	103	0 (0)	2 (1.9)	0 (0)	2 (1.9)
Bajwara	106	2 (1.9)	2 (1.9)	0 (0)	2 (1.9)
Bassi Babu Khan	112	25 (22.3)	3 (2.7)	0 (0)	3 (2.7)
Chebewal	101	27 (26.7)	2 (2)	0 (0)	2 (2)
Dhaliwal	102	5 (4.9)	0 (0)	0 (0)	0 (0)
Dholanwal	100	13 (13)	0 (0)	0 (0)	0 (0)
Dudiana	109	7 (6.4)	2 (1.8)	0 (0)	2 (1.8)
Ghagial	104	4 (3.8)	1 (1)	0 (0)	1 (1)
Hariana (Mci)Ward No.-0005	109	0 (0)	2 (1.8)	0 (0)	2 (1.8)
Hoshiarpur(Mci)Ward No. 0003	100	1 (1)	0 (0)	0 (0)	0 (0)
Hoshiarpur(Mci)Ward No. 0009	109	5 (4.6)	0 (0)	0 (0)	0 (0)
Hoshiarpur(Mci)Ward No. 0012	103	0 (0)	1 (1)	0 (0)	1 (1)
Hoshiarpur(Mci)Ward No. 0025 (two clusters)	201	1 (0.5)	2 (1)	0 (0)	2 (1)
Lalpur	108	8 (7.4)	1 (0.9)	0 (0)	1 (0.9)
Naushehra	104	11 (10.6)	0 (0)	0 (0)	0 (0)
Pajjodeota	108	8 (7.4)	2 (1.9)	0 (0)	2 (1.9)
Pandori	101	2 (2)	1 (1)	0 (0)	1 (1)
Saido Patti	104	0 (0)	0 (0)	0 (0)	0 (0)
Sherpur Pukhta	102	3 (2.9)	0 (0)	0 (0)	0 (0)
Total	**2086**	**122 (5.85)**	**21 (1.01)**	**0 (0.00)**	**21 (1.01)**

4.1.3 Environmental factors

All village clusters in Hoshiarpur district had water source available within half an hour walking distance. However, nearly 10% households did not have a functional latrine. In village Chebewal none of the households had a functional latrine. Contrary to that, all households in ward no. 0005, 0003, 0009, 0012, 0025, and Saido Patti had functional latrines. Nearly 30% households had solid waste/ animal present within 20 metres of their premises. The situation is worse in Chebewal (94.4%), Hariana ward no.0005 (71%) and Bassi Babu Khan (60.6%) as far as solid waste/animal pens in 20 metres vicinity is considered.

Table 23:Environmental risk Factors for Trachoma in Hoshiarpur, Punjab

Cluster Name	Total	Water Source unavailable within half an hour walking distance (%)	Solid waste/animal pens present within 20 meters (%)	Functional latrine absent (%)
Bajraur	69	0 (0.00)	22 (31.88)	1 (1.45)
Bajwara	64	0 (0.00)	9 (14.06)	6 (9.38)
Bassi Babu Khan	66	0 (0.00)	40 (60.61)	23 (34.85)
Chebewal	54	0 (0.00)	51 (94.44)	54 (100.0)
Dhaliwal	113	0 (0.00)	12 (10.62)	4 (3.54)
Dholanwal	70	0 (0.00)	10 (14.29)	2 (2.86)
Dudiana	65	0 (0.00)	5 (7.69)	24 (36.92)
Ghagial	75	0 (0.00)	4 (5.33)	2 (2.67)
Hariana (Mci)Ward No.-0005	69	0 (0.00)	49 (71.01)	0 (0.00)
Hoshiarpur(Mci)Ward No. 0003	78	0 (0.00)	3 (3.85)	0 (0.00)
Hoshiarpur(Mci)Ward No. 0009	70	0 (0.00)	34 (48.57)	0 (0.00)
Hoshiarpur(Mci)Ward No. 0012	72	0 (0.00)	4 (5.56)	0 (0.00)
Hoshiarpur(Mci)Ward No. 0025 (two clusters)	169	0 (0.00)	77 (45.56)	0 (0.00)
Lalpur	57	0 (0.00)	6 (10.53)	11 (19.30)
Naushehra	58	0 (0.00)	3 (5.17)	1 (1.72)
Pajjodeota	81	0 (0.00)	34 (14.98)	6 (7.41)
Pandori	71	0 (0.00)	38 (53.52)	6 (8.45)
Saido Patti	79	0 (0.00)	32 (40.51)	0 (0.00)
Sherpur Pukhta	93	0 (0.00)	1 (1.08)	3 (3.23)
Total	**1473**	**0 (0.00)**	**434 (29.46)**	**143 (9.71)**

4.1.4 Access to treatment facilities

All the clusters of Hoshiarpur were situated such that it would take less than 30 minutes by public transport to reach the Primary Health Centre. However, for reaching trichiasis surgical facility it might take 30 minutes to 2 hours by public transport from villages Bajraur, Bajwara, Bassi Babu Khan, Chebewal, Ghagial Hariana ward no. 0005, Lalpur, Naushehra and Pandori. Village Pharmacy, market and school can be traversed from each cluster by walking, in less than 30 minutes.

Table 24: Distance of Villages of Hoshiarpur, Punjab from various facilities

Hoshiarpur	Distance to Facility				
	By public transport		Walking time		
Village/Ward	Primary Health Care	Trichiasis Surg. Facility	Village Pharmacy	Market	School
	<30min=1; 30min-2hr=2; >2hr=3				
Bajraur	1	2	1	1	1
Bajwara	1	2	1	1	1
Bassi babu khan	1	2	1	1	1
Chebewal	1	2	1	1	1
Dhaliwal	1	1	1	1	1
Dholanwal	1	1	1	1	1
Dudiana	1	1	1	1	1
Ghagial	1	2	1	1	1
Hariana (M CI) Ward no.-0005	1	2	1	1	1
Hoshiarpur(M CI) Ward no. 0003	1	1	1	1	1
Hoshiarpur(M CI) Ward no. 0009	1	1	1	1	1
Hoshiarpur(M CI) Ward no. 0012	1	1	1	1	1
Hoshiarpur(M CI) Ward no. 0025 (two clusters)	1	1	1	1	1
Lalpur	1	2	1	1	1
Naushehra	1	2	1	1	1
Pajjodeota	1	1	1	1	1
Pandori	1	2	1	1	1
Saido patti	1	1	1	1	1
Sherpur pukhta	1	1	1	1	1

4.2 Uttaranchal

Figure 4: District Pauri Garhwal, Uttaranchal

Twenty clusters were randomly identified from the district Pauri Garhwal. The numbers enumerated in age groups 1-9 years and 15+ years were 2157 and 5745respectively. In 1-9 years age group, 95.9% and in 15+ years age group, 85.3% individuals were examined.

Table 25: Age-wise distribution of enumerated and examined population of Pauri Garhwal, Uttarakhand

Cluster name	Enumerated 15+ years	Examined (%)	Enumerated 1-9 years	Examined (%)
Bhanwansi	161	137 (85.1)	103	101 (98.1)
Bhimsinghpur	377	328 (87)	113	102 (90.3)
Grastanganj	262	234 (89.3)	103	103 (100)
Harsinghpur	250	226 (90.4)	105	103 (98.1)
Kambhichaur	471	429 (91.1)	108	106 (98.1)
Kanda	136	116 (85.3)	102	102 (100)
Kesta	153	138 (90.2)	104	101 (97.1)
Lalpani Palli	534	399 (74.7)	117	111 (94.9)
Lokmanipur	250	222 (88.8)	104	102 (98.1)
Padampur	358	317 (88.5)	104	101 (97.1)
Sanel	361	303 (83.9)	119	111 (93.3)
Saund	154	129 (83.8)	103	102 (99)
Sileth	182	158 (86.8)	103	102 (99)
Sitabpur	340	303 (89.1)	109	102 (93.6)
Ward No. 00021	338	262 (77.5)	110	104 (94.5)
Ward No. 00022	326	263 (80.7)	111	105 (94.6)
Ward No. 0003	400	361 (90.3)	105	101 (96.2)
Ward No. 00051	246	224 (91.1)	104	101 (97.1)
Ward No. 00052	223	173 (77.6)	113	103 (91.2)
Ward No. 00053	223	179 (80.3)	117	105 (89.7)
Total	**5745**	**4901 (85.3)**	**2,157**	**2068 (95.9)**

4.2.1 Trichiasis Load

Total 4 cases of trichiasis were identified, out of which 2 had corneal opacity. 17out of 20 clusters did not have a single case of trichiasis. The overall age-sex standardized prevalence of Trichiasis was1.03 per 1000 population in 15+ age group.

Table 26: Crude and Age-Sex Standardized Prevalence of Trachomatous Trichiasis (TT) and Trachomatous Corneal Opacity (CO) among population aged 15+ years in Pauri Garhwal, Uttarakhand

Cluster Name	Examined	Trichiasis (per 1000)	TT with CO (per 1000)	Total (per 1000)
Bhanwansi	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Bhimsinghpur	2 (6.1)	2 (6.1)	0 (0.0)	2 (6.1)
Grastanganj	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Harsinghpur	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Kambhichaur	1 (2.3)	1 (2.3)	0 (0.0)	1 (2.3)
Kanda	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Kesta	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Lalpani Palli	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Lokmanipur	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Padampur	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Sanel	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Saund	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Sileth	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Sitabpur	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Ward No.21	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Ward No.22	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Ward No.3	0 (0.0)	0 (0.0)	1 (2.8)	1 (2.8)
Ward No.51	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Ward No.52	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Ward No.53	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	**3 (0.6)**	**3 (0.6)**	**1 (0.2)**	**4 (0.8)**
Age-sex Standradized TT Prevalence per 1000 persons aged 15+ years			**4 (1.03)**	

4.2.2 Active Infection

Out of 2068 children (1-9years) examined, 11.4% had unclean faces and 0.15% had active infection. However, all the cases of active infection had trachomatous folliculitis and not a single case of trachomatous inflammation was seen. Only two clusters (Kesta and Sileth) had active infection.

Table 27: Presence of Active Trachoma in Pauri Garhwal, Uttarakhand among population aged 1-9 years

Cluster Name	Examined	Unclean face (%)	Active infection		TF+TI %
			TF (%)	TI (%)	
Bhanwansi	101	14 (13.9)	0 (0)	0 (0)	0 (0)
Bhimsinghpur	102	65 (63.7)	0 (0)	0 (0)	0 (0)
Grastanganj	103	8 (7.8)	0 (0)	0 (0)	0 (0)
Harsinghpur	103	1 (1.0)	0 (0)	0 (0)	0 (0)
Kambhichaur	106	7 (6.6)	0 (0)	0 (0)	0 (0)
Kanda	102	5 (4.9)	0 (0)	0 (0)	0 (0)
Kesta	101	5 (5.0)	1 (1)	0 (0)	1 (1)
Lalpani Palli	111	12 (10.8)	0 (0)	0 (0)	0 (0)
Lokmanipur	102	6 (5.9)	0 (0)	0 (0)	0 (0)
Padampur	101	0 (0.0)	0 (0)	0 (0)	0 (0)
Sanel	111	29 (26.1)	0 (0)	0 (0)	0 (0)
Saund	102	19 (18.6)	0 (0)	0 (0)	0 (0)
Sileth	102	18 (17.6)	2 (2)	0 (0)	2 (2)
Sitabpur	102	3 (2.9)	0 (0)	0 (0)	0 (0)
Ward No.21	104	7 (6.7)	0 (0)	0 (0)	0 (0)
Ward No.22	105	8 (7.6)	0 (0)	0 (0)	0 (0)
Ward No.3	101	1 (1.0)	0 (0)	0 (0)	0 (0)
Ward No.51	101	4 (4.0)	0 (0)	0 (0)	0 (0)
Ward No.52	103	5 (4.9)	0 (0)	0 (0)	0 (0)
Ward No.53	105	19 (18.1)	0 (0)	0 (0)	0 (0)
Total	**2,068**	**236(11.4)**	**3 (0.15)**	**0 (0)**	**3 (0.15)**

4.2.3 Environmental factors

Out of the 1700 household observed, 2.65% did not had a water source within half an hour walking distance. However, 14 out of 20 clusters had a water source nearby. In 40% households, animal pens were situated within 20 metres distance except in Sitabpur cluster. Nearly 17% households did not have a functional latrine. Although in 6 clusters all the household had functional latrine. These 6 clusters were Padampur, Sitabpur, Ward No. 00022, 0003, 00051 and 00052.

Table 28: Environmental risk Factors for Trachoma in Pauri Garhwal, Uttarakhand

Name of Cluster	Total	Water Source unavailable within half an hour walking distance n(%)	Solid waste/animal pen present within 20 meters n(%)	Functional latrine absent n(%)
Bhanwansi	57	11 (19.3)	34 (59.65)	29 (50.88)
Bhimsinghpur	110	0 (0.00)	72 (65.45)	41 (37.27)
Grastanganj	72	1 (1.39)	37 (51.39)	2 (2.78)
Harsinghpur	82	0 (0.00)	14 (17.07)	1 (1.22)
Kambhichaur	144	3 (2.08)	56 (38.89)	7 (4.86)
Kanda	46	0 (0.00)	29 (63.04)	28 (60.87)
Kesta	57	13 (22.81)	53 (92.98)	51 (89.47)
Lalpani Palli	152	0 (0.00)	109 (71.71)	13 (8.55)
Lokmanipur	71	0 (0.00)	24 (33.80)	24 (33.80)
Padampur	123	0 (0.00)	4 (3.25)	0 (0.00)
Sanel	103	0 (0.00)	81 (78.64)	9 (8.74)
Saund	46	9 (19.57)	25 (54.35)	27 (58.7)
Sileth	62	0 (0.00)	45 (72.58)	44 (70.97)
Sitabpur	100	0 (0.00)	0 (0.00)	0 (0.00)
Ward No.21	102	0 (0.00)	24 (23.53)	5 (4.9)
Ward No.22	90	0 (0.00)	23 (25.56)	0 (0.00)
Ward No.3	115	0 (0.00)	6 (5.22)	0 (0.00)
Ward No.51	60	8 (13.33)	7 (11.67)	0 (0.00)
Ward No.52	44	0 (0.00)	13 (29.55)	0 (0.00)
Ward No.53	64	0 (0.00)	18 (28.13)	2 (3.13)
Total	**1,700**	**45 (2.65)**	**674 (39.65)**	**283 (16.65)**

4.2.4 Access to treatment facilities

In 7 out of 20 clusters, it would take more than 30 min to reach the PHC by public transport. Out of which in 3 clusters it might even take more than 2 hours. Trichiasis Surgical facility was more than 2 hours away by public transport for all clusters except Kanda (<30 min) and Kesta (30 min to 2 Hrs). To reach the village pharmacy people had to walk for more than 2 Hrs in Harsinghpur, Kanda and Saund. It took 30 min to 2 Hrs for people living in Kesta and Lokmanipur. Market was within 30 min walk for all clusters except 2. Schools were at a distance of <30 minutes walk for all clusters.

Table 29: Distance of Villages of Pauri Garhwal, Uttarakhand from various facilities

Village/Ward in PauriGarhwal	Distance to Facility				
	By public transport		Walking time		
	Primary Health Care	Trichiasis Surg. Facility	Village Pharmacy	Market	School
	<30min=1; 30min-2hr=2; >2hr=3				
Bhanwansi	1	3	1	1	1
Bhimsinghpur	2	3	1	1	1
Grastanganj	1	3	1	1	1
Harsinghpur	3	3	3	1	1
Kambhichaur	1	3	1	1	1
Kanda	1	1	3	1	1
Kesta	3	2	2	2	1
Lalpani Palli	1	3	1	1	1
Lokmanipur	2	3	2	2	1
Padampur	1	3	1	1	1
Sanel	2	3	1	1	1
Saund	3	3	3	1	1
Sileth	2	3	1	1	1
Sitabpur	1	3	1	1	1
Ward No. 00021	1	3	1	1	1
Ward No. 00022	1	3	1	1	1
Ward No. 0003	1	3	1	1	1
Ward No. 00051	1	3	1	1	1
Ward No. 00052	1	3	1	1	1
Ward No. 00053	1	3	1	1	1

4.3 Haryana

Figure 5: District Mewat & Mahendergarh, Haryana

On random selection of previously hyperendemic districts, two districts from Haryana, Mewar and Mahendragarh, were selected.

Twenty clusters were identified from each of the two districts. The numbers enumerated in age groups 1-9 years and 15+ years in Mahendrgarh district were 2185 and 6384 respectively. In 1-9 years age group 96.9% and in 15+ years age group 85.0% individuals were examined.

Whereas in Mewat district, numbers enumerated in age groups 1-9 years and 15+ years in mahendrgarh district were 2240 and 4748 respectively. In 1-9 years age group 94.3% and in 15+ years age group 89.5% individuals were examined.

Table 30: Age-wise distribution of enumerated and examined population of Haryana

Cluster name	Enumerated 15+ years	Examined (%)	Enumerated 1-9 years	Examined (%)
District Mahendragarh				
Bassai	243	212 (87.2)	100	99 (99)
Budin	337	284 (84.3)	105	103 (98.1)
Deroli jat	351	287 (81.8)	106	103 (97.2)
Dhanunda	286	251 (87.8)	104	101 (97.1)
Gudha	248	227 (91.5)	110	106 (96.4)
Jant	320	263 (82.2)	130	126 (96.9)
Jhook	404	354 (87.6)	109	104 (95.4)
Khairana	264	207 (78.4)	103	101 (98.1)

Khera	322	254 (78.9)	109	104 (95.4)
Mahendragarh (u)ward 2	358	262 (73.2)	104	104 (100)
Mahendragarh (u) ward 7	288	257 (89.2)	110	108 (98.2)
Majra kalan	385	342 (88.8)	102	101 (99)
Mundia khera	308	277 (89.9)	107	103 (96.3)
Nangal	414	327 (79)	104	102 (98.1)
Pali	355	302 (85.1)	115	111 (96.5)
Palri	260	250 (96.2)	109	107 (98.2)
Patharwa	291	249 (85.6)	105	102 (97.1)
Satnali	329	261 (79.3)	127	119 (93.7)
Sihor	273	246 (90.1)	122	114 (93.4)
Unhani	348	315 (90.5)	104	101 (97.1)
Total	**6384**	**5427 (85.0)**	**2185**	**2119 (96.9)**
District Mewat				
Bissar akbarpur (2)	346	305 (88.2)	112	109 (97.3)
Chehalka (17)	160	139 (86.9)	114	107 (93.9)
Chharora (62)	168	151 (89.9)	110	107 (97.3)
Chilla (67)	156	144 (92.3)	107	101 (94.4)
Dalawas (77)	147	138 (93.9)	108	101 (93.5)
Dhulawat (81)	163	146 (89.6)	109	107 (98.2)
Didhara (44)	196	177 (90.3)	115	110 (95.7)
Guddhi (29)	171	149 (87.1)	121	120 (99.2)
Hassanpur taoru (7)-1	429	400 (93.2)	107	103 (96.3)
Hassanpur taoru (7)-2	306	273 (89.2)	104	102 (98.1)
Kangarka (47)	226	171 (75.7)	121	110 (90.9)
Kota khandewla (1)	333	299 (89.8)	124	108 (87.1)
Mohmmadpur ahir (13)	310	291 (93.9)	106	103 (97.2)
Mundarka (56)	219	190 (86.8)	122	103 (84.4)
Sehsaula (83)-1	162	128 (79)	116	103 (88.8)
Sehsaula (83)-2	199	178 (89.4)	114	103 (90.4)
Sehsaula (83)-3	155	140 (90.3)	109	105 (96.3)
Taoru (u) ward no.-1	187	179 (95.7)	105	102 (97.1)
Taoru (u) ward no.-2	368	327 (88.9)	111	107 (96.4)
Taoru (u) ward no.-3	347	327 (94.2)	105	102 (97.1)
Total	**4748**	**4252 (89.5)**	**2,240**	**2113 (94.3)**
Haryana (Both district)	**11132**	**9679 (86.9)**	**4,425**	**4232 (95.6)**

4.3.1 Trichiasis Load

Total 8 cases of trichiasis were identified in district Mahendragarh and 5 cases in Mewat, out of which 6 and 3 had corneal opacity respectively. A total of 13clusters in Mahendragarh and 15 in Mewat did not have a single case of trichiasis out of 20 clusters covered in each district. The overall age-sex standardized prevalence of trichiasis was1.34 and 1.15 per 1000 population respectively among population aged 15+ years.

Table 31: Prevalence of Trachomatous Trichiasis (TT) and Trachomatous Corneal Opacity (CO) among population aged 15+ years in district Mahendragarh and district Mewat, Haryana

Cluster name	Examined (%)	Trichiasis (per 1000)	TT with CO (per 1000)	Total (per 1000)
District Mahendragarh				
Bassai	212	0 (0.0)	1 (4.7)	1 (4.7)
Budin	284	0 (0.0)	0 (0.0)	0 (0.0)
Deroli jat	287	0 (0.0)	0 (0.0)	0 (0.0)
Dhanunda	251	0 (0.0)	0 (0.0)	0 (0.0)
Gudha	227	0 (0.0)	0 (0.0)	0 (0.0)
Jant	263	1 (3.8)	0 (0.0)	1 (3.8)
Jhook	354	0 (0.0)	0 (0.0)	0 (0.0)
Khairana	207	0 (0.0)	0 (0.0)	0 (0.0)
Khera	254	0 (0.0)	1 (3.9)	1 (3.9)
Mahendragarh (u)ward 2	262	0 (0.0)	0 (0.0)	0 (0.0)
Mahendragarh (u) ward 7	257	0 (0.0)	0 (0.0)	0 (0.0)
Majra kalan	342	0 (0.0)	0 (0.0)	0 (0.0)
Mundia khera	277	0 (0.0)	1 (3.6)	1 (3.6)
Nangal	327	0 (0.0)	0 (0.0)	0 (0.0)
Pali	302	0 (0.0)	1 (3.3)	1 (3.3)
Palri	250	0 (0.0)	0 (0.0)	0 (0.0)
Patharwa	249	0 (0.0)	0 (0.0)	0 (0.0)
Satnali	261	0 (0.0)	2 (7.7)	2 (7.7)
Sihor	246	0 (0.0)	0 (0.0)	0 (0.0)
Unhani	315	1 (3.2)	0 (0.0)	1 (3.2)
Total	**5427**	**2 (0.4)**	**6 (1.1)**	**8 (1.5)**
Age-sex Standradized Prevalence per 1000 persons aged 15+ years				**8 (1.34)**
District Mewat				
Bissar akbarpur (2)	305	0 (0)	0 (0)	0 (0)
Chehalka (17)	139	1 (7.2)	0 (0)	1 (7.2)
Chharora (62)	151	0 (0)	1 (6.6)	1 (6.6)

Chilla (67)	144	0 (0)	0 (0)	0 (0)
Dalawas (77)	138	0 (0)	0 (0)	0 (0)
Dhulawat (81)	146	0 (0)	0 (0)	0 (0)
Didhara (44)	177	0 (0)	0 (0)	0 (0)
Guddhi (29)	149	0 (0)	0 (0)	0 (0)
Hassanpur taoru (7)-1	400	0 (0)	0 (0)	0 (0)
Hassanpur taoru (7)-2	273	0 (0)	0 (0)	0 (0)
Kangarka (47)	171	0 (0)	0 (0)	0 (0)
Kota khandewla (1)	299	0 (0)	0 (0)	0 (0)
Mohmmadpur ahir (13)	291	1 (3.4)	0 (0)	1 (3.4)
Mundarka (56)	190	0 (0)	0 (0)	0 (0)
Sehsaula (83)-1	128	0 (0)	1 (7.8)	1 (7.8)
Sehsaula (83)-2	178	0 (0)	1 (5.6)	1 (5.6)
Sehsaula (83)-3	140	0 (0)	0 (0)	0 (0)
Taoru (u) ward no.-1	179	0 (0)	0 (0)	0 (0)
Taoru (u) ward no.-2	327	0 (0)	0 (0)	0 (0)
Taoru (u) ward no.-3	327	0 (0)	0 (0)	0 (0)
Total	**4252**	**2 (0.5)**	**3 (0.7)**	**5 (1.2)**
Age-sex Standradized Prevalence per 1000 persons aged 15+ years				**5 (1.15)**

4.3.2 Active Infection

In Mahendragarh, out of 2119 children (1-9 years) examined, 10.4% had unclean faces and 0.09% had active infection. However not a single case of trachomatous inflammation was seen. Only two clusters (Gudha and Unhani) had active infection.

However, in Mewat, the prevalence of unclean face was higher (39.83%) among the children examined and 1.18% of children had active infection. 11 out of 20 clusters had active infection.

Table 32: Presence of Active Trachoma in Haryana among population aged 1-9 years

Cluster name	Examined	Unclean Face (%)	Active Infection		TF+TI (%)
			TF %	TI %	
District Mahendragarh					
Bassai	99	24 (24.2)	0 (0)	0 (0)	0 (0)
Budin	103	7 (6.8)	0 (0)	0 (0)	0 (0)
Deroli jat	103	19 (18.4)	0 (0)	0 (0)	0 (0)
Dhanunda	101	26 (25.7)	0 (0)	0 (0)	0 (0)
Gudha	106	5 (4.7)	1 (0.9)	0 (0)	1 (0.9)
Jant	126	20 (15.9)	0 (0)	0 (0)	0 (0)

Jhook	104	2 (1.9)	0 (0)	0 (0)	0 (0)
Khairana	101	15 (14.9)	0 (0)	0 (0)	0 (0)
Khera	104	7 (6.7)	0 (0)	0 (0)	0 (0)
Mahendragarh (Mc) Ward No-0002	104	8 (7.7)	0 (0)	0 (0)	0 (0)
Mahendragarh (Mc) Ward No-0007	108	8 (7.4)	0 (0)	0 (0)	0 (0)
Majra Kalan	101	6 (5.9)	0 (0)	0 (0)	0 (0)
Mundia Khera	103	5 (4.9)	0 (0)	0 (0)	0 (0)
Nangal	102	13 (12.7)	0 (0)	0 (0)	0 (0)
Pali	111	11 (9.9)	0 (0)	0 (0)	0 (0)
Palri	107	3 (2.8)	0 (0)	0 (0)	0 (0)
Patharwa	102	7 (6.9)	0 (0)	0 (0)	0 (0)
Satnali	119	16 (13.4)	0 (0)	0 (0)	0 (0)
Sihor	114	3 (2.6)	0 (0)	0 (0)	0 (0)
Unhani	101	16 (15.8)	1 (1)	0 (0)	1 (1)
Total	**2,119**	**221 (10.43)**	**2 (0.09)**	**0 (0.00)**	**2 (0.09)**
District Mewat					
Bissar akbarpur (2)	109	25 (22.94)	1 (0.92)	0 (0.00)	1 (0.92)
Chehalka (17)	107	60 (56.07)	2 (1.87)	0 (0.00)	2 (1.87)
Chharora (62)	107	39 (36.45)	0 (0.00)	0 (0.00)	0 (0.00)
Chilla (67)	101	89 (88.12)	9 (8.91)	0 (0.00)	9 (8.91)
Dalawas (77)	101	52 (51.49)	0 (0.00)	0 (0.00)	0 (0.00)
Dhulawat (81)	107	91 (85.05)	3 (2.80)	0 (0.00)	3 (2.80)
Didhara (44)	110	84 (76.36)	2 (1.82)	0 (0.00)	2 (1.82)
Guddhi (29)	120	24 (20)	1 (0.83)	0 (0.00)	1 (0.83)
Hassanpur taoru (7)-1	103	8 (7.77)	1 (0.97)	0 (0.00)	1 (0.97)
Hassanpur taoru (7)-2	102	10 (9.8)	0 (0.00)	0 (0.00)	0 (0.00)
Kangarka (47)	110	53 (48.18)	0 (0.00)	0 (0.00)	0 (0.00)
Kota khandewla (1)	108	24 (22.22)	0 (0.00)	0 (0.00)	0 (0.00)
Mohmmadpur ahir (13)	103	9 (8.74)	0 (0.00)	0 (0.00)	0 (0.00)
Mundarka (56)	103	22 (21.36)	2 (1.94)	0 (0.00)	2 (1.94)
Sehsaula (83)-i	103	57 (55.34)	2 (1.94)	0 (0.00)	2 (1.94)
Sehsaula (83)-ii	103	84 (81.55)	1 (0.97)	0 (0.00)	1 (0.97)
Sehsaula (83)-iii	105	81 (77.14)	1 (0.95)	0 (0.00)	1 (0.95)
Taoru (u) ward no.-1	102	17 (16.67)	0 (0.00)	0 (0.00)	0 (0.00)
Taoru (u) ward no.-2	107	6 (5.61)	0 (0.00)	0 (0.00)	0 (0.00)
Taoru (u) ward no.-3	102	6 (5.88)	0 (0.00)	0 (0.00)	0 (0.00)
Total	**2,113**	**841 (39.8)**	**25 (1.18)**	**0 (0.00)**	**25 (1.18)**
Haryana (Both districts)	**4232**	**1062 (25.1)**	**27 (0.64)**	**0 (0.00)**	**27 (0.64)**

4.3.3 Environmental factors

Out of the 1624 households observed in Mahendragarh district, 0.25% did not have a water source within half an hour walking distance. However, 16 out of 20 clusters had a water source nearby. In nearly 67% households, animal pens were situated within 20 metres distance. About 28.6% households did not have a functional latrine. Situation was worse in Mewat 10.5% people did not have a water source with in half an hour walking distance and nearly half of the households did not have a functional latrine.

Table 33: Environmental risk Factors for Trachomain Mahendragarh and Mewat districts, Haryana

Name of Cluster	Total	Water Source unavailable within half an hour walking distance n(%)	Solid waste/animal pen present within 20 meters n(%)	Functional latrine absent n(%)
District Mahendragarh				
Bassai	68	0 (0.00)	40 (58.82)	38 (55.88)
Budin	78	0 (0.00)	61 (78.21)	23 (29.49)
Deroli jat	87	1 (1.15)	54 (62.07)	51 (58.62)
Dhanunda	78	0 (0.00)	44 (56.41)	29 (37.18)
Gudha	65	0 (0.00)	58 (89.23)	20 (30.77)
Jant	68	0 (0.00)	56 (82.35)	19 (27.94)
Jhook	103	0 (0.00)	77 (74.76)	11 (10.68)
Khairana	67	1 (1.49)	53 (79.1)	31 (46.27)
Khera	75	0 (0.00)	61 (81.33)	11 (14.67)
Mahendragarh (u) W-0002	101	0 (0.00)	11 (10.89)	1 (0.99)
Mahendragarh (u) W-0007	74	1 (1.35)	17 (22.97)	4 (5.41)
Majra kalan	95	1 (1.05)	55 (57.89)	20 (21.05)
Mundia khera	76	0 (0.00)	48 (63.16)	13 (17.11)
Nangal	110	0 (0.00)	66 (60.00)	55 (50.00)
Pali	95	0 (0.00)	88 (92.63)	42 (44.21)
Palri	65	0 (0.00)	47 (72.31)	11 (16.92)
Patharwa	79	0 (0.00)	69 (87.34)	17 (21.52)
Satnali	85	0 (0.00)	82 (96.47)	28 (32.94)
Sihor	70	0 (0.00)	53 (75.71)	10 (14.29)
Unhani	85	0 (0.00)	57 (67.06)	31 (36.47)
Total	**1,624**	**4 (0.25)**	**1097 (67.55)**	**465 (28.63)**

District Mewat				
Bissar akbarpur (2)	79	0 (0.00)	66 (83.54)	47 (59.49)
Chehalka (17)	47	1 (2.13)	41 (87.23)	44 (93.62)
Chharora (62)	46	2 (4.35)	40 (86.96)	33 (71.74)
Chilla (67)	40	19 (47.50)	22 (55.00)	35 (87.50)
Dalawas (77)	48	0 (0.00)	29 (60.42)	16 (33.33)
Dhulawat (81)	38	17 (44.74)	38 (100.00)	30 (78.95)
Didhara (44)	50	2 (4.00)	38 (76.00)	24 (48.00)
Guddhi (29)	36	0 (0.00)	32 (88.89)	20 (55.56)
Hassanpur taoru (7)-I	103	20 (19.42)	48 (46.60)	21 (20.39)
Hassanpur taoru (7)-ii	79	0 (0.00)	51 (64.56)	34 (43.04)
Kangarka (47)	54	9 (16.67)	34 (62.96)	39 (72.22)
Kota khandewla (1)	74	3 (4.05)	67 (90.54)	39 (52.70)
Mohmmadpur ahir (13)	86	6 (6.98)	35 (40.70)	30 (34.88)
Mundarka (56)	61	0 (0.00)	45 (73.77)	38 (62.30)
Sehsaula (83)-i	32	11 (34.38)	24 (75.00)	22 (68.75)
Sehsaula (83)-ii	47	11 (23.4)	43 (91.49)	27 (57.45)
Sehsaula (83)-iii	46	11 (23.91)	33 (71.74)	36 (78.26)
Taoru (u) ward no.-0001	55	7 (12.73)	26 (47.27)	13 (23.64)
Taoru (u) ward no.-0002	94	8 (8.51)	29 (30.85)	14 (14.89)
Taoru (u) ward no.-0003	87	0 (0.00)	10 (11.49)	17 (19.54)
Total	**1,202**	**127 (10.57)**	**751 (62.48)**	**579 (48.17)**
Haryana (Both districts)	**2826**	**131 (4.64)**	**1848 (65.39)**	**1044 (36.94)**

4.3.4 Access to treatment facilities

In 17 out of 20 clusters of Mahendragarh, it would take less than 30 min to reach the PHC by public transport. Trichiasis surgical facility was lesser than 30 minutes away by public transport in 15 out of 20 clusters. It would take lesser than 30 min to walk to reach the village pharmacy and market, except in Bassai where it would take a little longer. In order to reach the school they had to walk for less than 30 minutes.

Table 34: Distance of villages of Mahendragarh, Haryana from various facilities

Mahendergarh Village/Ward	Distance to Facility				
	By public transport		Walking time		
	Primary Health Care	Trichiasis Surg. Facility	Village Pharmacy	Market	School
	<30min=1; 30min-2hr=2; >2hr=3				
Bassai	1	2	2	2	1
Budin	1	1	1	1	1
Deroli jat	1	1	1	1	1
Dhanunda	1	1	1	1	1
Gudha	1	1	1	1	1
Jant	1	1	1	1	1
Jhook	1	1	1	1	1
Khairana	1	1	1	1	1
Khera	1	1	1	1	1
Mahendragarh (mc)ward no-0002	1	1	1	1	1
Mahendragarh (mc)ward no-0007	1	1	1	1	1
Majra kalan	1	1	1	1	1
Mundia khera	1	1	1	1	1
Nangal	1	1	1	1	1
Pali	2	2	1	1	1
Palri	1	1	1	1	1
Patharwa	2	2	1	1	1
Satnali	2	2	1	1	1
Sihor	1	2	1	1	1
Unhani	1	1	1	1	1

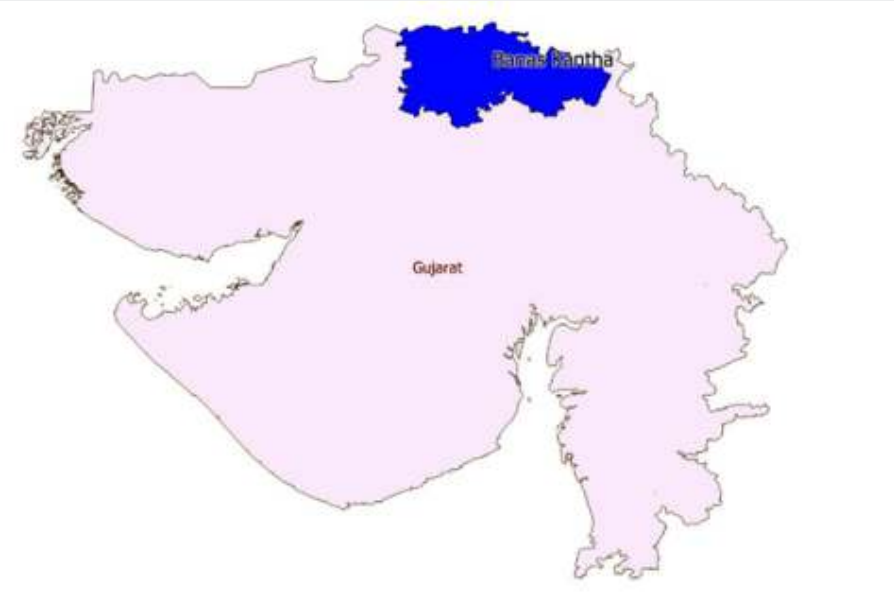
In 14 out of 20 clusters of Mewat, it would take less than 30 min to reach the PHC by public transport. In 15 out of 20 clusters, it would take 30 min to 2 hrs to reach the Trichiasis surgical facility. It would take less than 30 min to walk to reach the village pharmacy and market in 12 out of 19 clusters. In rest, it would take a little longer. In order to reach the school they had to walk for less than 30 minutes.

Table 35: Distance of villages of Mewat, Haryana from various facilities

Village/Ward	Distance to Facility				
	By public transport		Walking time		
	Primary Health Care	Trichiasis Surg. Facility	Village Pharmacy	Market	School
	<30min=1; 30min-2hr=2; >2hr=3				
Bissar Akbarpur (2)	2	2	2	2	1
Chehalka (17)	2	2	2	2	1
Chharora (62)	2	2	2	2	1
Chilla (67)	2	2	2	2	1
Dhulawat (81)	1	2	1	1	1
Didhara (44)	1	2	1	1	1
Guddhi (29)	1	1	1	1	1
Hassanpur Taoru (7)-I	1	2	2	2	1
Hassanpur Taoru (7)-II	1	2	2	2	1
Kangarka (47)	1	2	1	1	1
Kota Khandewla (1)	2	2	2	2	1
Mohmmadpur Ahir (13)	1	2	1	1	1
Mundarka (56)	1	2	1	1	1
Sehsaula (83)-I	1	2	1	1	1
Sehsaula (83)-II	1	2	1	1	1
Sehsaula (83)-III	1	2	1	1	1
Taoru (MC) WARD NO.-0001	1	1	1	1	1
Taoru (MC) WARD NO.-0002	1	1	1	1	1
Taoru (MC) WARD NO.-0003	1	1	1	1	1
					1

4.4 Gujarat

Figure 6: District Covered in Gujarat



In district Banaskantha, the numbers enumerated in age groups 1-9 years and 15+ years were 2186 and 5173 respectively. In 1-9 years age group 94.1% and in 15+ years age group 85.0% individuals were examined.

Table 36: Age-wise distribution of enumerated and examined population of Banaskantha, Gujarat

Cluster name	Enumerated 15+ years	Examined (%)	Enumerated 1-9 years	Examined (%)
Badargadh	235	194 (82.6)	109	103 (94.5)
Bhagal	247	198 (80.2)	117	91 (77.8)
Bhatamal Moti	250	219 (87.6)	106	103 (97.2)
Chandi Sar	252	197 (78.2)	114	104 (91.2)
Kanodan-Ii Thakur Mohalla	192	162 (84.4)	106	102 (96.2)
Kanodar-I	276	231 (83.7)	107	102 (95.3)
Khasa	265	225 (84.9)	108	102 (94.4)
Lala Wada	295	256 (86.8)	117	109 (93.2)
Laxmi Pura Ward No-15	244	216 (88.5)	108	103 (95.4)
Madana	267	208 (77.9)	106	103 (97.2)
Patosan	212	179 (84.4)	106	104 (98.1)
Sasam	258	228 (88.4)	105	103 (98.1)
Takar Wada-I	271	230 (84.9)	111	104 (93.7)
Takar Wada-Ii	252	205 (81.3)	110	107 (97.3)

Tokariya	245	215 (87.8)	114	105 (92.1)
Vagada	299	282 (94.3)	112	101 (90.2)
Vasan	217	185 (85.3)	107	102 (95.3)
Ward No 6 Golamnaz Mohalla	294	244 (83)	111	106 (95.5)
Ward No 7 Delhi Gate	336	287 (85.4)	103	101 (98.1)
Ward No 8 Dundiya Wadi	266	236 (88.7)	109	103 (94.5)
TOTAL	**5173**	**4397 (85.0)**	**2,186**	**2058 (94.1)**

4.4.1 Trichiasis Load

Total 5 cases of trichiasis were identified, out of which 2 had corneal opacity. 17out of 20 clusters did not have a single case of trichiasis. The overall age-sex standardized prevalence of Trichiasis was 1.05%.

Table 37: Prevalence of Trachomatous Trichiasis (TT) and Trachomatous Corneal Opacity (CO) among population aged 15+ years in Banaskantha, Gujarat

Cluster name	Examined (%)	Trichiasis (per 1000)	TT with CO (per 1000)	Total (per 1000)
Badargadh	194	0 (0.0)	0 (0.0)	0 (0.0)
Bhagal	198	0 (0.0)	0 (0.0)	0 (0.0)
Bhatamal Moti	219	0 (0.0)	0 (0.0)	0 (0.0)
Chandi Sar	197	0 (0.0)	0 (0.0)	0 (0.0)
Kanodan-Ii Thakur Mohalla	162	0 (0.0)	0 (0.0)	0 (0.0)
Kanodar-I	231	0 (0.0)	0 (0.0)	0 (0.0)
Khasa	225	0 (0.0)	0 (0.0)	0 (0.0)
Lala Wada	256	0 (0.0)	0 (0.0)	0 (0.0)
Laxmi Pura Ward No-15	216	0 (0.0)	0 (0.0)	0 (0.0)
Madana	208	0 (0.0)	0 (0.0)	0 (0.0)
Patosan	179	0 (0.0)	0 (0.0)	0 (0.0)
Sasam	228	2 (8.8)	1 (4.4)	3 (13.2)
Takar Wada-I	230	0 (0.0)	0 (0.0)	0 (0.0)
Takar Wada-Ii	205	0 (0.0)	1 (4.9)	1 (4.9)
Tokariya	215	0 (0.0)	0 (0.0)	0 (0.0)
Vagada	282	0 (0.0)	0 (0.0)	0 (0.0)
Vasan	185	0 (0.0)	0 (0.0)	0 (0.0)
Ward No 6 Golamnaz Mohalla	244	1 (4.1)	0 (0.0)	1 (4.1)
Ward No 7 Delhi Gate	287	0 (0.0)	0 (0.0)	0 (0.0)
Ward No 8 Dundiya Wadi	236	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	**4397**	**3 (0.7)**	**2 (0.5)**	**5 (1.1)**
Age-sex Standradized Prevalence per 1000 persons aged 15+ years				**5 (1.05)**

4.4.2 Active Infection

Out of 2058 children (1-9 yrs.) examined, 5.54% had unclean faces and 0.44% had active infection. However, all the cases of active infection had trachomatous folliculitis and not a single case of trachomatous inflammation was seen. Eight out of 20 clusters had active infection.

Table 38: Presence of Active Trachoma in Banaskantha, Gujaratamong population aged 1-9 years

Cluster name	Examined	Unclean Face (%)	Active Infection		TF+TI (%)
			TF %	TI %	
Badargadh	103	8 (7.8)	0 (0)	0 (0)	0 (0)
Bhagal	91	13 (14.3)	1 (1.1)	0 (0)	1 (1.1)
Bhatamal Moti	103	5 (4.9)	2 (1.9)	0 (0)	2 (1.9)
Chandi Sar	104	6 (5.8)	0 (0)	0 (0)	0 (0)
Kanodan-Ii Thakur Mohalla	102	2 (2)	0 (0)	0 (0)	0 (0)
Kanodar-I	102	1 (1)	0 (0)	0 (0)	0 (0)
Khasa	102	22 (21.6)	0 (0)	0 (0)	0 (0)
Lala Wada	109	2 (1.8)	1 (0.9)	0 (0)	1 (0.9)
Laxmi Pura Ward No-15	103	0 (0)	1 (1)	0 (0)	1 (1)
Madana	103	7 (6.8)	0 (0)	0 (0)	0 (0)
Patosan	104	4 (3.8)	0 (0)	0 (0)	0 (0)
Sasam	103	4 (3.9)	1 (1)	0 (0)	1 (1)
Takar Wada-I	104	2 (1.9)	0 (0)	0 (0)	0 (0)
Takar Wada-Ii	107	1 (0.9)	1 (0.9)	0 (0)	1 (0.9)
Tokariya	105	31 (29.5)	0 (0)	0 (0)	0 (0)
Vagada	101	1 (1)	0 (0)	0 (0)	0 (0)
Vasan	102	3 (2.9)	1 (1)	0 (0)	1 (1)
Ward No 6 Golamnaz Mohalla	106	0 (0)	0 (0)	0 (0)	0 (0)
Ward No 7 Delhi Gate	101	0 (0)	1 (1)	0 (0)	1 (1)
Ward No 8 Dundiya Wadi	103	2 (1.9)	0 (0)	0 (0)	0 (0)
Total	**2058**	**114 (5.54)**	**9 (0.44)**	**0 (0.00)**	**9 (0.44)**

4.4.3 Environmental factors

All the 1465 households had a water source within half an hour walking distance In 32% households animal pens were situated within 20 metres distance. Nearly 43% households did not have a functional latrine. Except in Laxmipur ward no15 cluster where all households had functional latrine.

Table 39: Environmental risk Factors for Trachomain Banaskantha, Gujarat

Name of Cluster	Total	Water Source unavailable within half an hour walking distance n(%)	Solid waste/animal pen present within 20 meters n(%)	Functional latrine absent n(%)
Badargadh	67	0 (0)	39 (58.2)	23 (34.3)
Bhagal	77	0 (0)	27 (35.1)	32 (41.6)
Bhatamal Moti	69	0 (0)	29 (42)	41 (59.4)
Chandi Sar	77	0 (0)	27 (35.1)	30 (39)
Kanodan-Ii Thakur Mohalla	66	0 (0)	0 (0)	21 (31.8)
Kanodar-I	68	0 (0)	3 (4.4)	26 (38.2)
Khasa	72	0 (0)	14 (19.4)	32 (44.4)
Lala Wada	78	0 (0)	44 (56.4)	56 (71.8)
Laxmi Pura Ward No-15	81	0 (0)	19 (23.5)	0 (0)
Madana	70	0 (0)	43 (61.4)	54 (77.1)
Patosan	65	0 (0)	7 (10.8)	48 (73.8)
Sasam	68	0 (0)	19 (27.9)	55 (80.9)
Takar Wada-I	74	0 (0)	34 (45.9)	42 (56.8)
Takar Wada-Ii	80	0 (0)	28 (35)	32 (40)
Tokariya	62	0 (0)	40 (64.5)	52 (83.9)
Vagada	84	0 (0)	32 (38.1)	20 (23.8)
Vasan	63	0 (0)	19 (30.2)	49 (77.8)
Ward No 6 Golamnaz Mohalla	82	0 (0)	12 (14.6)	1 (1.2)
Ward No 7 Delhi Gate	91	0 (0)	7 (7.7)	2 (2.2)
Ward No 8 Dundiya Wadi	71	0 (0)	27 (38)	17 (23.9)
TOTAL	**1465**	**0 (0.00)**	**470 (32.08)**	**633 (43.21)**

4.4.4 Access to treatment facilities

Table 40: Distance of villages of Banaskantha, Gujarat from various facilities

Mahendergarh Village/Ward	Distance to Facility				
	By public transport		Walking time		
	Primary Health Care	Trichiasis Surg. Facility	Village Pharmacy	Market	School
	<30min=1; 30min-2hr=2; >2hr=3				
Badargadh	2	2	2	1	1
Bhagal	1	1	1	1	1
Bhatamal Moti	2	2	2	1	1
Chandi Sar	1	1	1	1	1
KANODAN-II THAKUR MOHALLA	1	1	1	1	1
Kanodar-I	1	1	1	1	1
Khasa	1	1	1	1	1
LALA WADA	2	2	1	1	1
Laxmi Pura Ward No-15	1	1	1	1	1
Madana	1	1	1	1	1
Patosan	2	2	1	1	1
Sasam	2	2	2	1	1
Takar Wada-I	1	1	1	1	1
Takar Wada-II	1	1	1	1	1
Tokariya	2	2	2	1	1
VASAN	1	1	1	1	1
Vagada	1	1	1	1	1
WARD NO 6 GOLAMNAZ MOHALLA	1	1	1	1	1
WARD NO 7 DELHI GATE	1	1	1	1	1
Ward no 8 Dundiya wadi	1	1	1	1	1

4.5 National Capital Territory of Delhi

Figure 7: District covered in Delhi

Out of the eleven districts of Delhi, East Delhi district was selected for prevalence survey. Twenty clusters were identified from East Delhi. The numbers enumerated in age groups 1-9 years and 15+ years were 2210 and 5212 respectively. In 1-9 years age group 94.6% and in 15+ years age group 85.7% individuals were examined.

Table 41: Age-wise distribution of enumerated and examined population of East Delhi

Cluster name	Enumerated 15+ years	Examined (%)	Enumerated 1-9 years	Examined (%)
Chilla Saroda Bangar(Ct)Ward No.-0212	262	219 (83.6)	117	109 (93.2)
Dallo Pura(Ct)Ward No.-0210	204	172 (84.3)	101	100 (99)
Dallo Pura(Ct)Ward No.-0211	377	313 (83)	112	106 (94.6)
Dmc(U)(Part)Ward No.-0219	235	206 (87.7)	116	108 (93.1)
Dmc(U)(Part)Ward No.-0220	283	236 (83.4)	111	108 (97.3)
Dmc(U)(Part)Ward No.-0221_1	301	281 (93.4)	119	107 (89.9)
Dmc(U)(Part)Ward No.-0221_2	183	149 (81.4)	105	102 (97.1)
Dmc(U)(Part)Ward No.-0221_3	230	210 (91.3)	121	117 (96.7)
Dmc(U)(Part)Ward No.-0221_4	177	148 (83.6)	110	108 (98.2)
Dmc(U)(Part)Ward No.-0221_5	249	214 (85.9)	112	101 (90.2)
Dmc(U)(Part)Ward No.-0223_1	263	238 (90.5)	110	102 (92.7)
Dmc(U)(Part)Ward No.-0223_2	272	244 (89.7)	108	100 (92.6)
Dmc(U)(Part)Ward No.-0223_3	283	224 (79.2)	113	105 (92.9)
Dmc(U)(Part)Ward No.-0231_1	203	160 (78.8)	103	100 (97.1)

Dmc(U)(Part)Ward No.-0231_2	193	165 (85.5)	112	102 (91.1)
Dmc(U)(Part)Ward No.-0231_3	241	206 (85.5)	111	105 (94.6)
Dmc(U)(Part)Ward No.0213_1	324	284 (87.7)	104	102 (98.1)
Dmc(U)(Part)Ward No.0213_2	298	255 (85.6)	104	100 (96.2)
Dmc(U)(Part)Ward No.0213_3	374	323 (86.4)	109	103 (94.5)
Gharonda Neemka Bangar Alias Patnar Ganj(Ct) Ward No.-0220	260	219 (84.2)	112	105 (93.8)
Total	**5212**	**4466 (85.7)**	**2,210**	**2090 (94.6)**

4.5.1 Trichiasis Load

Total 6 cases of trichiasis were identified, out of which one had corneal opacity. Fifteen out of 20 clusters did not have a single case of trichiasis. The overall age-sex standardized prevalence of Trichiasis was 2.14 per 1000 population in 15+ age.

Table 42: Prevalence of Trachomatous Trichiasis (TT) and Trachomatous Corneal Opacity (CO) among population aged 15+ years in East Delhi

Cluster name	Examined (%)	Trichiasis (per 1000)	TT with CO (per 1000)	Total (per 1000)
Chilla Saroda Bangar(Ct)Ward No.-0212	219	0 (0)	0 (0)	0 (0)
Dallo Pura(Ct)Ward No.-0210	172	0 (0)	0 (0)	0 (0)
Dallo Pura(Ct)Ward No.-0211	313	1 (3.2)	0 (0)	1 (3.2)
Dmc(U)(Part)Ward No.-0219	206	0 (0)	1 (4.9)	1 (4.9)
Dmc(U)(Part)Ward No.-0220	236	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0221_1	281	2 (7.1)	0 (0)	2 (7.1)
Dmc(U)(Part)Ward No.-0221_2	149	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0221_3	210	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0221_4	148	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0221_5	214	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0223_1	238	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0223_2	244	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0223_3	224	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0231_1	160	1 (6.3)	0 (0)	1 (6.3)
Dmc(U)(Part)Ward No.-0231_2	165	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0231_3	206	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.0213_1	284	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.0213_2	255	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.0213_3	323	0 (0)	0 (0)	0 (0)
Gharonda Neemka Bangar Alias Patnar Ganj(Ct) Ward No.-0220	219	1 (4.6)	0 (0)	1 (4.6)
Total	**4466**	**5 (1.1)**	**1 (0.2)**	**6 (1.3)**
Age-sex Standradized Prevalence per 1000 persons aged 15+ years				**6 (2.14)**

4.5.2 Active Infection

Out of 2090 children (1-9 yrs.) examined, 9.86% had unclean faces and 0.53% had active infection. However all the cases of active infection had trachomatous folliculitis and not a single case of trachomatous inflammation was seen. Nine out of 20 clusters had active infection.

Table 43: Prevalence of Unclean face and Active Trachoma infection in East Delhi among population aged 1-9 years

Cluster name	Examined	Unclean Face (%)	Active Infection		TF+TI (%)
			TF %	TI %	
Chilla Saroda Bangar(Ct)Ward No.-0212	109	8 (7.3)	1 (0.9)	0 (0)	1 (0.9)
Dallo Pura(Ct)Ward No.-0210	100	23 (23)	1 (1)	0 (0)	1 (1)
Dallo Pura(Ct)Ward No.-0211	106	5 (4.7)	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0219	108	20 (18.5)	2 (1.9)	0 (0)	2 (1.9)
Dmc(U)(Part)Ward No.-0220	108	18 (16.7)	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0221_1	107	14 (13.1)	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0221_2	102	12 (11.8)	1 (1)	0 (0)	1 (1)
Dmc(U)(Part)Ward No.-0221_3	117	8 (6.8)	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0221_4	108	11 (10.2)	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0221_5	101	17 (16.8)	1 (1)	0 (0)	1 (1)
Dmc(U)(Part)Ward No.-0223_1	102	8 (7.8)	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0223_2	100	6 (6)	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0223_3	105	8 (7.6)	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0231_1	100	13 (13)	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.-0231_2	102	8 (7.8)	1 (1)	0 (0)	1 (1)
Dmc(U)(Part)Ward No.-0231_3	105	1 (1)	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.0213_1	102	11 (10.8)	2 (2)	0 (0)	2 (2)
Dmc(U)(Part)Ward No.0213_2	100	7 (7)	0 (0)	0 (0)	0 (0)
Dmc(U)(Part)Ward No.0213_3	103	0 (0)	1 (1)	0 (0)	1 (1)
Gharonda Neemka Bangar Alias Patnar Ganj(Ct) Ward No.-0220	105	8 (7.6)	1 (1)	0 (0)	1 (1)
TOTAL	**2,090**	**206 (9.86)**	**11 (0.53)**	**0 (0.00)**	**11 (0.53)**

4.5.3 Environmental Risk factors

All the 1526 households had a water source within half an hour walking distance. In 15.31% households animal pens were situated within 20 metres distance. Inspite of being the National Capital, nearly one-third households did not have a functional latrine. Except in 6 clusters, where all households had functional latrine.

Table 44: Environmental risk Factors for Trachomain East Delhi

Name of Cluster	Total	Water Source unavailable within half an hour walking distance n(%)	Solid waste/animal pen present within 20 meters n(%)	Functional latrine absent n(%)
Chilla Saroda Bangar(Ct) Ward No.-0212	78	0 (0)	8 (10.3)	0 (0)
Dallo Pura(Ct)Ward No.-0210	77	0 (0)	26 (33.8)	15 (19.5)
Dallo Pura(Ct)Ward No.-0211	90	0 (0)	1 (1.1)	0 (0)
Dmc(U)(Part)Ward No.-0219	68	0 (0)	42 (61.8)	23 (33.8)
Dmc(U)(Part)Ward No.-0220	83	0 (0)	24 (28.9)	73 (88)
Dmc(U)(Part)Ward No.-0221_1	95	0 (0)	48 (50.5)	0 (0)
Dmc(U)(Part)Ward No.-0221_2	60	0 (0)	59 (98.3)	53 (88.3)
Dmc(U)(Part)Ward No.-0221_3	69	0 (0)	49 (71)	7 (10.1)
Dmc(U)(Part)Ward No.-0221_4	61	0 (0)	55 (90.2)	61 (100)
Dmc(U)(Part)Ward No.-0221_5	80	0 (0)	80 (100)	60 (75)
Dmc(U)(Part)Ward No.-0223_1	77	0 (0)	43 (55.8)	72 (93.5)
Dmc(U)(Part)Ward No.-0223_2	87	0 (0)	36 (41.4)	20 (23)
Dmc(U)(Part)Ward No.-0223_3	74	0 (0)	62 (83.8)	10 (13.5)
Dmc(U)(Part)Ward No.-0231_1	73	0 (0)	73 (100)	71 (97.3)
Dmc(U)(Part)Ward No.-0231_2	60	0 (0)	31 (51.7)	0 (0)
Dmc(U)(Part)Ward No.-0231_3	76	0 (0)	9 (11.8)	1 (1.3)
Dmc(U)(Part)Ward No.0213_1	88	0 (0)	63 (71.6)	19 (21.6)
Dmc(U)(Part)Ward No.0213_2	72	0 (0)	22 (30.6)	0 (0)
Dmc(U)(Part)Ward No.0213_3	89	0 (0)	0 (0)	0 (0)
Gharonda Neemka Bangar Alias	69	0 (0)	52 (75.4)	9 (13)
Patnar Ganj(Ct) Ward No.-0220				
TOTAL	**1,526**	**0 (0.00)**	**783 (51.31)**	**494 (32.37)**

4.5.4 Access to treatment facilities

It would take less than 30 min by public transport to reach the PHC as well as Trichiasis Surgical Facility from any of the cluster. The Pharmacy, market and school were 30 minutes walk away from each clusters.

Table 45: Distance of various wards of Delhi from various facilities

Mahendergarh Village/Ward	Distance to Facility				
	By public transport		Walking time		
	Primary Health Care	Trichiasis Surg. Facility	Village Pharmacy	Market	School
	<30min=1; 30min-2hr=2; >2hr=3				
Chilla Saroda Bangar (CT) WARD NO.-0212	1	1	1	1	1
DMC (U) (Part)WARD NO.-0219	1	1	1	1	1
DMC (U) (Part)WARD NO.-0220	1	1	1	1	1
DMC (U) (Part)WARD NO.-0221_1	1	1	1	1	1
DMC (U) (Part)WARD NO.-0221_2	1	1	1	1	1
DMC (U) (Part)WARD NO.-0221_3	1	1	1	1	1
DMC (U) (Part)WARD NO.-0221_4	1	1	1	1	1
DMC (U) (Part)WARD NO.-0221_5	1	1	1	1	1
DMC (U) (Part)WARD NO.-0223_1	1	1	1	1	1
DMC (U) (Part)WARD NO.-0223_2	1	1	1	1	1
DMC (U) (Part)WARD NO.-0223_3	1	1	1	1	1
DMC (U) (Part)WARD NO.-0231_1	1	1	1	1	1
DMC (U) (Part)WARD NO.-0231_2	1	1	1	1	1
DMC (U) (Part)WARD NO.-0231_3	1	1	1	1	1
DMC (U) (Part)WARD NO.0213_1	1	1	1	1	1
DMC (U) (Part)WARD NO.0213_2	1	1	1	1	1
DMC (U) (Part)WARD NO.0213_3	1	1	1	1	1
Dallo Pura (CT)WARD NO.-0210	1	1	1	1	1
Dallo Pura (CT)WARD NO.-0211	1	1	1	1	1
Gharonda Neemka Bangar alias Patnar Ganj	1	1	1	1	1

4.6 Rajasthan

Figure 8: Districts Covered in Rajasthan

On random selection of previously hyperendemic districts, three districts (Bikaner, Tonk and Dholpur) from Rajasthan were selected. Twenty clusters were identified from each district. The numbers enumerated in age groups 1-9 years and 15+ years were 6850 and 17344 respectively. In 1-9 years age group 91.9% and in 15+ years age group 84.5% individuals were examined.

Table 46: Age-wise distribution of enumerated and examined population of Tonk, Dholpur and Bikaner districts in Rajasthan

Cluster name	Enumerated 15+ years	Examined (%)	Enumerated 1-9 years	Examined (%)
District TONK				
Arniya neel	238	199 (83.6)	113	103 (91.2)
Bamor	375	315 (84)	108	100 (92.6)
Bharni	336	292 (86.9)	109	101 (92.7)
Lamba	375	314 (83.7)	112	103 (92.0)
Mahuwa	344	291 (84.6)	114	104 (91.2)
Nimola	392	296 (75.5)	115	103 (89.6)
Tonk (u) ward no. 45	254	223 (87.8)	123	111 (90.2)
Tonk (u)ward no. 3	325	255 (78.5)	113	104 (92.0)
Tonk (u)ward no. 6	423	335 (79.2)	120	100 (83.3)
Tonk (u)ward no. 7	301	248 (82.4)	115	104 (90.4)
Tonk (u)ward no. 21	341	275 (80.6)	112	101 (90.2)
Tonk (u)ward no. 28	271	256 (94.5)	119	103 (86.6)

Tonk (u)ward no. 31	346	292 (84.4)	110	103 (93.6)
Tonk (u)ward no. 37	415	361 (87)	116	102 (87.9)
Tonk (u)ward no. 39	295	234 (79.3)	109	104 (95.4)
Tonk (u)ward no. 41	367	308 (83.9)	107	104 (97.2)
Tonk (u)ward no. 42	355	301 (84.8)	116	106 (91.4)
Tonk (u)ward no. 45	418	345 (82.5)	226	208 (92.0)
Untitana	321	272 (84.7)	110	102 (92.7)
Total	**6492**	**5412 (83.4)**	**2,267**	**2066 (91.1)**
District Dholpur				
Bal govind ka pura	243	203 (83.5)	110	103 (93.6)
Bara gaon	278	229 (82.4)	108	105 (97.2)
Basai samanta	226	196 (86.7)	119	112 (94.1)
Beelpur	274	210 (76.6)	114	102 (89.5)
Bhilgawan	245	213 (86.9)	116	112 (96.6)
Dagarpur	230	193 (83.9)	119	106 (89.1)
Dholpur (m)ward no. 6	166	135 (81.3)	110	105 (95.5)
Dholpur (m)ward no. 16	473	415 (87.7)	115	105 (91.3)
Dholpur (m)ward no. 22	267	240 (89.9)	111	103 (92.8)
Dholpur (m)ward no. 28	306	263 (85.9)	115	104 (90.4)
Dholpur (m)ward no. 38	310	254 (81.9)	115	104 (90.4)
Dheemri	215	197 (91.6)	128	119 (93.0)
Doon ka pura	254	229 (90.2)	115	111 (96.5)
Dubati	321	274 (85.4)	113	102 (90.3)
Garayach	179	162 (90.5)	124	114 (91.9)
Inchhapura	243	206 (84.8)	111	105 (94.6)
Maniyan	230	182 (79.1)	111	102 (91.9)
Moroli ka pura	215	188 (87.4)	116	104 (89.7)
Ondela	223	183 (82.1)	115	109 (94.8)
Virjapura	192	165 (85.9)	108	102 (94.4)
Total	**5090**	**4337 (85.2)**	**2,293**	**2129 (92.8)**
District Bikaner				
Bikaner (m) ward no.1_2	300	264 (88)	120	109 (90.8)

Bikaner (m) ward no.1_3	246	210 (85.4)	119	105 (88.2)
Bikaner (m) ward no.2_1	312	244 (78.2)	116	102 (87.9)
Bikaner (m) ward no.2_2	430	354 (82.3)	121	100 (82.6)
Bikaner (m) ward no.2_3	416	367 (88.2)	121	109 (90.1)
Bikaner (m)ward no.1_1	233	197 (84.5)	119	108 (90.8)
Bikaner basti ka mohalla ward no.13	241	217 (90)	112	108 (96.4)
Bikaner damami ka mohallha ward no.28	297	265 (89.2)	122	112 (91.8)
Bikaner dhobi talayia ward no.34_1	398	324 (81.4)	112	103 (92.0)
Bikaner old patti peda ward no.35	359	283 (78.8)	116	100 (86.2)
Bikaner rampura basti ward no.58	267	222 (83.1)	109	101 (92.7)
Bikaner tailiyo ka mohala ward no.13	321	277 (86.3)	105	100 (95.2)
Bikaner vyepariyo ki basti ward no.11	275	254 (92.4)	117	110 (94.0)
Bikaner (m)ward no.34_2	420	352 (83.8)	116	108 (93.1)
Bikaner (m)ward no.38	234	188 (80.3)	106	100 (94.3)
Bikaner (m)ward no.55	210	177 (84.3)	110	102 (92.7)
Husangsar	169	154 (91.1)	111	104 (93.7)
Kharda	163	149 (91.4)	112	105 (93.8)
Malasar	240	209 (87.1)	109	105 (96.3)
Seenthal	231	207 (89.6)	117	110 (94.0)
Total	**5762**	**4914 (85.3)**	**2,290**	**2101 (91.7)**
Rajasthan total	**17344**	**14663 (84.5)**	**6850**	**6296 (91.9)**

4.6.1 Trichiasis Load

Total 48 cases of trichiasis were identified in Rajasthan, out of which22 were from district Tonk, 18 from Dholpur and 8 from Bikaner. Out of these cases, 28 had corneal opacity. Dholpur alone had 18 cases of Trichiasis with corneal opacity. Among the three districts, Bikaner is the best with 14 out of 20 clusters not having a single case of Trichiasis. In Tonk, 13 out of 19 districts had Trichiasis. In Dholpur 50% of clusters didnot have a single case of Trichiasis. The overall prevalence of trichiasis was Tonk 3.76,Dholpur: 4.45 %, Bikaner: 2.06 per 1000 population in 15+ age group respectively.

Table 47: Crude and Age-Sex Standardized Prevalence of Trachomatous Trichiasis (TT) and Trachomatous Corneal Opacity (CO) among population aged 15+ years in Rajasthan

Cluster name	Examined (%)	Trichiasis (per 1000)	TT with CO (per 1000)	Total (per 1000)
Arniya neel	199	0 (0)	0 (0)	0 (0)
Bamor	315	0 (0)	0 (0)	0 (0)
Bharni	292	1 (3.4)	0 (0)	1 (3.4)
Lamba	314	2 (6.4)	1 (3.2)	3 (9.6)
Mahuwa	291	2 (6.9)	0 (0)	2 (6.9)
Nimola	296	0 (0)	1 (3.4)	1 (3.4)
Tonk (u) ward no. 45	223	0 (0)	0 (0)	0 (0)
Tonk (u)ward no. 3	255	0 (0)	1 (3.9)	1 (3.9)
Tonk (u)ward no. 6	335	0 (0)	0 (0)	0 (0)
Tonk (u)ward no. 7	248	0 (0)	1 (4.0)	1 (4.0)
Tonk (u)ward no. 21	275	1 (3.6)	1 (3.6)	2 (7.3)
Tonk (u)ward no. 28	256	1 (3.9)	0 (0)	1 (3.9)
Tonk (u)ward no. 31	292	1 (3.4)	0 (0)	1 (3.4)
Tonk (u)ward no. 37	361	5 (13.9)	0 (0)	5 (13.9)
Tonk (u)ward no. 39	234	0 (0)	0 (0)	0 (0)
Tonk (u)ward no. 41	308	1 (3.2)	0 (0)	1 (3.2)
Tonk (u)ward no. 42	301	2 (6.6)	0 (0)	2 (6.6)
Tonk (u)ward no. 45	345	0 (0)	0 (0)	0 (0)
Untitana	272	1 (3.7)	0 (0)	1 (3.7)
Total	**5412**	**17 (3.1)**	**5 (0.9)**	**22 (4.1)**
Age-sex Standradized Prevalence per 1000 persons aged 15+ years				
District Dholpur				
Bal govind ka pura	203	1 (4.9)	1 (4.9)	2 (9.9)
Bara gaon	229	0 (0)	1 (4.4)	1 (4.4)
Basai samanta	196	0 (0)	0 (0)	0 (0)
Beelpur	210	2 (9.6)	1 (4.8)	3 (14.3)
Bhilgawan	213	0 (0)	0 (0)	0 (0)
Dagarpur	193	1 (5.2)	0 (0)	1 (5.2)
Dholpur (m)ward no. 6	135	0 (0)	0 (0)	0 (0)
Dholpur (m)ward no. 16	415	0 (0)	1 (2.4)	1 (2.4)
Dholpur (m)ward no. 22	240	0 (0)	0 (0)	0 (0)
Dholpur (m)ward no. 28	263	0 (0)	0 (0)	0 (0)
Dholpur (m)ward no. 38	254	0 (0)	0 (0)	0 (0)
Dheemri	197	0 (0)	0 (0)	0 (0)
Doon ka pura	229	1 (4.4)	2 (8.7)	3 (13.1)

Dubati	274	0 (0)	0 (0)	0 (0)
Garayach	162	0 (0)	0 (0)	1 (6.2)
Inchhapura	206	0 (0)	2 (9.7)	2 (9.7)
Maniyan	182	0 (0)	3 (16.5)	3 (16.5)
Moroli ka pura	188	1 (5.3)	0 (0)	1 (5.3)
Ondela	183	0 (0)	0 (0)	0 (0)
Virjapura	165	0 (0)	0 (0)	0 (0)
Total	**4337**	**7 (1.6)**	**11 (2.5)**	**18 (4.2)**
Age-sex Standradized Prevalence per 1000 persons aged 15+ years				
District Bikaner				
Bikaner (m) ward no.1_2	264	0 (0)	0 (0)	0 (0)
Bikaner (m) ward no.1_3	210	0 (0)	0 (0)	0 (0)
Bikaner (m) ward no.2_1	244	0 (0)	0 (0)	0 (0)
Bikaner (m) ward no.2_2	354	0 (0)	0 (0)	0 (0)
Bikaner (m) ward no.2_3	367	0 (0)	0 (0)	0 (0)
Bikaner (m)ward no.1_1	197	0 (0)	0 (0)	0 (0)
Bikaner basti ka mohalla ward no.13	217	0 (0)	0 (0)	0 (0)
Bikaner damami ka mohallha ward no.28	265	0 (0)	0 (0)	0 (0)
Bikaner dhobi talayia ward no.34_1	324	1 (3.1)	1 (3.1)	2 (6.2)
Bikaner old patti peda ward no.35	283	0 (0)	0 (0)	0 (0)
Bikaner rampura basti ward no.58	222	0 (0)	0 (0)	0 (0)
Bikaner tailiyo ka mohala ward no.13	277	1 (3.6)	0 (0)	1 (3.6)
Bikaner vyepariyo ki basti ward no.11	254	1 (3.9)	0 (0)	1 (3.9)
Bikaner (m)ward no.34_2	352	1 (2.8)	0 (0)	1 (2.8)
Bikaner (m)ward no.38	188	0 (0)	0 (0)	0 (0)
Bikaner (m)ward no.55	177	0 (0)	0 (0)	0 (0)
Husangsar	154	2 (13.0)	0 (0)	2 (13.0)
Kharda	149	0 (0)	0 (0)	0 (0)
Malasar	209	0 (0)	1 (4.8)	1 (4.8)
Seenthal	207	0 (0)	0 (0)	0 (0)
Total	4914	6 (1.2)	2 (0.4)	8 (1.6)
Age-sex Standradized Prevalence per 1000 persons aged 15+ years				

4.6.2 Active Infection

Out of 6297 children (1-9 yrs.) examined, 20.58% had unclean faces and 0.91% had active infection. There is one case of Trachomatous Inflammation in one of the clusters of Dholpur. Rest all cases of active infection are those of Trachomatous Folliculitis. Maximum cases of folliculitis were seen in Dholpur. Fourteen clusters of Tonk did not have any active infection. In Bikaner, only Malasar cluster had cases of active infection. While in Dholpur, maximum cases of TF were seen, only 6 clusters did not have any active infection.

Table 48: Presence of Active Trachoma in Rajasthanamong population aged 1-9 years

Cluster name	Examined	Unclean Face (%)	Active Infection		TF+TI (%)
			TF %	TI %	
Arniya neel	103	21 (20.4)	0 (0)	0 (0)	0 (0)
Bamor	100	4 (4)	0 (0)	0 (0)	0 (0)
Bharni	101	9 (8.9)	0 (0)	0 (0)	0 (0)
Lamba	103	7 (6.8)	0 (0)	0 (0)	0 (0)
Mahuwa	104	11 (10.6)	0 (0)	0 (0)	0 (0)
Nimola	103	8 (7.8)	1 (1)	0 (0)	1 (1)
Tonk (u) ward no.45	111	34 (30.6)	3 (2.7)	0 (0)	3 (2.7)
Tonk (u)ward no. 3	104	22 (21.2)	0 (0)	0 (0)	0 (0)
Tonk (u)ward no. 6	101	11 (10.9)	0 (0)	0 (0)	0 (0)
Tonk (u)ward no. 7	104	12 (11.5)	0 (0)	0 (0)	0 (0)
Tonk (u)ward no. 21	101	5 (5)	0 (0)	0 (0)	0 (0)
Tonk (u)ward no. 28	103	36 (35)	0 (0)	0 (0)	0 (0)
Tonk (u)ward no. 31	103	6 (5.8)	0 (0)	0 (0)	0 (0)
Tonk (u)ward no. 37	102	3 (2.9)	0 (0)	0 (0)	0 (0)
Tonk (u)ward no. 39	104	12 (11.5)	1 (1)	0 (0)	1 (1)
Tonk (u)ward no. 41	104	7 (6.7)	0 (0)	0 (0)	0 (0)
Tonk (u)ward no. 42	106	26 (24.5)	3 (2.8)	0 (0)	3 (2.8)
Tonk (u)ward no. 45	208	75 (36.1)	0 (0)	0 (0)	0 (0)
Untitana	102	14 (13.7)	1 (1)	0 (0)	1 (1)
Total	**2,067**	**323 (15.63)**	**9 (0.44)**	**0 (0.00)**	**9 (0.44)**
District Dholpur					
Bal govind ka pura	103	42 (40.78)	2 (1.94)	0 (0)	2 (1.94)
Bara gaon	105	26 (24.76)	0 (0.00)	1 (0.95)	1 (0.95)
Basai samanta	112	51 (45.54)	5 (4.46)	0 (0.00)	5 (4.46)
Beelpur	102	24 (23.53)	3 (2.94)	0 (0.00)	3 (2.94)
Bhilgawan	112	37 (33.04)	2 (1.79)	0 (0.00)	2 (1.79)
Dagarpur	106	40 (37.74)	3 (2.83)	0 (0.00)	3 (2.83)
Dholpur (m)ward no. 6	105	56 (53.33)	12 (11.43)	0 (0.00)	12 (11.43)
Dholpur (m)ward no. 16	105	2 (1.9)	0 (0.00)	0 (0.00)	0 (0.00)
Dholpur (m)ward no. 22	103	14 (13.59)	0 (0.00)	0 (0.00)	0 (0.00)
Dholpur (m)ward no. 28	104	19 (18.27)	0 (0.00)	0 (0.00)	0 (0.00)

Dholpur (m)ward no. 38	104	9 (8.65)	1 (0.96)	0 (0.00)	1 (0.96)
Dheemri	119	63 (52.94)	3 (2.52)	0 (0.00)	3 (2.52)
Doon ka pura	111	25 (22.52)	0 (0.00)	0 (0.00)	0 (0.00)
Dubati	102	25 (24.51)	4 (3.92)	0 (0.00)	4 (3.92)
Garayach	114	52 (45.61)	4 (3.51)	0 (0.00)	4 (3.51)
Inchhapura	105	31 (29.52)	1 (0.95)	0 (0.00)	1 (0.95)
Maniyan	102	25 (24.51)	0 (0.00)	0 (0.00)	0 (0.00)
Moroli ka pura	104	38 (36.54)	1 (0.96)	0 (0.00)	1 (0.96)
Ondela	109	43 (39.45)	4 (3.67)	0 (0.00)	4 (3.67)
Virjapura	102	54 (52.94)	0 (0.00)	0 (0.00)	0 (0.00)
Total	**2,129**	**676 (31.75)**	**45 (2.11)**	**1 (0.05)**	**46 (2.16)**
District Bikaner					
Bikaner (m) ward no.1_2	109	16 (14.68)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner (m) ward no.1_3	105	27 (25.71)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner (m) ward no.2_1	102	19 (18.63)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner (m) ward no.2_2	100	7 (7.0)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner (m) ward no.2_3	109	11 (10.09)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner (m)ward no.1_1	108	13 (12.04)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner basti ka mohalla ward no.13	108	17 (15.74)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner damami ka mohalla ward no.28	112	16 (14.29)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner dhobi talayia ward no.34_1	103	7 (6.8)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner old patti peda ward no.35	100	9 (9)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner rampura basti ward no.58	101	2 (1.98)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner tailiyo ka mohala ward no.13	100	15 (15)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner vyepariyo ki basti ward no.11	110	8 (7.27)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner (m)ward no.34_2	108	5 (4.63)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner (m)ward no.38	100	2 (2)	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner (m)ward no.55	102	9 (8.82)	0 (0.00)	0 (0.00)	0 (0.00)
Husangsar	104	41 (39.42)	0 (0.00)	0 (0.00)	0 (0.00)
Kharda	105	24 (22.86)	0 (0.00)	0 (0.00)	0 (0.00)
Malasar	105	5 (4.76)	2 (1.90)	0 (0.00)	2 (1.90)
Seenthal	110	44 (40)	0 (0.00)	0 (0.00)	0 (0.00)
Total	**2,101**	**297 (14.14)**	**2 (0.10)**	**0 (0.00)**	**2 (0.10)**
Rajasthan (Three districts)	**6297**	**1296 (20.58)**	**56 (0.89)**	**1 (0.02)**	**57 (0.91)**

4.6.3 Environmental factors

Out of 4366 households, 3.14% did not have a water source within half an hour walking distance. However, in Bikaner, all the households had water source within half an hour of walking distance. In 70% households, animal pens were situated within 20 metres distance. Functional latrines were absent in 43.70% of households, situation being worst in Dholpur (72.98%).

Table 49: Environmental risk factors in three districts of Rajasthan

Name of Cluster	Total	Water Source unavailable within half an hour walking distance n(%)	Solid waste/animal pen present within 20 meters n(%)	Functional latrine absent n(%)
District Tonk				
Arniya neel	70	0 (0.00)	69 (98.57)	68 (97.14)
Bamor	88	11 (12.50)	81 (92.05)	73 (82.95)
Bharni	95	0 (0.00)	72 (75.79)	70 (73.68)
Lamba	92	1 (1.09)	50 (54.35)	80 (86.96)
Mahuwa	89	0 (0.00)	68 (76.40)	81 (91.01)
Nimola	97	0 (0.00)	64 (65.98)	89 (91.75)
Tonk (u) ward no. 045	73	0 (0.00)	66 (90.41)	71 (97.26)
Tonk (u)ward no. 003	87	0 (0.00)	62 (71.26)	30 (34.48)
Tonk (u)ward no. 006	89	2 (2.25)	25 (28.09)	1 (1.12)
Tonk (u)ward no. 007	73	0 (0.00)	58 (79.45)	4 (5.48)
Tonk (u)ward no. 021	80	0 (0.00)	16 (20.00)	1 (1.25)
Tonk (u)ward no. 028	59	0 (0.00)	58 (98.31)	10 (16.95)
Tonk (u)ward no. 031	76	0 (0.00)	36 (47.37)	12 (15.79)
Tonk (u)ward no. 037	95	0 (0.00)	68 (71.58)	2 (2.11)
Tonk (u)ward no. 039	68	0 (0.00)	33 (48.53)	1 (1.47)
Tonk (u)ward no. 041	78	0 (0.00)	47 (60.26)	3 (3.85)
Tonk (u)ward no. 042	78	0 (0.00)	59 (75.64)	27 (34.62)
Tonk (u)ward no. 045	134	0 (0.00)	113 (84.33)	131 (97.76)
Untitana	77	0 (0.00)	75 (97.40)	76 (98.70)
Total	1,598	14 (0.88)	1120 (70.09)	830 (51.94)
District Dholpur				
Bal govind ka pura	70	26 (37.14)	66 (94.29)	69 (98.57)
Bara gaon	66	16 (24.24)	59 (89.39)	62 (93.94)
Basai samanta	64	0 (0.00)	64 (100.00)	63 (98.44)
Beelpur	66	0 (0.00)	66 (100.00)	66 (100.00)

District Tonk				
Bhilgawan	63	0 (0.00)	55 (87.30)	59 (93.65)
Dagarpur	55	14 (25.45)	54 (98.18)	53 (96.36)
Dholpur (m)ward no. 0006	52	39 (75)	46 (88.46)	52 (100.00)
Dholpur (m)ward no. 0016	104	0 (0.00)	45 (43.27)	0 (0.00)
Dholpur (m)ward no. 0022	76	0 (0.00)	60 (78.95)	12 (15.79)
Dholpur (m)ward no. 0028	84	0 (0.00)	50 (59.52)	15 (17.86)
Dholpur (m)ward no. 0038	69	0 (0.00)	56 (81.16)	4 (5.80)
Dheemri	63	0 (0.00)	63 (100.00)	63 (100.00)
Doon ka pura	51	13 (25.49)	50 (98.04)	49 (96.08)
Dubati	87	0 (0.00)	87 (100.00)	81 (93.10)
Garayach	61	0 (0.00)	61 (100.00)	60 (98.36)
Inchhapura	59	2 (3.39)	58 (98.31)	58 (98.31)
Maniyan	71	6 (8.45)	61 (85.92)	44 (61.97)
Moroli ka pura	68	0 (0.00)	68 (100.00)	66 (97.06)
Ondela	53	7 (13.21)	48 (90.57)	46 (86.79)
Virjapura	54	0 (0.00)	54 (100.00)	53 (98.15)
Total	**1,336**	**123 (9.21)**	**1171 (87.65)**	**975 (72.98)**
District Bikaner				
Bikaner (m) ward no.0001_2	87	0 (0.00)	74 (85.06)	4 (4.6)
Bikaner (m) ward no.0001_3	71	0 (0.00)	59 (83.10)	6 (8.45)
Bikaner (m) ward no.0002_1	83	0 (0.00)	64 (77.11)	0 (0.00)
Bikaner (m) ward no.0002_2	101	0 (0.00)	70 (69.31)	5 (4.95)
Bikaner (m) ward no.0002_3	109	0 (0.00)	49 (44.95)	1 (0.92)
Bikaner (m)ward no.0001_1	74	0 (0.00)	69 (93.24)	3 (4.05)
Bikaner basti ka mohalla ward no.0013	52	0 (0.00)	15 (28.85)	0 (0.00)
Bikaner damami ka mohalla wd no. 0028	60	0 (0.00)	60 (100.00)	0 (0.00)
Bikaner dhobi talayia ward no.0034_1	97	0 (0.00)	12 (12.37)	0 (0.00)
Bikaner old patti peda ward no.0035	89	0 (0.00)	61 (68.54)	0 (0.00)
Bikaner rampura basti ward no.0058	70	0 (0.00)	1 (1.43)	0 (0.00)
Bikaner tailiyo ka mohala ward no.0013	64	0 (0.00)	16 (25.00)	0 (0.00)
Bikaner vyepariyo ki basti ward no.0011	64	0 (0.00)	10 (15.63)	0 (0.00)
Bikaner (m)ward no.0034_2	94	0 (0.00)	5 (5.32)	0 (0.00)
Bikaner (m)ward no.0038	70	0 (0.00)	0 (0.00)	0 (0.00)
Bikaner (m)ward no.0055	53	0 (0.00)	51 (96.23)	0 (0.00)
Husangsar	47	0 (0.00)	42 (89.36)	27 (57.45)
Kharda	39	0 (0.00)	39 (100.00)	35 (89.74)
Malasar	48	0 (0.00)	37 (77.08)	8 (16.67)
Seenthal	60	0 (0.00)	57 (95.00)	14 (23.33)
Total	**1,432**	**0 (0.00)**	**791 (55.24)**	**103 (7.19)**
Rajasthan(Three districts)	**4366**	**137 (3.14)**	**3082 (70.59)**	**1908 (43.70)**

4.6.4 Access to treatment facilities

In Bikaner, except for Kharda, it would take less than 30 min to reach the PHC by public transport. Trichiasis surgical facility could be reached in less than 30 min by public transport in 16 out of 20 clusters. It would take more than 2 hours to reach from Kharda. School and Market were <30 min walk away from the clusters. While to reach the village pharmacy one has to walk more than 30 min in Kharda and Seenthal.

Table 50: Distance of villages of Bikaner, Rajasthan from various facilities

Village/Ward	Distance to Facility				
	By public transport		Walking time		
	Primary Health Care	Trichiasis Surg. Facility	Village Pharmacy	Market	School
	<30min=1; 30min-2hr=2; >2hr=3				
Bikaner (m)wardno.0001_2	1	1	1	1	1
Bikaner (m)wardno.0001_3	1	1	1	1	1
Bikaner (m)wardno.0002_1	1	1	1	1	1
Bikaner (m)wardno.0002_2	1	1	1	1	1
Bikaner (m)wardno.0002_3	1	1	1	1	1
Bikaner (m)wardno.0001_1	1	1	1	1	1
Bikanerbastikamohallawardno.0013	1	1	1	1	1
Bikanerdamamikamohallhawardno.0028	1	1	1	1	1
Bikanerdhobitalayiawardno.0034_1	1	1	1	1	1
Bikaneroldpattipedawardno.0035	1	1	1	1	1
Bikanerrampurabastiwardno.0058	1	1	1	1	1
Bikanertailiyokamohalawardno.0013	1	1	1	1	1
Bikanervyepariyokibastiwardno.0011	1	1	1	1	1
Bikaner (m)wardno.0034_2	1	1	1	1	1
Bikaner (m)wardno.0038	1	1	1	1	1
Bikaner (m)wardno.0055	1	1	1	1	1
Husangsar	1	2	1	1	1
Kharda	3	3	2	1	1
Malasar	1	2	1	1	1
Seenthal	1	2	2	1	1

In Dholpur, it would take less than 30 min to reach the PHC by public transport in 14 out of 20 clusters. Trichiasis surgical facility could be reached in less than 30 min by public transport in 50 % of the clusters, in rest it would take 30 min to 2 Hrs. School and Market were <30 min walk away from the clusters except in Moroli ka Pura where it would take >30 min to reach the market. While to reach the village pharmacy one has to walk more than 30 min in Bassai Samanta, Bhilagaon and Moroli ka Pura, for rest it would take less than 30 min.

Table 51: Distance of villages of Dholpur, Rajasthan from various facilities

Village/Ward	Distance to Facility				
	By public transport		Walking time		
	Primary Health Care	Trichiasis Surg. Facility	Village Pharmacy	Market	School
	<30min=1; 30min-2hr=2; >2hr=3				
Bal govind ka pura	1	2	1	1	1
Bara gaon	1	2	1	1	1
Basai samanta	2	2	2	1	1
Beelpur	1	1	1	1	1
Bhilgawan	1	2	2	1	1
Dagarpur	1	1	1	1	1
Dholpur (m)ward no. 0006	1	1	1	1	1
Dholpur (m)ward no. 0016	1	1	1	1	1
Dholpur (m)ward no. 0022	1	1	1	1	1
Dholpur (m)ward no. 0028	1	1	1	1	1
Dholpur (m)ward no. 0038	1	1	1	1	1
Dheemri	2	2	1	1	1
Doon ka pura	1	1	1	1	1
Dubati	2	2	1	1	1
Garayach	2	2	1	1	1
Inchhapura	1	2	1	1	1
Maniyan	1	1	1	1	1
Moroli ka pura	2	2	2	2	1
Ondela	1	1	1	1	1
Virjapura	2	2	1	1	1

In Tonk, it would take less than 30 min to reach the PHC by public transport from all clusters. Trichiasis surgical facility could be reached in less than 30 min by public transport in 15 out of 20 clusters. In rest it would take a little longer. School, Market and village pharmacy were <30 min walk away from the clusters.

Table 52: Distance of villages of Tonk, Rajasthan from various facilities

Village/Ward	Distance to Facility				
	By public transport		Walking time		
	Primary Health Care	Trichiasis Surg. Facility	Village Pharmacy	Market	School
	<30min=1; 30min-2hr=2; >2hr=3				
Arniya neel	1	1	1	1	1
Bamor	1	1	1	1	1
Bharni	1	2	1	1	1
Lamba	1	2	1	1	1
Mahuwa	1	2	1	1	1
Nimola	1	2	1	1	1
Tonk (M CI) ward no3. 045	1	1	1	1	1
Tonk (M CI) Ward no. 003	1	1	1	1	1
Tonk (M CI) Ward no. 006	1	1	1	1	1
Tonk (M CI) Ward no. 007	1	1	1	1	1
Tonk (M CI) Ward no. 021	1	1	1	1	1
Tonk (M CI) Ward no. 028	1	1	1	1	1
Tonk (M CI) Ward no. 031	1	1	1	1	1
Tonk (M CI) Ward no. 037	1	1	1	1	1
Tonk (M CI) Ward no. 039	1	1	1	1	1
Tonk (M CI) Ward no. 041	1	1	1	1	1
Tonk (M CI) Ward no. 042	1	1	1	1	1
Tonk (M CI) ward no1. 045	1	1	1	1	1
Tonk (M CI) ward no2. 045	1	1	1	1	1
Untitana	1	2	1	1	1

4.7 Andaman and Nicobar Islands

Figure 9: District covered in Andaman and Nicobar Islands

As per the survey conducted in 2010, Car-Nicobar island had high prevalence of Trachoma infection in children. Annual mass drug treatment with azithromycin was administered from 2010-12 to all individuals residing in the island. To assess the effect of mass drug treatment, a prevalence survey was conducted in 2013 in Car Nicobar. It was found that the prevalence of active infection though significantly reduced but was as high as 6.8%. This repeat prevalence survey was conducted to assess the prevalence of active infection of trachoma in Car-Nicobar after persistent elimination efforts.

Table 53: Age-wise distribution of enumerated and examined population of Nicobar

Cluster name	Enumerated 15+ years	Examined (%)	Enumerated 1-9 years	Examined (%)
Arong & Kimious	215	152 (70.7)	104	99 (95.2)
Kinmai & Small Lapathy	252	173 (68.7)	103	96 (93.2)
Kinyuka	324	251 (77.5)	100	96 (96)
Malacca & Kakana	251	165 (65.7)	111	106 (95.5)
Mus & Big Lapathy	279	205 (73.5)	119	114 (95.8)
Perka & Tamaloo	254	162 (63.8)	101	92 (91.1)
Tapoiming & Chukchuka	233	182 (78.1)	124	120 (96.8)
Teetop & Sawai	338	271 (80.2)	127	108 (85)
Total	2146	1561 (72.7)	889	831 (93.5)

4.7.1 Trichiasis Load

Among people aged 15+ years, 45 cases of Trichiasis were identified, out of which 6 even had corneal opacity. Two clusters did not have a single case of Trichiasis. Maximum cases (15) of Trichiasis were seen in Tapoiming/ Chukchuka. The overall prevalence of Trichiasis was 23.99 per 1000 Population in 15+age group.

Table 54: Prevalence of Trachomatous Trichiasis (TT) and Trachomatous Corneal Opacity (CO) among population aged 15+ years in Nicobar

Cluster name	Examined (%)	Trichiasis (per 1000)	TT with CO (per 1000)	Total (per 1000)
Arong & Kimious	152	0 (0.0)	0 (0)	0 (0)
Kinmai & Small Lapathy	173	1 (5.8)	0 (0)	1 (5.8)
Kinyuka	251	4 (15.9)	1 (4.0)	5 (19.9)
Malacca & Kakana	165	0 (0.0)	0 (0)	0 (0)
Mus & Big Lapathy	205	4 (19.5)	1 (4.9)	5 (24.4)
Perka & Tamaloo	162	10 (61.7)	1 (6.2)	11 (67.9)
Tapoiming & Chukchuka	182	15 (82.4)	0 (0)	15 (82.4)
Teetop & Sawai	271	5 (18.5)	3 (11.1)	8 (29.5)
Total	**1561**	**39 (25.0)**	**6 (3.8)**	**45 (28.8)**

4.7.2 Active Infection

Out of 831 children (1-9 yrs.) examined, 6.38% had unclean faces and 1.56% had active infection. There was a single case of trachomatous inflammation (TI), rest all had evidence of follicular stage of Trachoma (TF). There were 3 clusters out of 8 which did not have any active infection.

Table 55: Presence of Active Trachoma in Nicobar among population aged 1-9 years

Cluster name	Examined	Unclean Face (%)	Active Infection		TF+TI (%)
			TF %	TI %	
Arong & Kimious	99	2 (2)	2 (2)	0 (0)	0 (0)
Kinmai & Small Lapathy	96	10 (10.4)	5 (5.2)	0 (0)	0 (0)
Kinyuka	96	0 (0)	0 (0)	0 (0)	0 (0)
Malacca & Kakana	106	8 (7.5)	0 (0)	0 (0)	0 (0)
Mus & Big Lapathy	114	12 (10.5)	3 (2.6)	0 (0)	0 (0)
Perka & Tamaloo	92	10 (10.9)	0 (0)	0 (0)	0 (0)
Tapoiming & Chukchuka	120	2 (1.7)	2 (1.7)	1 (0.8)	1 (0.8)
Teetop & Sawai	108	9 (8.3)	0 (0)	0 (0)	0 (0)
Total	**831**	**53 (6.38)**	**12 (1.44)**	**1 (0.12)**	**1 (0.12)**

4.7.3 Environmental factors

Of all the 446 households, 30 didn't had a water source within half an hour walking distance. These 30 households were in Tapoiming, Arong and Chukchuka. All other villages had water source available within half an hour walking distance. In nearly four-fifth households, animal pens were situated within 20 metres distance. All households had functional latrine except 9 households from Malacca/Kakana and one each from Arong and Teetop.

Table 56: Environmental Risk factors in district Nicobar

Name of Cluster	Total	Water Source unavailable within half an hour walking distance n(%)	Solid waste/animal pen present within 20 meters n(%)	Functional latrine absent n(%)
Arong & Kimious	61	8 (0.1)	61 (100)	1 (1.6)
Kinmai & Small Lapathy	38	0 (0)	38 (100)	0 (0)
Kinyuka	58	0 (0)	58 (100)	0 (0)
Malacca & Kakana	61	0 (0)	59 (96.7)	9 (14.8)
Mus & Big Lapathy	56	0 (0)	56 (100)	0 (0)
Perka & Tamaloo	60	0 (0)	48 (80)	0 (0)
Tapoiming & Chukchuka	50	22 (0.4)	28 (56)	0 (0)
Teetop & Sawai	62	0 (0)	8 (12.9)	1 (1.6)
Total	**446**	**30 (6.73)**	**356 (79.82)**	**11 (2.47)**

4.7.4 Access to treatment facilities

It would take less than 30 min by public transport to reach the PHC as well as Trichiasis Surgical Facility from any of the cluster. The Pharmacy, market and school were 30 minutes walk away from each clusters.

Table 57: Distance of various clusters of Nicobar from various facilities

Village/Ward	Distance to Facility				
	By public transport		Walking time		
	Primary Health Care	Trichiasis Surg. Facility	Village Pharmacy	Market	School
	<30min=1; 30min-2hr=2; >2hr=3				
Arong & Kimious	2	2	1	2	1
Kinmoi & Small Lapathy	1	1	1	1	1
Kinyuka	1	1	1	1	1
Malacca & Kakana	1	1	1	1	1
Mus & Big Lapathy	1	1	1	1	1
Perka & Tamaloo	1	3	1	1	1
Teetop & Sawai	1	1	1	1	1
Topoiming & Chukchuka	1	1	1	1	1

5 Annexures

5.1 Code of the states and districts

S.No.	State Name	State Code	District Name	District Code
1.	Gujrat	01	Banaskantha	01
			Kutch	02
2.	Haryana	02	Mahendragarh	03
			Mewat	04
3.	Punjab	03	Hoshiarpur	05
4.	Rajasthan	04	Banswara	06
			Barmer	07
			Bikaner	08
5.	Uttrakhand	05	PauriGarhwal	09

5.2 Village Facility Form

NPCB- NATIONAL TRACHOMA PREVALENCE SURVEY IN INDIA 2014-15

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Village Facility form

State Name and Code :	Haryana	2	
District Name and & Code :	Mewat	4	
Name of Village/Cluster & Code:			

Village infrastructure	Accessibility (travel time) < 30 minutes=1 ⩾30minutes &<2hours =2 ⩾2hours =Resu3
1.Primary health care centre or private general practitioners	
2.Trichiasis surgery facility	
3.Village pharmacy (drug store)	
4.Market	
5.School	

5.3 Informed consent form and Survey Form: Trachoma Prevalence Study

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सहभागी स्वीकृति पत्र

परियोजना का शीर्षक: "भारत में राष्ट्रीय ट्रेकोमा सर्वेक्षण 2014-2015"

मुख्य अन्वेषक का नाम: डॉ. प्रवीण वशिष्ठ

मैंने सूचना पत्र में दिये गए सभी तथ्यो को पढ लिया है। मुझे समझ आने वाली भाषा में विस्तारपूर्वक बता दिया गया है और मैंने तथ्यो को भली भांति समझ लिया है। मैं पुष्टि करता हूँ/करती हूँ कि मुझे प्रश्न पूछने का अवसर दिया गया है।

मुझे अध्ययन की प्रकृति, उद्देश्य और इसके सम्भावित लाभ/जोखिमों और अध्ययन की सम्भावित अवधि अन्य प्रासंगिक जानकारी के बारे में विस्तार पूर्वक समझा दिया गया है। मैं समझता हूँ कि इस अध्ययन में मेरी और मेरे परिवार की भागीदारी स्वेछिक है और इस अध्ययन से किसी भी समय बिना कोई कारण बताए, बिना मेरी चिकित्सा देखभाल या कानूनी अधिकारों के प्रभावित हुए अपना नाम वापिस ले सकता/सकती हूँ।

मै समझता हूँ कि इस अध्ययन मे मेरी और मेरे परिवार की सहभागिता से मेरे बारे मे एकत्र जानकारी और चिकित्सीय नोट्स को एम्स अस्पताल के जिम्मेदार लोगो द्वारा देखा जायेगा। मैं इन व्यक्तियों को अपने रिकार्ड देखने कि अनुमति प्रदान करता/करती हूँ।

मै और मेरा परिवार उपयुर्क्त अध्ययन मे भाग लेने के लिए अपनी सहमती प्रदान करता/करती हूँ।

हस्ताक्षर/बाए अंगूठे का निशान तथा दिनांक : .....

सहभागी का नाम तथा पता : .....

यह प्रमाणित किया जाता है कि उपरोक्त स्वीकृति मेरी उपस्थिति में प्राप्त की गई है।

गवाह – 1

गवाह का नाम/हस्ताक्षर .....

डाक का पूरा पता .....

गवाह – 2

गवाह का नाम/हस्ताक्षर .....

डाक का पूरा पता .....

प्रधान अन्वेषक के हस्ताक्षर

Name of the Institute: Dr. R.P. Centre for Ophthalmic Sciences

A. IDENTIFICATION DATA	RESPONSE		
State Name and Code :	Haryana/02	0	2
District Name and & Code :	Mewat/04	0	4
Name of Village/Cluster & Code:	.....		
Name of HOH and Household Code :	.....		
No. of Total Family Members:	Total:	<1 yr:	1-9 yrs:	≥10yrs:
Number of living rooms in the house:			
Total Family Income per month (Family income Code: ≤5000=1, 5001 to 15000=2, 15001 to 30000=3, >30000=4):			
Contact Number with Name:			

B. ENVIRONMENTAL FACTORS (Yes=1, No=0)	
1. Water source available within half an hour walking distance	
2. Solid waste or animal pens present within 20 meters	
3. Functional latrine present in house	

C. Details of 10 years and above age group for Trichiasis (TT) & Corneal opacity (CO)

Person No.	Name	Relation With HOH	Age in years	Sex M=1 F=2	Education Code	Occupation Code	Trichiasis: No TT=0, TT+ve=1, Recurrent TT=2	Corneal Opacity: No CO=0 CO=1	Cause of CO: Trachoma=1 Trauma=2 Infective Keratitis=3 Others/undetermined=4 — RE	Cause of CO — LE	Visual Acuity in patients with CO — RE	Visual Acuity in patients with CO — LE	Examination status Write R if refused — Visit 1	Visit 2	Visit 3

D. Details of Children examined 1 to 9 year age- for Active Trachoma Infection

Person No	Name	Relation With HOH	Age in years	Sex M=1 F0.=2	Clean face: Yes=1, No=0	Active Infection: No TF/TI=0, TF=1, TI=2 TF + TI=3	Microbiological Swab Case=1, Control=2, Refuse/Not possible=3 Not Applicable=4	Examination status Write R if refused — Visit 1	Visit 2	Visit 3

Relation of HOH: Self=01, Spouse=02, Father=03, Mother=04 Son=05, Daughter=06, Brother=07, Sister=08, Daughter-in-law=09, Grand Son=10, Grand Daughter=11, Other(Specify)=66

Education: Illiterate=00, Can read & write=50, Years of schooling=1-12, Diploma/ Graduation=15, Post-graduation/Professional Education=20, Others (Specify)=66 _____

Occupation: House work=01, Cultivator=02, Agricultural laborer=03, Non Agricultural laborer=04, Skilled worker=05, Office Job (Class I)=06, Office Job(Class II/III)=07, Office Job(Class IV)=08, Shop Keeper=09, Business=10, Professional (Doctor, Engineer, Lawyer etc)=11, Unemployed=12, Retired/ Not working=13, Student=14, Others (Specify)=66_____

Name of Enumerator: _____

Name of Optometrist: _____

Name of Ophthalmologist: _____ Signature: _____ Date: ___/___/_____

5.4 Environmental Assessment Form

Unique Id: _____

Water, sanitation and hygiene Questions

W 1	In the dry season what is the main source of drinking water for members of your household?	01= Piped water into dwelling 02=Piped water to yard/plot 03=public tap/standpipe 04=tubewell/borehole 05=Protected dug well 06=unprotected dug well 07=Protected spring 08=unprotected spring 09=Rainwater collection 10=water vendor 11=surface water(river,dam,canal) 99=other(specify)	
W 2	What is the main source of water used by your household for washing faces?	01=Piped water into dwelling 02=Piped water to yard 03=public tap 04=tubewell/borehole 05=protected dug well 06=unprotected dug well 07=protected spring 08=unprotected spring 09=Rainwater collection 10=watervendor 11=surface water(river,dam,canal) 99=others(specify)	
S1	*Observation:* What kind of toilet facility do the adults in the household use?	01=Flush/pour flush to piped sewer system 02=flush/pour flush to septic tank 03=pit latrine with slab 99= others(specify)	
H1	*Observation:* Is there a handwashing facility within 15meters of the toilet?	0=No 1=Yes 5=Not applicable(no toilet)	
H2	*Observation:* At the time of visit, is soap or ash available at the handwashing facility?	0=No 1=Yes 5=Not applicable(no toilet) 99= others (specify)	

5.5 Children Examined Tally Sheet

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Village/Clusters Name: Date: ___/___/_____

Children Examined

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108

5.6 Microbiological swab status from children

NPCB-National Trachoma Prevalance Survey In India 2014-15

Dr. R.P Centre for Ophthalmic Sciences,AIIMS

Status of Microbiological Swab

Children with Active Trachoma Infection						
S.No	Date	I.D Number	Name	Age	Gender	Case/Control
1	6/2/2014					
2	6/2/2014					
3	6/2/2014					
4	6/2/2014					
5	6/2/2014					
6	6/2/2014					
7	6/2/2014					
8	6/2/2014					
9	6/2/2014					
10	6/2/2014					
11	6/2/2014					
12	6/2/2014					
13	6/2/2014					

Date of receiving: __/__/_____ Signature of receiver_____

5.7 Checklist for the logistics

Logistics	Amount	Date
Form		
Tally Sheet		
Pencil		
Pen		
Writing Pad		
Binocular loupe		
Torch		
Epilation forceps		
Cotton Buds		
Toffee		
Cotton Roll		
Hand Wash/Sanitizer		
Tab Azithromycin 250mg		
Tab. Paracitamol		
E/D Tear Plus		
E/D Paracaine		
E/D Zoxan		
E/D Zaha		
Vision Chart + MeasuringTape		
Demo Card		
Green Card + Stapler + Stamp Pad		
Color pens & marker		
Hard board		
Clear bag		
A4 Sheet		
Water Jug		
Bag		
ID Card		
Slides		
Diamond Pencil		
Cotton Swab		
Acetone+ acetone jars		
Ice pack + thermal box		
Slide stand		

5.8 Cluster Daily report form:

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Name of the village/code:_____ Date: _____

Activity	Visit 1	Visit 2	Visit 3
No. of House Enumerated			
No. of Enumerated children(1-9 years)			
No. of Children Examined(1-9 years)			
No. of Children Identified with TF+TI			
No. of Swab Collected (case/control)			
No. of Adult Enumerated(10 years and above)			
No. of Adult Examined(10 years and above)			
No. of Adult with CO			
No. of Adult with trachomatous CO/TT			

Submitted By: _____

5.9 Participant information sheet

सहभागी सूचना पत्र

अध्ययन का विषय : "भारत में राष्ट्रीय दृष्टिविहीनता नियंत्रण कार्यक्रम (NPCB) के अंतर्गत भारत में राष्ट्रीय ट्रेकोमा सर्वक्षण"

मुझे एवं मेरे परिवार को "भारत में राष्ट्रीय दृष्टिविहीनता नियंत्रण कार्यक्रम(NPCB) के अंतर्गत भारत में राष्ट्रीय ट्रेकोमा सर्वक्षण" में सम्मिलित होने के लिए निमंत्रित किया गया है। ट्रेकोमा आंखों की एक संक्रमित बीमारी है जो कि दूषित वातावरण और मक्खियों की वजह से ज्यादा फैलती है। यह बीमारी बच्चो एवं बडे व्यक्तियों को हो सकती है। सर्वेक्षण के दौरान आँखों की सामान्य समस्याओं का आंकलन किया जायेगा। मैं जानता/जानती हूँ कि इस दस्तावेज द्वारा मुझे इस अध्ययन में सम्मिलित होने संबंधी निर्णय लेने के लिए निम्नलिखित दी गई जानकारी से सहायता प्राप्त होगी।

1. **अनुसंधान का उद्देश्य एवं पद्धतियाँ:** इस सर्वेक्षण का उद्देश्य भारत में राष्ट्रीय ट्रेकोमा सर्वक्षण के द्वारा ट्रेकोमा का आंकलन करना हैं। जिसको 'ट्रेकोमा' होगा उसका मुफ्त में इलाज किया जायेगा।
2. **अध्ययन में सहभागी की संभावित अवधि:** सहभागी परिवार के सदस्यों को अपने घर पर एक बार ही आंखों की जांच करानी होगी और जांच के दौरान आंखों में से ट्रेकोमा के नमूने लिए जायेगे।
3. **लाभ:** ट्रेकोमा से संक्रमित रोगियों को इलाज किया जायेगा। भारत में होने वाले इस सर्वेक्षण से भविष्य में होने वाले ट्रेकोमा संक्रमण के उचित समय पर बचाव एवम् इलाज करने में तथा ट्रेकोमा निवारण करने में मदद मिलेगी।
4. **सहभागी को जोखिम:** कोई नही
5. **गोपनीयता:** इस सर्वेक्षण द्वारा प्राप्त सभी सूचनाओं को पूर्णतः गोपनीय रखा जाएगा। रोग प्रक्रिया से संबंधित जानकारी का मूल्यांकन जिम्मेदार व्यक्तियों द्वारा किया जाएगा।
6. **निःशुल्क उपचार:** ट्रेकोमा से प्रभावित व्यक्तियों को निःशुल्क उपचार दिया जायेगा।
7. **सर्वेक्षण के दौरान प्रदान किए गए उपचार के परिणाम स्वरुप किसी प्रकार की चोट क्षति की संभावना:** नही है।
8. **अध्ययन छोडने का अधिकार:** रोगी को बिना कारण बताये किसी भी समय इस अध्ययन को छोडने का अधिकार है, डा० राजेन्द्र प्रसाद नेत्र विज्ञान केन्द्र, अखिल भारतीय आर्युविज्ञान संस्थान में इसके उपचार अधिकार पर कोई दुष्प्रभाव नहीं पड़ेगा।

संपर्क सूचना: किसी भी जानकारी के लिए संपर्क करें :

डा० प्रवीन वशिष्ठ: 26593140, 26593143

5.10 Trachoma Health Education Leaflet

ट्रेकोमा
(रोहे/कुक्करे)

रोहे/कुक्करे एक संक्रामक रोग है। यह पलकों को प्रभावित करता है। बाद में पलक अंदर की तरफ मुड जाती है जो कार्निया (काली पुतली) को नुकसान पहुंचाता है। हरियाणा, पंजाब, राजस्थान, उत्तर प्रदेश, उत्तरांचल, गुजरात यादि जैसे उत्तरी भारत के राज्यों में यह रोग ज्यादा आम है।

ट्रेकोमा/रोहे के लक्षण

- आंखों में किरकिरी/चुबन महसूस होना
- सामान्यताः दोनों आंखे प्रभावित होते हैं।
- पलक अंदर को पलटना।
- आंखों से मवाद आना।

ट्रेकोमा का रोकथाम

- रोहे से बचने के लिए व्यक्तिगत साफ–सफाई सर्वोत्तम उपाय है।
- वातावरण को स्वच्छ रखें।
- घर में और घर के आसपास मक्खी के जनन के अनुकूल सभी प्रकार की परिस्थितियों को समाप्त करना।
- व्यक्तिगत साफ–सफाई और चेहरे को साफ रखना।
- अपने परिवार के प्रत्येक सदस्य के लिए अलग तौलिया, चादर आदि रखें और उनको साफ रखें।
- एकदिन में कई बर स्वच्छ पानी से अपने चेहरे को साफ करें।

ट्रेकोमा का उपचार

- रोहे को उपचार से ठीक किया जा सकता है। नेत्र डाक्टर की सलाह से एंटीबायटिक नेत्र मरहम लगाऐं।
- अपने चेहरे को बार–बार धोऐं।
- अंदर के पलक को सर्जरी द्वारा ठीक करना।

सेफ कार्यनीति अपनाना

S – (सर्जरी)–अंदर की पलक की सर्जरी
A – (एंटीबायोटिक)– एंटीबायोटिक (दवा एवं नेत्र मरहम)
F – (फेश) –बार–बार चेहरे को धोना
E – (एनवायरनमेंटल सेनीटेशन) –स्वच्छ वातावरण

रोहे की रोकथाम के लिए व्यक्तिगत साफ–सफाई और आसपास के वातावरण की स्वच्छता सर्वोत्तम उपाय है।

National Program for Control of Blindness and Visual Impairment,
Directorate General of Health Services,
Ministry of Health & Family Welfare, Government of India, New Delhi