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About the Organizations



LGT Venture Philanthropy (LGT VP) aims to improve the quality of life of less advantaged people, contribute to healthy ecosystems and build resilient, inclusive and prosperous communities. LGT VP supports organizations with outstanding social and environmental impact and potential to scale through tailored financing, know-how and access to networks. Headquartered in Zurich, Switzerland, LGT VP primarily invests in organizations based in developing countries, focusing on high-impact sectors. LGT VP is the venture philanthropy arm of LGT – the world's largest privately owned Private Banking and Asset Management group with over USD 180 billion AuM as of June 30th 2017.



Grameen Foundation India (GFI) is a social business that catalyses double bottom line approaches to serve low-income and poor communities. We create breakthrough, technology-enabled solutions that extend financial services and health information to underserved communities, especially women, living at the "last mile." We share a common mission with the global nonprofit Grameen Foundation: to enable the poor, especially women, to create a world without poverty and hunger. Our solutions include client-level research and impact assessments, social performance evaluation, financial, banking and people solutions.

Client Insights for Impact at GFI provides advisory and technical services to research collect and analyze client/beneficiary data that can be used as intelligence to provide services that are based on empirical evidence and can help organizations establish impact in the end. Grameen Foundation's global research experience has helped the team to put together a suite of technical advisory products that cater to various needs of a pro-poor organization across the life span of a project.

Table of Contents

		Acknowledgement	1		
		About the Organizations	2		
	_	Executive Summary	4		
CHAPTER	1	Introduction	8		
CHAPTER	2	Background of the study			
CHAPTER	3	Study Results	26		
		3.1. Demographic and socio economic characteristics of the study participants	27		
		Prevalence of habits directly linked with occurrence of dental ailments	29		
		3.2. Prevalence and response to self-reported oral health ailments and in the study population	33		
		3.3. Choice of healthcare facility	41		
		3.4. Access to dental care	45		
		3.5. Non users of dental care services: Community Interviews	52		
		3.6. Perceptions about dental treatment (Community and Patient Exit respondents)	53		
		3.7. Response to dental ailments of children	56		
		3.8. Determinants of dental health seeking behaviour- findings from multiple regression analysis.			
HAPTER	4	Conclusion and Recommendations	60		
		Annexures-3 Poverty Probability Index			
		Relative poverty lines			
		Absolute poverty lines			
		Annexures-4 List of State wise spread of private and Govt. dental colleges in India (as per DCI website data)	66		
		Annexure 5: Qualitative Tool	69		
		Annexure 6: Sampling Note and Mapping	70		

Executive Summary

aintaining dental and oral health contributes towards the overall well-being of a person. Good dental health practices has the potential to improve quality of life associated with diseases of oral cavity and complications arising from it. The consequences of widespread poor oral health can be seen at the personal, population, and health systems level, as highly prevalent oral conditions deteriorates an individual health and wellbeing, decrease economic productivity, and act as significant risk factors for other systemic health ailments¹. However, the benefits of dental health remain elusive as the overall uptake of oral health care services is very low in India. This issue is exacerbated and becomes more pronounced for the lower socio-economic segments. The National Oral Health Policy in 1986 was unfortunately the first and only step that took the form of a public health initiative towards improving oral health in India. However, our study findings and literature in the field of oral health in India indicate that much of this policy remained on paper with minimal steps taken towards implementation of its initiatives. Policies on paper aside, concrete steps taken on the ground to make quality and affordable dental care a reality for all segments of the population is what matters the most.

The research undertaken by Grameen Foundation India and LGT Venture Philanthropy in the months of May-August 2017 across five Indian cities provides important insights into the oral healthcare ecosystem of low income households with special emphasis on access, ability and awareness to access dental healthcare. The cross sectional survey of 2924 respondents employed a mixed methodology that helped us explore deeper insights about dental health seeking behaviour, determinants, perceptions about oral healthcare and understand the challenges and bottlenecks that prevent an optimal utilisation of dental healthcare facilities. Majority of the respondents were from low income households, 80% of the respondent fall below \$5 poverty line².

Refer Annexure 3



Singh A, Purohit BM. Addressing oral health disparities, inequity in access and workforce issues in a developing country. Int Dent J. 2013;63:225–9

In addition to the quantitative survey, the study also involved qualitative interviews with dental healthcare providers from these cities. Care was taken to involve representatives of both public, private and charitable organisations to elicit multiple and comprehensive views on the subject.

The study has been successful in understanding the incidence of dental ailments among low income communities and their response to such ailments. The burden of dental ailments was found to be quite high among the communities that were included in the study. Nearly 49% of the respondents from community surveys reported experiencing an oral ailment in the last 12 months. It is highly likely that the actual prevalence of oral ailments was much higher than the self-reported prevalence as the perception and attitude of general population towards oral ailments might actually result in an under reporting of oral health conditions.

Study also found that dental health seeking behaviour among the study population leaves much to be desired. Nearly 50% of the respondents did not seek care from a healthcare provider even when they experienced the symptoms. Among those who decide to seek care, private dental clinics are the most popular options even when the cost of care in such clinics are on the higher side. Since, dental care is not part of most public healthcare facilities, people are forced to depend on private entities for healthcare.

Most dentists who were interviewed during this study articulated that they observed a tendency to delay access to medical care in most patients and more so in low income groups. Most patients sought care once the severity increased and the symptoms were unbearable. Self-reported data from respondents also shows that the tendency to test alternate means to heal the dental ailment or self-treatment is high which leads to delayed medical intervention. Thus, perceptions and attitude towards oral health and dental treatment are significant barriers to overcome in order to bring about meaningful changes in health seeking behaviour. This view was corroborated by dental health care providers who unanimously opined that one of the main reasons for high prevalence of dental problems among low income groups is the lack of awareness about dental hygiene, oral health and its significance in maintaining the overall health. On the other hand, patients who have visited a dental clinic expressed the need for access to more information, as most of them felt that the available information about the various treatment was not adequate. The onus then also lies with the dental care providers to share information in simple terms and maintain transparency while treating patients.

In terms of cost of treatment, out of the respondents who had visited a dental clinic, 65% reported that they found the service affordable. The analysis of data reported on the treatment cost for the most recent visit to the clinic in the cross sectional study presents a positive picture on affordability of care as well. However, since the study captured information on the cost of last treatment alone, the data does not give an accurate estimate of the cost incurred for the complete dental treatment. Most practitioners also cited that cost was one of the key barriers for low income population while seeking dental treatment. As a consequence, patients delay seeking care till such time it is unavoidable. Cost was also reported as a factor that affects the follow up visits of patients who either post pone or delay it to avoid the additional financial burden of an extra visit to the dental clinics.

While the study focussed on urban areas in India, existing literature and key informant interview also highlight the enormous unmet needs of the rural communities in India, where there is a huge gap in the availability of dental services and dentists. While geographic maldistribution is a universal issue when it comes to health it gets further exacerbated by the fact that primary or community health centres that form the crux of healthcare delivery in rural areas often do not have any provision for dental care. To push for reforms in the rural regions which is home to nearly 70% of Indian population, research based insights are critical and could facilitate to gain adequate attention from the policy makers and bolster the ongoing advocacy work.

One major recommendation that emerged from the in-depth interviews was to invest in improvement of awareness and attitude of the general population towards oral health and the practitioners felt that this need was far greater for the low income segments as they are far more vulnerable to health shocks. Information, education, communication and behaviour change communication initiatives targeting both adults and children will play an important role in changing the demand side factors affecting utilisation of dental health services.

Efforts focusing on improving awareness and knowledge among the population can go a long way in addressing the root causes associated with dental health. However, equally important is to address the supply side of dental care services. Government services are nominal in urban areas and almost non-existent in rural areas when it comes to dental health. All efforts aimed at improving the behaviour of patients will fall flat if the services are not made available. Private dental care providers play a significant role in the provision of services since they make up majority of dental health providers in the country. Maximising the potential of those private clinics through public private



partnerships and improving both the physical and human power infrastructure of public dental care services in both rural and urban areas are significant steps.

Currently, the priority for dental health is very low among the Government run public health programs as is evident from the dismal amount of funds earmarked for the same in their annual health budgets. Schemes such as Rashtriya Swasthya Bima Yojna (RSBY) are ambitious projects that set out to achieve extensive coverage of low income segments through health insurance. RSBY has reached **36.3 million** of the **50 million** below poverty line (BPL) families in India³. The scheme holds promise from healthcare perspective as it covers several diseases which require hospitalization as part of its package which covers a family of 5 for a premium of **Rs. 30,000** per annum.

Few day care procedures are covered under the scheme, dental surgery due to accident being one such procedure. By extending this scheme to cover dental ailments, dental care could potentially be made available for the BPL families registered under RSBY. However, access is an issue with the 36.3 million households having access to just about **8600 health providers** of which many may not offer dental healthcare as part of their services.

The need of the hour is a synergetic effort from the public and private sector supported by evidence based policies that address priority needs of the population, while provisioning for preventive and promotive dental care. This report is an effort towards this evidence based advocacy effort, trying to bring in insights and perceptions from the patients, potential beneficiaries and service providers.

Rashtriya Swasthya Bima Yojna (March 2017); retrieved from: http://www.rsby.gov.in/Overview.aspx



Oral health status - Global scenario



Dental caries and periodontal diseases are the most prevalent non communicable diseases present globally. With an estimated prevalence among 2.4 billion people globally, untreated dental caries was considered to be the most prevalent disease.⁴ According to World Health Organisation, nearly all adults and 60-90% of school children are affected by tooth decay worldwide. While untreated caries is the most prevalent condition, periodontal diseases affecting the gums rank sixth among the 291 major diseases and injuries tracked by the Global burden of diseases study. 5 It is estimated that nearly 15-20% of adults aged 35-44 years, suffer from periodontal disease and nearly **30%** of those aged **65-74 years** lack any natural dentition. The high prevalence of oral infections in HIV, oral cancer, dental trauma and other ailments affecting the oral cavity indicates a pressing need for tackling and improving both preventive and curative measures associated with oral health. While the prevalence of dental caries especially among children was higher in developed countries than in developing countries; the trend is showing a reversal in recent times. This is owing to the changing dietary habits (increased sugar uptake), inadequate oral health services in developing countries and effective implementation of preventive programmes including use of fluorides and improved self-care practices in developed countries.⁷

https://www.ncbi.nlm.nih.gov/pubmed/25740856

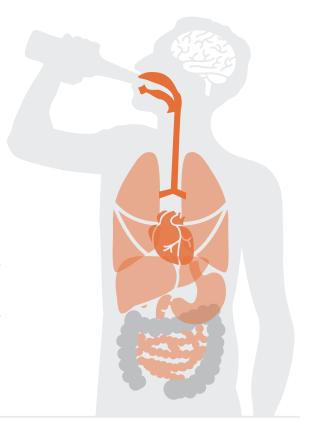
⁵WHO. Prevention is better than treatment. Bulletin of the World Health Organisation. 2015.

WHO. Oral health fact sheet. 2012 April

Petersen PE, etal. The global burden of oral diseases and risks to oral health. Bulletin of the World Health Organisation. 2005 Sep; 83 (9):661-670.

These highly prevalent oral health conditions can result in double burden with its impact on the quality of life and morbidity as well as the huge financial burden associated with treatment of dental diseases. The impact of oral diseases, especially dental caries can severely impede quality of life with pain, discomfort, disruption of sleep and eating pattern which in turn can impede nutrition and growth; especially among children.8 Several socio-epidemiological studies have pointed out that the burden and prevalence of oral diseases are higher in developing countries especially among the poor and disadvantaged population. Experts also point out the relatively high financial burden associated with treating oral diseases. Peterson et al note that treatment of oral disease is the fourth most expensive treatment, especially in developed countries who invest nearly **5-10%** of their public health expenditure on oral health. While this indicates a severe financial burden in developed countries, investment in oral health care is practically negligible in developing countries. It is estimated that the cost of providing effective treatment to dental caries alone in children will exceed the total child health care budget of many low income countries.¹⁰

Most oral diseases share risk factors with other major chronic diseases like diabetes, cardiac conditions and cancer. These include increased sugar intake through diet, tobacco usage and alcohol. This has led to an emphasis on common risk factor approach where the efforts are aimed at addressing these risk factors which in turn will yield multiple results. This has prompted bilateral international organisations like the World Health Organisation to advocate for an integrated approach with other chronic diseases. They also call for implementation of community based preventive tactic with specific focus on disadvantaged and poor population. 11



⁸ Sheiham A. Oral health, general health and quality of life. Bulletin of the World Health Organisation. 2005 Sep; 83(9).

¹⁰Yee R, Sheiham A. The burden of restorative dental treatment for children in Third World countries. International Dental Journal. 2002;52(1):1-9.

Supra note 3

Oral health status -Indian scenario



The oral health status of the country leaves much to be desired. The National Oral Health Survey and fluoride mapping by Dental Council of India (DCI) which was published way back in 2004 indicated dental caries prevalence of 50% among age 5 group which progressively increased and became 85% among those aged 65-74. Prevalence of periodontal disease was found to be 80% among the elderly and nearly 30% of those in the age group 65-74 had edentulousness (partial or complete loss of teeth).

Despite the high prevalence of oral diseases, the percentage of respondents who consulted a trained dentist was as low as 24% among the elderly age group. Survey findings also indicated the low awareness levels with 21% respondents among 35-44 year olds having no knowledge of any kind of oral health problems, 28% being unaware of the etiological factors and 33% oblivious about preventive measures. The corresponding percentages among younger and older age groups both were worse than that of **35-44** age group. 12 A seven state oral health baseline sample survey by Govt. of India and WHO estimated prevalence of periodontal disease as high as 100% in Rajasthan and Odisha. 13

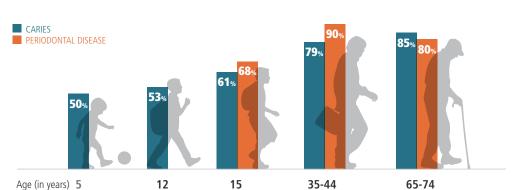


Figure 1: Age specific prevalence of periodontal disease* and dental caries (National Oral Health Survey, DCI)

^{*}Periodontal disease not assessed for 5 and 12 year old groups

Dental Council of India. National Oral Health Survey. 2004

¹³Shah N, et al. Oral health in India: a report of the multi centric study, Directorate General of Health Services, MOHFW, Govt. of India and World Health Organisation. 2007.

A projected estimate of oral health status in India (2000-2015) anticipated a prevalence of 50% for dental caries and 45% for relatively severe periodontitis (90% for minor periodontal diseases) and 33% for malocclusion. 14 However, the actual prevalence could be on the higher side at present than these estimates due to changes in dietary habits and other personal habits including use of tobacco and alcohol. Despite the alarming findings from the oral health survey, the implementation of national oral health policy and concrete measures to address these illnesses are yet to be initiated in a full scale. Systematic review of literature on prevalence of oral diseases have cited studies with varying prevalence of oral diseases across different states and different socio economic strata. However, there is a lack of data and studies employing standardised techniques for estimating the prevalence of oral diseases in India. ¹⁵ More recent studies have established prevalence of periodontal diseases like 97.5 % (Kundu et al, 2011 in West Bengal) 6, **85.6%** (Goswami D,2014 in Assam) and **61%** (Sekhon TS, et al, 2015) in Karnataka). 18

Determinants of oral health

Age, gender, educational status, per capita income, occupation and overall socio economic status are considered as major determinants of oral health status and health seeking behaviour. Reduced awareness and inability to afford expensive dental procedures result in an increased prevalence of oral disease among poor and negatively impact oral health seeking behaviour. Varying studies and frameworks have elaborated different determinants of oral health and dental health seeking behaviour. 19, 20, 21, 22

¹⁴ Shan N. Oral and dental diseases: causes, prevention and treatment strategies. National Commission of Macroeconomics in Health Background papers-Burden of disease in India. 2005: 275-8. Available from: http://www.who.int/macrohealth/action/NCMH_Burden%20of%20disease_(29%20Sep%202005).pdf

¹⁵ Shaju PJ, et al. Prevalence of periodontitis in the Indian population: a literature review. Journal of Indian Society of Periodontology. 2011;15(1):29-34. Available from: http://www.jisponline.com/article.asp?issn=0972-124X;year=2011;volume=15;issue=1;spage=29;epage=34;aulast=Shaju

¹⁶ Kundu D, et al. Periodontal status of a given population of West Bengal- an epidemiological study. Journal of Indian Society of Periodontology. 2011;15(2):126-9. Available from: http://www.jisponline.com/article.asp?issn=0972-124X;year=2011;volume=15;issue=2;spage=126;epage=129;aulast=Kundu

¹⁷ Goswami D. Periodontal treatment needs of a rural population of North East India. The Clarion. 2014;3(1):8-12. Available from: http://theclarion.in/index.php/clarion/article/viewFile/135/151

¹⁸ Sekhon TS, et al. Periodontal health status and treatment needs of rural population of India: a cross sectional study. Journal of Natural Science, Biology and Medicine. 2015(6):111-5. Available from: http://www.jnsbm.org/article.asp?issn=0976-9668;year=2015;volume=6;issue=1;spage=111;epage=115;aulast=Sekhon

Varenne B, et al. Illness related behaviour and utilisation of oral health services among adult city dwellers in Burkina Faso: evidence from a household survey. BMC Health Services Research. 2006;6:164. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1769368/

Joshi N, et al. Prevalence, severity and related factors of dental caries in school going children of Vadodara city- An epidemiological study. International Journal of Oral Health. 2013;5(4):35

²¹ Sheiham A, et al. The common risk factor approach: a rational basis for promoting oral health. Community Dentistry and Oral Epidemiology. 2000;28(6):399-

Watt RG. Strategies and approaches in oral disease prevention and health promotion. Bulletin of World Health Organisation. 2005;83(9):711-8.

FACTORS AFFECTING ORAL HEALTH STATUS

Modifiable socio demographic factors like income, education, occupation, marital status

Non modifiable socio demogrpahic factors like age, gender

Dietary habits

Personal habits like smoking, alcohol consumption

Oral hygiene status

Knowledge on oral health and positive behaviour

Fear of dentist and dental procedures

FACTORS AFFECTING ORAL HEALTH SEEKING BEHAVIOUR

Socio economic characterists

Affordability of services

Availability of services

Perception of need

Perceived importance of oral health care

Fear of dental procedure

Self assessment of oral health status

Social support

Different studies have shown that prevalence of periodontal disease and dental caries increase with age. Oral health problems, especially dental caries is influenced to a large extent by dietary habits including consumption of sweets and chocolates and population from higher economic strata are more susceptible to dental caries while periodontal diseases are found to be more prevalent among the lower socio economic strata.²⁵ Tobacco, alcohol and consumption of sugars has been established as major risk factors associated with prevalence of oral diseases. Poor oral hygiene and a diet comprising of more saturated fat, sugars and less amount of fruits and vegetables are also seen associated with poor oral health status. ²⁶

It is also worth noting the prevalence of dental diseases among different segments of the population. For instance, there is a gender perspective to oral hygiene with women being more likely to suffer from oral diseases. However, dental health seeking behaviour did not vary much according to gender. Urban population and those from higher income quintiles are more likely to seek treatment for oral health conditions than the rest of the population. 27

A multitude of factors affected the health seeking behaviour with accessibility, availability and affordability of dental services playing a crucial role.





Boban D. Oral diseases and health seeking behaviour among women aged 18-34 years in rural Ernakulam, Kerala. Dissertation for the award of the degree of Master of Public Health. SCTIMST. 2014. | Supra note 2, 4 | Supra note 20

Gambhir RS, et al. Utilisation of dental care: an Indian outlook. Journal of Nature, Science, Biology and Medicine. 2013;4(2):292-7.

Educational status, income, perceived need for and importance of oral health care, fear of dental procedures, anxiety, lack of time and a lack of dental work force are some of the factors that can influence the health seeking behaviour.²⁸

According to the results of National Oral Health Survey, among those who reported dental health ailments, the percentage who sought care from a trained dentist was low. There were marked differences between rural and urban population when it comes to seeking care from a trained dentist as well.²⁹

Dental health in India: Infrastructure, Humanpower, Health Seeking Behaviour

Dental health field seems to be one of paradox in India where on one hand there is an oversupply of dentists and number of private dental colleges, whereas there is unmet need for dental health care especially in the rural areas. ³⁰ From the first dental college that was opened in Kolkata in 1920 to 305 dental colleges in 2017 (275 recognised and 30 approved), dental health education has come a long way in India. 31

However, majority of these institutions are concentrated in certain states with more than 80% of these institutions being concentrated in 10 states. The three southern states of Karnataka, Tamil Nadu and Kerala have 34% of these institutions while there is only one dental college in entire North-East India. Also, 85% of these institutions are in the private sector while only 15% are Govt. dental colleges. A state wise split of the recognised dental colleges in India is given in Annexure 4. Tuition and related expenses in a private dental college is many times higher than that of a government dental college.

If there is a surplus of dentists in the urban areas, the corresponding numbers in rural areas are very low. While the dentist population ration is 1:10,000 in urban areas, it is **1:250,000** in rural areas.³² This geographic mal-distribution is one major issue in making dental healthcare inaccessible in rural areas. In the absence of government facilities, the huge capital investment of establishing a private dental clinic can be a major deterrent for young dental health professionals from practising in rural areas. Students who pay hefty sums as tuition fee are often reluctant to work in rural areas due to the non-viability of private dental clinics in such areas. Since the post of dental surgeon is not present in the primary health centres, dental services are not made available through government health system as well. It is reported that there are about 2, 17,539 dentists working in India with nearly **25,000** new graduates joining the work force every year.³³

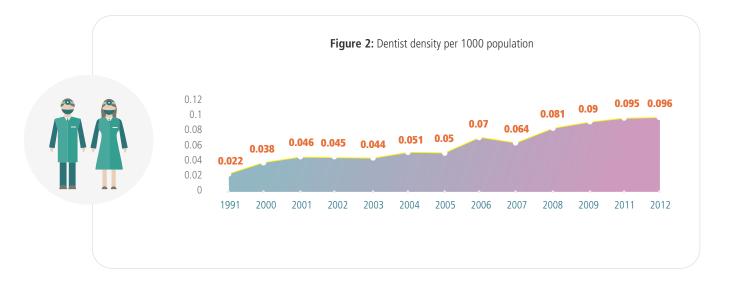
Supra note 16 | Supra note 9 | Washisth S, et al. Utilisation of services rendered in dental outreach programs in rural areas of Haryana. Contemporary Clinical Dentistry. 2012;3(2):s164-6.

DCI website. List of approved and recognised dental colleges in India. Downloaded on 26th February 2017.

Dagli N, et al. Increasing unemployment among Indian dental graduates- high time to control dental manpower. Journal of International Oral Health. 2015 Mar;7(3):i-ii. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4385734/

³³ Dental Council Of India. Available from: http://www.dciindia.org.in/DentistRegistered.aspx

The density of dentists per **1000** population increased from **0.022** in 1991 to **0.096** in **2012.**³⁴ However, the number is below the WHO recommended level of 1 per 1000 population and even though rural urban wise data was not available readily it would be safe to assume that rural areas will have a much higher deficiency than the urban counterparts. A report from 2009 that assessed the density of dentists found that it ranged from **0.019** (NE states), **0.016** (Chattisgarh), **0.013** (Odisha) to **0.428** (Karnataka).³⁵



Oral health and its issues do not figure high on the priority items of health care for most of the Indian population. Lack of adequate infrastructure and trained professionals could be one of the reasons for such a callous attitude of majority of the population. According to the Consumer Usage & Attitude Study (CUAS) – an exhaustive study conducted by Colgate in association with Indian Market research Bureau (IMRB) in 2016, 43% Indians claimed to have visited a dentist at least once in their lifetime, which is a significant growth as compared to the 28% in 2008. Some of the other findings of the study also points to the lack of seriousness and awareness among the Indian population. 90% of people don't visit a dentist regularly and only 31% of people had visited a dentist in the past one year. The health seeking behaviour has shown significant change, however there is much ground to cover to ensure good oral health for all. Several agencies like the Indian Dental Association, Dental Council of India are working towards correcting the many issues related to oral health care in India. Several private stakeholders operating in the dental care industry have also invested in generating awareness about oral care through television commercials, dental awareness programmes, camps etc.

³⁴ Global health observatory data repository. Density per 1000- data by country. Available from: http://apps.who.int/gho/data/node.main.A1444

Hazarika I. Health workforce in India.: assessment of availability, production and distribution. WHO South East Asia Journal of Public health. 2013;2(2): 106-12. Available from: http://www.searo.who.int/publications/journals/seajph/seajph/2n2_p106.pdf

http://www.colgate.co.in/app/Colgate/IN/Corp/News/CompanyArchives/HomePage.cvsp?newsArticle=News_1111116

Dental health insurance in India:

In India, there are very few insurance providers that are offering exclusive cover for dental healthcare. Again, for an average buyer, a fair amount of research goes into choosing the right general health insurance product that covers dental both because of the way they prioritize dental healthcare as well as differences in approach by the insurer towards the type of dental coverage. For example, Apollo Munich Maxima health, a general health insurance product offers dental coverage only if the ailment is not a result of an accident whereas Bharati Axa Smart health provides coverage purely accident cases.³⁷ Furthermore, many insurance providers offer services for dental only on payment of an additional premium. Hence, even for an individual/family in the general population, the effort- both in terms of the required research, prioritization of dental healthcare as well as the additional cost burden can be significant barriers in the access of an adequate insurance cover.

The Indian Dental Association has been striving to bring out a new all-inclusive oral and dental health care insurance scheme. Especially from a low income segment perspective, except for RSBY which has limited coverage of dental ailments, there are very limited insurance options available. OCare, an insurance Process as a Service (PAAS) platform has recently launched India's first exclusive dental insurance plan. The plan provides insurance up to Rs.25,000 a year per person and covers pre-existing dental conditions as well. Additionally, the plan provides two dental check-ups a year as well as a loyalty card that is redeemable on dental services. With a view to making dental treatment accessible and affordable for all, OCare's dental insurance plan is being launched in villages through their respective local governing bodies- Gram Panchayats. Since its launch in late 2016, there is not enough literature about the coverage of this product and it is yet to be seen whether it passes muster for the target segment-low income households.



accorded to dental ailments by the general population. Provision of products such as dental health insurance can be a prudent way to create a value chain that can build information services around dental healthcare sustained through the potential uptake of these products by the population. Products like RSBY that are particularly focused on low income segments should be highlighted for their coverage of niche healthcare areas such as dental and adequate capacities must be built for such households who may have very limited exposure to the benefits of this product. Hence, while bridging the market gap of



National Health Policy: India

Despite the pressing need for addressing the oral health issues and restructuring dental education and human power, the implementation of National Oral Health Policy is not given due importance in India. Efforts at implementation of a national policy/programme is given below.³⁸ However, the implementation of National Oral Health Programme is yet to be streamlined. The budgetary allocation, if considered as a proxy indicator for the interest in oral health programme; leaves much to be desired.

As per the financial outlays and outcome budget of 2013-14, oral health received a total planned allocation of Rs. 15.73 cr (USD 2.36 million) of which Rs. 10 cr (USD 1.50 million) was earmarked for national oral health programme³⁹ and Rs. 5.73 cr (USD 0.86 million) for oral health in general. This is 0.05% of the total planned health budget for the financial year. In 2014-15, the budgetary allocation for oral health plummeted to Rs. 2.66 cr(USD 0.4 million) which is 0.02% of the total planned health budget for that

³⁸ Kothia NR, et al. Assessment of the status of National Oral Health Policy in India. International Journal of Health Policy and Management. 2015;4(9):575-81

³⁹ National Oral Health Programme . Available from http://dghs.gov.in/content/1352_3_NationalOralHealthProgramme.aspx

MOHFW. Financial outlays and outcome budget 2013-14. Available from: http://www.mohfw.nic.in/WriteReadData/l892s/6%20ChapII%20PAGE%204-22Financial%20Outlay%20&%20Outcome%20Bugt-94046996.pdf

financial year. 41 The overall objective of the National Oral health programme is to bring about improvement of the determinants of oral health in the country by providing comprehensive oral health care through synergistic, equitably distributed general and oral health facilities and coordination with related sectors in public or private. The financial outlays and outcome budget for 2016-17 did not have any separate allocation for national oral health programme, rather oral health programme was clubbed under flexible pool for NCDs, injury and trauma all of which together was allotted Rs. 555cr (USD 83.4 million).42

If oral health status, perceptions and quality of care are to be enhanced, it requires further concrete efforts and commitment on part of the Government and professional associations that lead the dental community in India. Some of the areas where concrete steps need to be taken are:

- Increase in financial commitments to improve oral health
- Providing choices to patients for paying for dental services (eg: dental insurance)
- Innovative Information Education and Communication(IEC) efforts to positively influence the oral health habits and perceptions about dental care
- Promoting alternate models like Public private partnerships (PPPs) to provide dental services in rural areas
- Streamlining dental education especially the private dental colleges and improving the quality of education

⁴¹ http://www.mohfw.nic.in/WriteReadData/l892s/6FinancialOutlaysOutcomeBudget201415.pdf

⁴² http://www.mohfw.nic.in/WriteReadData/c08032016/6_CH_II_Financial_Outlays_Out.pdf



a. Rationale of the Study

Financial burden due to health issues counts as one of the major concerns in the development/ welfare sectors across the globe. It is well known that one of the primary reasons behind decreased financial resilience at low-income household level is due to high out of pocket expenses for health emergencies. Health related financial distress takes on bigger proportions for ailments concerning dental health. High cost infrastructure and services with minimal risk coverage makes spend on dental health care a very expensive one; especially for low-income households.

According to a WHO report that collected data for 182,00743 respondents of age 18 and over showed expenditure on dental health care as catastrophic with 35% of respondents in low/middle income countries having spent 40% or more than the respective household's capacity to pay.

The above context sets a strong foundation for government and civil society initiatives to push for reforms in the way dental healthcare is provided to low income households and the risk cushioning that needs to be provided thereof. It is also key to understand the demand side of the dental healthcare space, barriers in the uptake of services and to understand the triggers that push dental patients to reach out for professional healthcare. This becomes especially important as well as interesting in urban and periurban areas where there is reasonable access to healthcare providers but low uptake of such services- especially among low-income groups.

Objectives of the Study

Grameen Foundation India with support from LGT Venture Philanthropy, conducted a holistic research that covered both the demand side (low-income households) and the supply side of the dental healthcare system in select urban areas in India to investigate the following:

- What is the perceived occurrence of dental health care related ailments in the selected sample of low income urban areas?
- What are the barriers for non-users and positive influencers for users of dental healthcare services in low income Urban India?

- What is the life time value for a patient across Economic strata for dental care services?
- · What attributes are considered salient by consumers in choosing and recommending dental care service providers?
- What are the satisfaction levels of patients in relation to these salient attributes? What are the marketing implications of these customer attributes and correlation with customer satisfaction levels? What is the relative importance of each of the attributes?
- How is the market for dental care services segmented in terms of economic strata, demographics, culture, and geography?
- How has this number (those receiving no or poor dental care) trended over time and what do we project the trend to be over the next 5-10 years?
- What are the key drivers of adequate dental care in India and what interventions appear to be most effective in addressing the problem?

b. Study design & methodology

Research Design

A mixed method approach was used while conducting the study, wherein a combination of quantitative and qualitative methodologies were used to achieve the desired objectives. The cross sectional study was majorly quantitative in nature and qualitative interviews with dentists were used to supplement the findings from the quantitative interviews.

Study Geography and Target Respondents

The research covered five cities from different geographical locations in the country.









The key components of the research and therefore the respondents were as follows:



Patient Exit: Structured quantitative interview with patients visiting dental health care facilities (private clinics and hospital as well as government facilities where dental health care is available)



- 2. **Community:** Structured quantitative interviews with community members in the vicinity of dental healthcare facilities. Care was taken to conduct interviews with the target group low-income households.
- 3. Qualitative in-depth interviews with dentists who provide services in these areas.

iii. Sampling plan | Quantitative Sampling Plan

SAMPLE SIZE

2800 respondents were to be included in the study from 5 different cities and the sample was distributed equally across the five cities included in the study. **560** respondents were to be selected from each of the five cities- Mumbai, Surat, Delhi, Bangalore and Kolkata. With 95% confidence interval, margin of error of 4.3 and a non-response rate of around 10%, the sample size will allow us to read the findings at each city level. Eventually, 2924 respondents were covered under the study, sample distribution by city and survey type is as follows:

City	Patient Exit	Community	Grand Total
Bangalore	289	282	571
Delhi	282	308	590
Kolkata	311	300	611
Mumbai	281	279	560
Surat	297	295	592
Grand Total	1460	1464	2924

Table 1: Sample Distribution

Sampling Methodology

- To begin with each city selected for the study viz. Mumbai, Bangalore, Kolkata, Delhi and Surat was divided into different zones based on administrative divisions of the city and the secondary data available in the public domain.
- From the geographical division which was undertaken, 4 zones were selected and for each zone the areas with higher concentration of low income segments were identified from the records maintained (notified slum areas) at the Municipality/ Corporation of particular city.

 Out of this list, one slum area was selected from each zone through random sampling. Once the slum area was identified, the next step was to identify the wards from the areas. The study considered all the wards under the selected area.

Community household interviews were conducted in the selected wards. Left hand thumb rule⁴⁴ was employed once the wards to be included were identified, all the dental health facilities in the vicinity of these wards were mapped. Detailed sampling strategy for each city is included in *Annexure 5*, along with detailed information on city wise ward selection for community based household interviews.

The dental health facilities to be visited for conducting patient exit interviews under the study were identified through the process of mapping facilities in the selected wards where community based household interviews were completed. The dental facilities included:



The mapping of the dental health facilities was undertaken manually and also by using online mapping techniques. The data from the mapping exercise for all the five cities is available in *Annexure 5*. The survey also covered major hospitals with dental health services around the selected slum area with the assumption that the patient from the selected area might be traveling to bigger facilities in adjacent areas for seeking care. The study also included survey of patients visiting Dental Colleges from the selected cities.

Qualitative Sample

In addition to the quantitative survey, in-depth interviews were conducted with healthcare providers in all the five cities. These interviews provided us with valuable information that has helped supplement the quantitative findings. In all 20 in-depth interviews were completed across the five cities with dental care service providers.

⁴⁴ Left hand thumb rule is the path used to walk within a starting point for identifying the health facilities to rule out impact of interviewer convenience and to maintain randomness in the sample

iv. Survey Tools

The quantitative survey tool for the community based surveys and the patient exit interviews are available in Annexure 1 and Annexure 2. The qualitative IDI guideline is also added to Annexure 4. The following aspects were probed through the quantitative research:

- 1. Personal Habits
- 2. Perceptions and Opinions about oral health care
- 3. Health seeking behaviors with respect to oral health
- 4. Prevalence of oral health issues in the study population.
- 5. Determinants of health seeking with respect to oral health
- 6. Treatment seeking and frequency of check ups
- 7. Economic profile of the respondent's household through Poverty Probability Index tool

v. Data Collection

The structured interview schedules, informed consent form and information sheet were translated into local languages before deployment in field. Data enumerators proficient in the local language were employed for data collection. CAPI based data collection was used for this project to enable real time monitoring and there were validations incorporated at different levels in the software to ensure high standards of accuracy and data quality.



vi. Limitations of the study

The patient interviews were conducted with patients who were exiting the dental facility after undergoing a check-up or treatment. Patients who had undergone extensive procedures or were experiencing discomfort were not able to participate in the exit interviews. This limitation should be considered while reading the findings from this study, especially findings related to cost of dental care. Most respondents were able to share only the consolidated expenses incurred for their dental treatment for a single visit to a dental, therefore further classification of treatment cost by consultation fees, medicine cost, diagnostics and travel cost was not possible. Due to the above mentioned reasons the estimation of life time value for a patient was also not possible which requires an accurate estimate of average cost of treatment.

The extrapolation of insights gathered from this study can only be extended to urban and peri urban areas of the regions surveyed since rural areas were not covered under this study.

vii. Ethical Committee Review

The Institutional Ethics Committee (IEC) reviewed the research proposal for ethical concerns, respondent's consent, security and privacy of data. They also reviewed the survey tools, data collection processes and data management protocol. Approval for the study was granted by the IEC after they thoroughly reviewed the entire research plan.



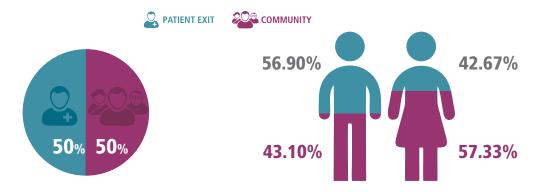


3.1. Demographic and socio economic characteristics of the study participants

A total of 2,924 participants from 5 cities took part in the study. Of these, 1,464 were randomly selected respondents from the community while the remaining 1,460 were randomly selected patients exiting dental clinics or facilities across these cities.

Figure 3: Sample Distribution

Figure 4: Gender distribution

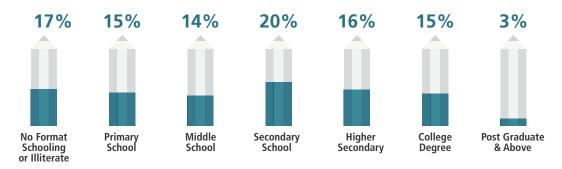


Of the overall study participants, 49% were females while the remaining 51% males. The proportion of female participants were higher in the community interviews. The difference in the gender proportions between patient exit interviews and community interviews was found to be statistically significant. Participants from the patient exit interviews were found to be slightly younger than community participants. The mean age of community participants is **37.6** (Standard deviation (SD) of 12.7, (SD) is used to tell how measurements for a group are spread out from the average (mean)) and the mean age of exit interview participants is 36.1 (SD of 11.4).

Education status:

The distribution of educational status of participants is depicted in the following Figure:

Figure 5: Overall education status

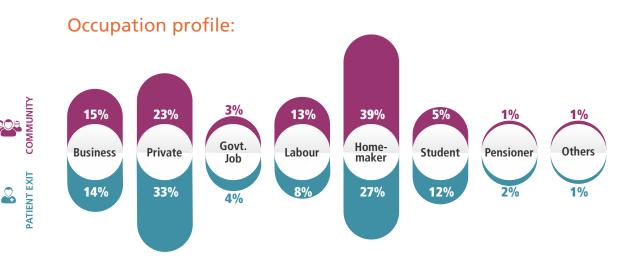


About **34%** of the respondents had completed formal education beyond the secondary school level. A further exploration within community and exit interview patients are shown below.

PATIENT EXIT COMMUNITY **22**% 20%20% 20% **18**% **16**% 13% 11% 8% 7% 6% Primary No Format Middle Secondary Higher College Post Graduate School Schooling School School Secondary Degree & Above or Illiterate

Figure 6: Educational status of participants

Self-reported status of education was higher among the respondents from the patient exit interviews vis a vis participants of community interviews and this difference was found to be statistically significant. **25%** of those who were interviewed from the community were without formal schooling when compared to **8%** from the patient exit interviews.

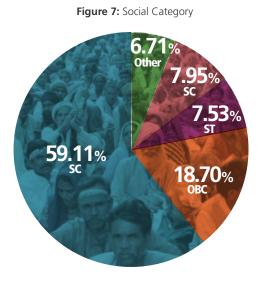


Of the entire study population, **33%** comprised of home makers while **28%** were employed in the private sector. In addition, **10%** were labourers and only **3%** held a job with the government. The mean household (HH) size of the study population was found to be **3.89**. This is lower than the average HH size reported in urban India. ⁴⁵ More than **80%** of the study population comprised of married individuals. The average monthly household income was lower for those interviewed from the community (**Rs. 14,731**) when compared to the participants of patient exit interviews (**Rs. 19,062**). This difference was found to be significant enough to be applied statistically to both groups even in the larger population.

⁴⁵ Census 2011 reports the national average household size as 4.1 for urban areas. Normal Households by household size urban India. Available from: http://www.censusindia.gov.in/2011census/hh-series/hh01.html

Social Category

The social category of respondents is depicted in the *Figure 7.* Some of these demographic and socio economic factors like age, gender, educational status, occupation and monthly HH income were found to be varying significantly between the community interviews and patient exit interviews. However, what is more important is that whether these demographic factors have any impact on utilization of dental health services among these two groups. It will be discussed further in the section for utilization of services.



Prevalence of habits directly linked with occurrence of dental ailments

The overall prevalence of tobacco usage was 34.7% among the study population and about a quarter of the respondents consume tobacco on a daily basis. The prevalence of consumption of sweets/ chocolates and fizzy drinks on a daily basis was 16% and 7% respectively however overall prevalence recorded was high- as 89% and 87% respectively.

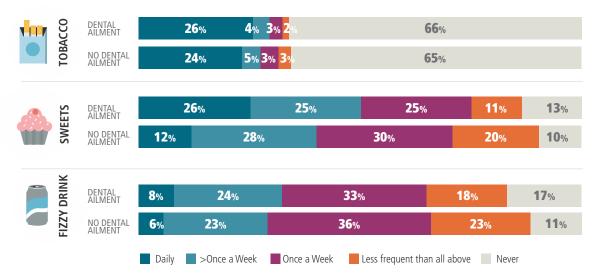


Figure 8: Usage of Tobacco, Sweets, Fizzy Drinks and Dental ailment experience

The consumption of tobacco and fizzy drink was similar among respondents who reported dental ailment(s) and those who did not. The reported daily consumption of sweets was higher by 14% among respondents who did not report a dental ailment as compared to those who had a dental ailment.

Poverty Analysis using Poverty Probability Index

Poverty line-based segmentation offers useful, uniform way to segment low income groups and helps create standard benchmarks. Recognizing this, Grameen Foundation participated in the making of the Poverty Probability Index (PPI)⁴⁶- a country-specific, statistically sound and simple to use poverty tool. Grameen Foundation has spun off the PPI which is now governed and managed by the new PPI Alliance housed at IPA. With the PPI, responses to 10 questions about a household's characteristics and asset ownership are scored to compute the likelihood of the household being above or below a number of national and international poverty lines. 47 PPI data can thus measure the proportion of clients living above or below a particular poverty line, and when used over time, can track movement out of poverty.

The PPI is calibrated to both national and international poverty lines, which means that PPI score for a household can be used to estimate the likelihood for a wide spectrum of poverty lines. GFI uses poverty lines, which are defined by the World Bank as cut-off points separating the poor from the non-poor, to classify these poverty segments. Eight poverty lines⁴⁸ have been primarily calibrated in the latest version of PPI (R68), the National Poverty Line (NPL) for India and the globally accepted lines which are listed below. Also, the annual Household level expenditure⁴⁹ estimates, as provided in the table below, have been drawn using the PPP values defined for each poverty line.

Table 3: Poverty lines in terms of Annual HH expenditure in Rs. and USD

Poverty Lines	Annual HH Expenditure (Rs.)		Annual HH Expenditure(USD)	
	Rural India	Urban India	Rural India	Urban India
<1.9 2011 PPP	53,239	69,943	820	1076
<national line(npl)<="" poverty="" td=""><td>77,271</td><td>100,897</td><td>1191</td><td>1552</td></national>	77,271	100,897	1191	1552
<\$3.1 2011 PPP	86,856	114,111	1338	1756
<\$3.8 2011 PPP	106,454	139,863	1640	2152
<\$4 2011 PPP	112,056	147,243	1727	2265
<\$5 2011 PPP	140,071	184,032	2158	2831
<\$10 2011 PPP	420,236	368,085	6475	5663
<\$15 2011 PPP	560,306	552,117	8633	8494

Refer Appendix 3 for more information about the PPI

⁴⁷ Please refer Appendix 3 for a description of the poverty lines that India's PPI is calibrated to

Three poverty lines have been additionally calibrated for this study using services of Mark Schreiner, a poverty scientist and creator of the tool

^{1.} Income calibrated to various poverty lines, after applying the inflation index factor(1.42), was then multiplied with number of days in a month (30 days) to calculate monthly income; then by number of months in a year (12 months), to calculate annual income.

^{2.} Poverty lines (Rs. / person / day) taken from Schreiner, Mark, A Simple Poverty Score Card for India, May 2016 - https://www.povertyindex.org/

^{3.} Household Size: Rural -4.6 & Urban-4.2 (Census, 2011 data)

^{4.} Inflation Index Factor: (Based on change in CPI for Agricultural laborers between Dec 2011 to June 2017

The poverty profile of the respondents is presented in Figure 9. About **85%** of the respondents from the Patient exit interviews and about **74%** of respondents from the community interviews fall below the **\$5** poverty line. Thus for majority of the respondents, the estimate for monthly household expenditure was about **Rs. 15,336/-.**

Overall the study was successful in reaching out to respondents from low income household, nearly **80%** of the respondent households fall below **\$5** poverty line. Since **\$5** is the most representative poverty line for the study sample, further analysis of poverty data with factors affecting dental health care uptake will be undertaken using this line.

The poverty levels of the respondents from the patient exit interviews are higher than those from the community interviews for most of the lines, for **\$5** PL the difference is of **10%.** The economic profile of patient exit interview respondents brings forth a key point, people from low income segments residing in urban centers do avail dental health services.

Figure 9: Economic Status of Patient Exit and Community survey respondents



It is also pertinent to note at this point that education levels observed in the patient exit interviews were higher, nearly **28%** respondents had attended college (graduates/post-graduates). Many of the educated urban respondents belong to poor households, which highlights the gap in the employment opportunities for the urban poor. In India, for example, **78%** of the workforce is employed in the informal sector (excluding agriculture), which is mostly based in urban and semi-urban areas. Formal employment is less accessible for the poorer and less-educated segments of the population. Also, the employability of the graduates in India is lower due to the rising skill gap which results from outdated curriculum, inadequate infrastructure and the overall poor quality of education. Federation of Indian Chambers of Commerce and Industry's report on higher

International Food Policy Research Institute. 2017. 2017 Global food policy report. Washington, DC: International Food Policy Research Institute. https://doi.org.10.2499/9780896292529

education in India, states that India produces more than six million graduates every year. However, a majority of them are not 'industry-ready' because of the skill-gap. 51



Finally, about one fourth of the respondents from patient exits were homemakers⁵² and therefore did not participate in the labour force. This could affect the cash flows for their households and increase their likelihood of poverty. Women outside the labor force represent underused human capital and reduce the country's potential economic growth. A recent report by the World Bank noted that in India, female Labour Force Participation Rate (LFPR) in urban areas has stagnated at very low levels (20%). It is also estimated that GDP growth of India could accelerate from 7.4% currently to over 9% if India closed half the female LFPR gap with Nepal (Women's LFPR for Nepal is 83%). 53

⁵¹ http://www.ficci.in/spdocument/20787/FICCI-Indian-Higher-Education.pdf

Homemakers are housewives/ female members of the household who manage/supervise the household chores are called

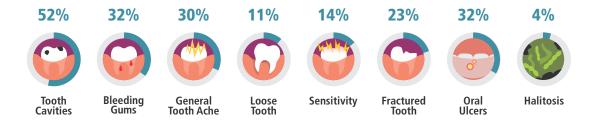
World Bank. 2017. India Development Update, May 2017 : Unlocking Women's Potential. World Bank, New Delhi. © World Bank. https://openknowledge.worldbank.org/handle/10986/27545 License: CC BY 3.0 IGO.

3.2. Prevalence and response to selfreported oral health ailments and in the study population

Findings from community interviews:

About 49% of the respondents from the community interviews reported an incidence of dental ailment over the last 12 months. Carious teeth or cavities (52%) was the most prevalent self-reported condition among the participants who were already at the dental health facility to seek care. A description of prevalence is depicted in the Figure 9. Even though 32% of respondents complained of bleeding gums indicative of gum diseases, very few (4%) complained of halitosis or bad breath which is usually an accompaniment of gum diseases.⁵⁴ This is indicative of the relative importance that people attribute to certain oral health conditions. The overall prevalence of dental ailments among the community respondents was 48.7%. The distribution of prevalence of various dental ailments is explored in the Figure 10 below.

Figure 10: Prevalence of oral ailments community interviews



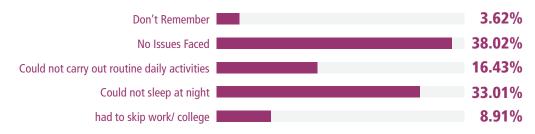
On further exploration, we found statistically significant associations between gender and bleeding gums (p value-0.006) and gender and general tooth ache (p value-0.004). The associations between social category and ailments were much clearer with cavities, bleeding gums, ulcers and sensitivity showing highly significant associations (p value- 0.000). Tooth mobility (p value-0.010) and tooth ache (p value-0.035) were also found to be significantly associated with the social category of participants in community interviews. Age was not found as a significant factor.

Using multiple regression method which helps predict an outcome using one or more independent variables, the occurrence of a dental ailment was found to be explained by gender and poverty levels while the other variables were not found to be significantly associated. Regarding gender, the probability of any dental ailment is lower for males than females.

⁵⁴ Amou T, Hinode D, Yoshioka M, Grenier D. Relationship between halitosis and periodontal disease - associated oral bacteria in tongue coatings. Int J Dent Hyg. 2014 May;12(2):145-51. doi: 10.1111/idh.12046. Epub 2013 Jul 26. Available from: https://www.ncbi.nlm.nih.gov/pubmed/23890391

These various oral health ailments were seen to affect the individuals in different ways in their daily life. While a majority of respondents indicated that they did not face any issue from oral health problems, the most common complaint among those who were affected was interrupted sleep due to dental pain.

Figure 11: Oral ailments affecting daily life- community interviews

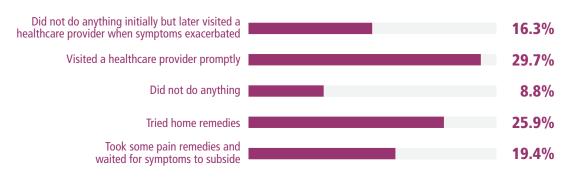


Dental health seeking behaviour (responses from community interviews)

While 42% of respondents took the decisions on health care by themselves, 55% of the respondents had their spouses or parents taking the healthcare decisions for them. 34% of participants from community interviews had spouses taking decisions for them compared to 30% of patient exit survey respondents. Especially when seen through a gender lens, this finding resonates the socio-cultural factors that affect decision making for women where the agency to make a choice, even for their health needs is limited and often the role played by patriarchal figures such as husbands or even older women such as mother in laws.

Of those who experienced oral ailment, only 30% of the respondents visited a dental care facility immediately and remaining 54% exercised the options of home remedies (25.9%), self-medication (19.4%) or not doing anything (8.8%). Another 16% visited a healthcare provider when the symptoms exacerbated.

Figure 12: Responses to symptoms of oral ailments (Community interviews)



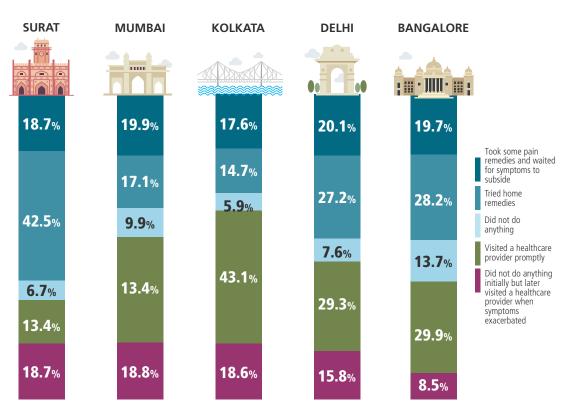
Based on the response to dental ailment, we also tried to understand if the economic status of the respondents was different for each of the different type of responses. For NPL and \$5 PL, the difference in poverty levels of each of the sub groups based on their response to ailments was found to be small. Thus economic status was not found to be a key factor that determined a person's response to oral ailment.

Figure 13: Response to Oral ailment and Economic Status

ズ	Did not do anything initially but later visited a healthcare provider when symptoms exacerbated	26.5%	50.8%	22.7%
0	Visited a healthcare provider promptly	26.0%	48.6%	25.4%
Ø	Did not do anything	31.9%	48.1%	18.9%
\checkmark	Tried home remedies	26.0%	48.3%	27.7%
	Took some pain remedies and waited for symptoms to subside	28.5%	48.7%	22.8%
			Below NPL NPL	- \$5

There was city wise variation in the responses to the symptoms of oral ailments as well. Kolkata was different from other cities in that 43% respondents reported visiting a healthcare provider immediately on experiencing a symptom. Such a response was lowest in Surat (13.4%).

Figure 14: City wise responses to symptoms of oral ailments



Other 10.0% 50.0% 40.0% Took some pain remedies and waited for symptoms to subside 28.6% 14.3% Pensioner 42.9% 14.3% Tried home remedies Did not do anything Labour 19.5% 31.0% 26.4% 11.5% Visited a healthcare provider promptly 18.8% Student 28.1% 18.8% 15.6% 18.8% Did not do anything initially but later visited a Homemaker 20.1% 19.4% healthcare provider when **22.7% 9.0%** 28.8% symptoms exacerbated Govt. Job 16.1% 25.8% 6.5% 41.9% 9.7% **Private Job** 22.4% 6.5% 28.8% 15.3% 27.1% **Business** 12.6% 11.7% 34.0% 8.7% 33.0%

Figure 15: Occupation wise responses to symptoms of oral ailments

Those who held government jobs and who are pensioners are more likely to immediately seek treatment when compared to other groups, especially students who are a part of an age group that is perhaps more resilient to such occurrences. This might be an indicator of the amount of disposable income available to those who are pensioners or hold government jobs as well as knowledge and attitude towards the significance of dental health issues. The prevalence of dental health ailments in a severe form might also be less among students who are in the young age group.

The association between the response to oral ailments and city (p value-0.000) was found to be statistically significant using a one way analysis of variance (ANOVA). This signifies that the response to oral ailment is related to the city to which the respondents live in. Such characteristic behaviour of people belonging to different cities within a country, highlights the need to explore these differences further which will help customize strategies to improve oral health of people.

Similar analysis shows association between the response to oral ailments and occupation of respondents (p value-0.003) was also found to be statistically significant using a one way analysis of variance (ANOVA). This means occupation of people influence their response to oral ailments, this information is useful while designing the IEC material for any awareness generation activities.

The economic status of respondents and their dental care seeking behaviour was studied, the percentage of respondents who fall below the National Poverty Line (NPL) and below \$5 PL does not differ much for those who visited a dentist and those who did not as seen in Figure 16. This emphasizes the finding that economic status of the respondents did

not emerge as a key determinant of dental care seeking behaviour. Result from the multiple regression analysis, where several key variables were tested to check if they influenced the dental health seeking behaviour, shows that economic status did not emerge as a significant factor in determining dental health seeking behaviour of the respondents. This analysis is discussed in detail in section 3.8 of this report.

23 49.9 27.1 No Dental Ailment 26.2 49.4 Visited Dentist 24.4 27.7 48.5 23.8 Did not visit Dentist 10% 20% 30% 50% 100%

Figure 16: Dental Health Care seeking behaviour and Economic Status

Poverty Concentration %



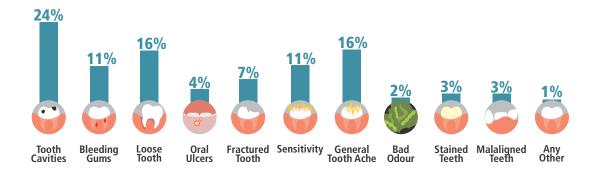
Patient exit interviews: Prevalence of different oral health ailments

Below NPL

NPL - \$5

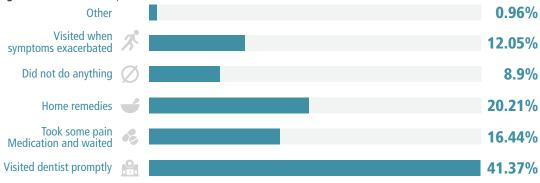
Of the total 1460 patients interviewed at various dental care facilities, 47% were visiting any dental healthcare facility for the very first time. For the remaining 53% these were part of multiple visits. The distribution of different oral ailments is depicted in Figure 17.

Figure 17: Distribution of oral ailments among patients



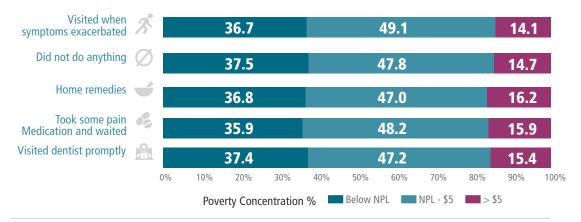
Even though the respondents at the Patient exit interviews were the ones who had reached out for medical care for their dental ailments, it was important to understand their immediate response to a dental ailment among respondents of patient exit interviews. This throws light on their decision making process and interestingly only about 41% of the respondents had chosen to immediately visit a dentist.

Figure 18: Immediate Response to Dental Ailment -Patient Exit



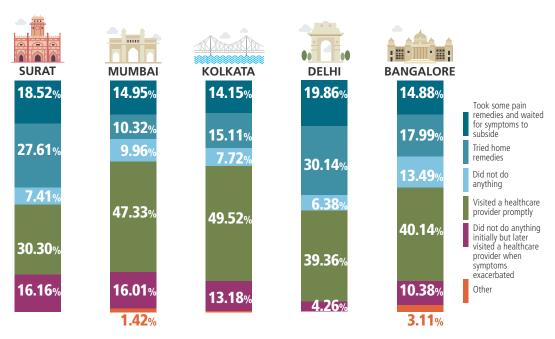
Those who visited a healthcare provider promptly was high among patient exit interview respondents when compared to those from the communities. Correspondingly those who sought home remedies were lesser in the patient exit interview group.

Figure 19: Response to Dental ailment and Economic Status



City wise variations in health seeking behaviour among respondents of patient exit interviews is given in Figure 20.

Figure 20: City wise immediate response to Dental Ailment, Patient Exit



Kolkata and Mumbai had similar proportion of people reaching out to a healthcare provider immediately while facing an oral ailment. Surat had lowest proportion of people visiting a dentist promptly which is matching the findings from the community interviews as well. Home remedies was high in Delhi followed by Surat.

The self-reported behaviour of respondents in Surat is similar in the community interviews and the patient exit, further evidenced by the practitioners from the city who called out this behaviour during the interviews. During the in depth interviews, a dentist working at a government run facility in Surat shared that patients who visited that facility largely came there due to the lower cost of treatment. Migrants from other states such as Uttar Pradesh and Bihar formed a large chunk of the patient load and majority of them were also not interested in availing preventive dental services. Surat has traditionally been a migrant hub and 40% of the population of the city lives in slums.⁵⁵ Even the education level of respondents in the patient exit interviews from Surat was low, 11% were illiterate and 53% respondents had only completed primary education. Thus migrant nature of the population coupled with lower education levels could be one of the reasons for the low priorities to seek dental health care. The opportunity costs in the form of lost wages may also deter them from seeking dental care on priority.

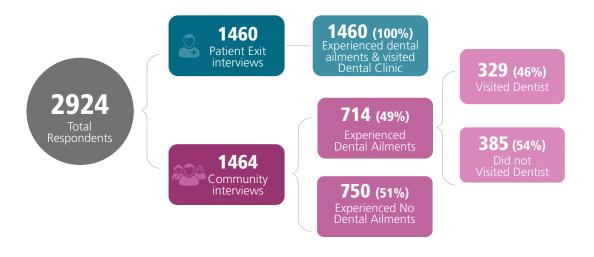
Qualitative interviews from Kolkata implied a positive culture of health seeking behavior wherein patients from all socio economic sections actively seek care. This is reflected in the high proportion of population who sought care from dentists in Kolkata when compared to other cities further demonstrated by our statistical analysis that shows that difference in health seeking behaviour observed for the 5 cities has been found to be statistically relevant. In addition, the qualitative interviews in Mumbai and Kolkata noted that trust in the care providers was a big facilitator for seeking treatment as per the reports of physicians.

The interregional differences observed in the health care seeking behavior is an interesting insight from this study and should be explored further. The secondary research undertaken through this project shows that there is limited literature available which explores this behavioural differences among low income segments in India.



In summary, the sample of 2924 respondents is classified basis their experience of dental ailment and dental health care seeking behaviour.

⁵⁵ https://www.suratmunicipal.gov.in/Content/Documents/Departments/VectorBorneDiseasesControl/VBDC_Annual_Report.pdf



Adherence to follow up (Community Interviews)

Overall, 68% of those who visited a dental clinic had a follow up visit scheduled. This varied between 72.8% in the patient exit interviews and 48.8% in the community interviews. Of these 81% from patient exit interviews and 75% from community interviews had intentions of adhering to the follow up visit.

Overall, 20% of the respondents who had follow up visits scheduled, had no intention of following it up. Among those who said that they would not adhere to the follow up visits, 31% mentioned that they were feeling better and did not perceive any need for further treatment while 29% considered dental treatment to be too expensive to follow up, while 17% thought that it was too time consuming.

Majority of the dentists have reported much lower rate of adherence to follow up visits than the self reported data by patients. The dentists told us that generally patients reach the clinics only when the pain is very severe. After initial treatment if the pain doesn't persist, the chances that the patient will come back are very low.

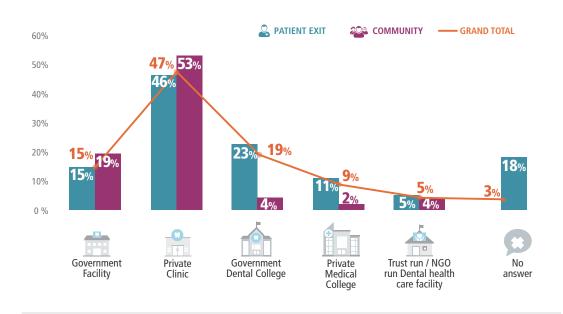
The practitioners also opined that tooth extraction was mostly the preferred method of treatment among lower income groups. It was considered as a very effective management procedure. This was because tooth extraction saved patient's time and multiple visits related to conservation procedures were absent. At times medication was perceived by patients as an effective alternative to dental procedures. This was due to the fear that symptoms may return even after spending a considerable amount of money on dental procedures.

Overall, dental problems are not generally treated with importance as long as prolonged pain does not interfere with the daily routine of the patients. Developing awareness and knowledge about the importance of good oral health can lead to positive attitude towards healthcare

3.3. Choice of healthcare facility

Private dental clinic was the most popular facility of choice for both community and patient exit interviews followed by government dental clinic/facility. This could be reflective of the high penetration of private dental clinics in the urban, semi urban areas that cater to a wide spectrum of population. Using multiple regression which helps predict an outcome using several other independent variables, it was found that trust on the provider, quality of care, economic and physical access, timing and reputation of clinic variables play a statistically significant role in the adoption of a private clinic. Annual household income was another factor that was significantly associated with choosing private clinic.

Figure 22: Healthcare facility of Choice



The difference in economic status of the respondents who visited different type of dental facilities was studied for the NPL and \$5 PL. The sub set of respondents who either visit private dental college or private dental clinic have higher percentage of people below the NPL than the respondents who visit government run facility. This comes as a surprise as one would expect that the poorer the household, lower would be their ability and willingness to pay for private health care.

Trust run / NGO run Dental 35.3 47.4 17.3 health care facility Private Medical College 41.3 47.4 11.3 **Government Dental College 29.8** 47.7 22.5 37.4 47.7 14.9 Private Clinic **Government Dental** 32.7 48.4 18.9 Clinic Facility 0.0 20.0 40.0 60.0 80.0 100.0 Poverty Concentration % Below NPL NPL - \$5

Figure 23: Type of dental care facility visited and Economic Status

Reasons for selecting a particular dental clinic/ dental facility

Among the many reasons for selecting a particular facility- quality of care, economic reasons and physical access were the most important ones. Presence of multiple departments and advertisements by clinics were found to be least affecting the decision to choose a dental facility. Gender, occupation, social category and type of clinic are the independent variables that play a significant role in selecting a particular dental facility.

Table 4: Reasons for selecting a particular dental clinic/facility (Multiple responses allowed)

Reasons for selection of Clinic	Patient Exit	Community	Total
Economical	55%	63%	57%
Quality of Care	54%	56%	55%
Physical Access	50%	60%	52%
Previously Visited and Trusted	33%	26%	32%
Recommended by Others/Reputation of Clinic	32%	19%	29%
Convenient Timing	26%	32%	27%
Consultants/Multiple Departments	2%	4%	3%
Advertisement	1%	2%	1%

The different reasons were further explored within gender groups, age groups, occupation groups, city groups using ANOVA test. 56 Among the different reasons, quality of care, economic reasons, physical access to the clinic, reputation of the clinic and convenient timing were found to be statistically significant reasons.

One of the least reported reason for selection of clinics was advertisements, however, it could be a key driver for informing people about the importance of dental care and the medical facilities which can provide appropriate treatment.

Table 5: Reasons for selecting a particular dental facility; association with different groups

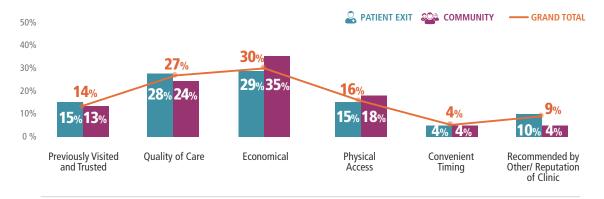
Reason for selecting a clinic	Independent Variable	Significant association with ANOVA
Trust	City	✓
Quality of care	City	~
Quality of care	Gender	~
Quality of care	Occupation	~
Economical	City	~
Economical	Occupation	~
Physical access	City	~
Physical access	Gender	~
Physical access	Occupation	~
Convenient timing	City	~
Convenient timing	Occupation	~
Recommended by Others/Reputation of Clinic	City	~
Recommended by Others/Reputation of Clinic	Age group	✓
Recommended by Others/Reputation of Clinic	Gender	✓
Recommended by Others/Reputation of Clinic	Occupation	~

How to Read the Data in Table 5: The Column 1 lists the various reasons for selecting a clinic for treatment, whereas, the column 2 gives the factors that influence the reasons, column 3, shows that the influence was established through the "Analysis of variance".

The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of three or more independent (unrelated) groups.

None of the other variables were found to be significantly associated with the different reasons for choosing a particular facility. Respondents were further requested to identify the most important reason from amongst all those listed above. Of the **1789**, who had visited a dental clinic, **1302** responded to this question. The findings are listed in *Figure 24*.

Figure 24: Most important reason for selecting a particular clinic/facility



Quality of care and economic reasons were the most important reasons for selecting a particular dental health care facility. Age group, gender, city and occupation were found to be significantly associated with the reasons for selecting a particular dental facility (p value <0.005). The economic status (basis the NPL and \$5 PL) was also studied with the most important reason for selection of clinic, substantial difference was not observed in economic status of respondents who reported different reasons for their decision.

Only **5%** (81 respondents) of those who had availed services changed their provider in between services. This is indicative of either strong preferences for the usual providers or limited physical and financial accessibility to services for these respondents.

Table 6: Reasons for changing dental healthcare facility

Reason for Changing the clinic	% of Respondents
Too Expensive	28.40%
Wasn't Satisfied with the clinic	24.69%
Too Time consuming	18.52%
Too far Away	11.11%
Unhappy with Doctor's behaviour	7.41%
Seek a second Opinion	7.41%
My Dentist shifted from there	1.23%
Negative reviews	1.23%
Total	100.00%

Financial reasons followed by dissatisfaction with the services provided and time consumed for availing care accounted for almost **70%** of the reasons why patients changed their dental clinic. However, the pool of respondents who changed the clinic was small and therefore not adequate to draw significant observations. These findings should be treated as trends and need further investigation.

3.4. Access to dental care

Private dental clinic was the most popular facility of choice for both community and patient exit interviews followed by government dental clinic/facility. This could be reflective of the high penetration of private dental clinics in the urban, semi urban areas that cater to a wide spectrum of population. Using multiple regression which helps predict an outcome using several other independent variables, it was found that trust on the provider, quality of care, economic and physical access, timing and reputation of clinic variables play a statistically significant role in the adoption of a private clinic. Annual household income was another factor that was significantly associated with choosing private clinic.

3.4.1. Physical access to dental care

More than **70%** of the respondents from both patient exit and community based interviews reported less than **30 minutes** as the average time of travel to reach the dental clinic. This is indicative of the comparatively better physical access to dental services in urban areas and is comparative to other literature in the field citing better access in urban when compared to rural areas.⁵⁷

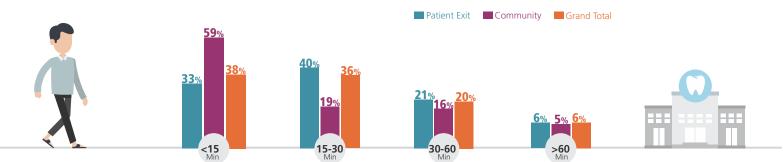


Figure 25: Time taken to reach the dental clinic

3.4.2. Financial access to dental health care and affordability

Further, we collected information on the expenditure incurred from last visit to the dental clinic from the respondents. While an attempt was made to understand the different costs associated with dental treatment such as consultation fees, medicines,

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4071723/

diagnostics and travel cost, most respondents were able to share only the consolidated cost of treatment and such values have been used to draw inferences.

There was a difference in the average cost incurred for the most recent visit between the two groups with patient exit interviews quoting a lesser amount on an average. There could be two explanations for such differences. First, an issue of recall bias is expected with those from patient exit interviews recalling exact amount spent when compared to those from the community who might be approximating to a higher amount. Second, patients that underwent longer dental procedures such as root canal or orthodontic treatments typically experience physical discomfort and were reluctant to be part of the survey. Hence, the primary survey outreach in case of patient exit interviews was to individuals who had undergone relatively less expensive procedures.

Table 7: Expenses incurred during last visit to dental clinic.

Mean Treatment

Community



These numbers showed much variation between the cities. Surat was the most expensive with average expenditure of Rs. 532 and Delhi the cheapest with average expenditure of Rs. 268 for the last visit to a dental healthcare facility. None of the factors like age, city, gender, occupational status etc. were found to be significantly associated with dental healthcare spending. The city wise distribution of average cost for the last visit is given in Table 8.

Table 8: City wise average cost of treatment/visit

Average expenditure (Rs.)

Cost of most recent visit











A distribution of the cost across the type of facility that formed part of the study is indicated in Figure 26. High cost of care was recorded for private dental clinics and private dental colleges (grouped under the "Private Clinic" classification) and different types of government facilities (grouped under the "Government Clinic" classification).

Figure 26: Distribution of cost of care across type of facility

SOvernment Clinic

578.64

690.82

325.77

Government Clinic

Private Clinic

Trust / NGO

Others (Pharmacy, GP, Traditional Care)

Surprisingly, the cost of care in trust run/ NGO operated hospitals were also found to be on a higher side. Cost of care in government facilities were consistently lower than for profit and not for profit entities. This points towards the significant role that government facilities play in offering affordable dental health care.

Estimating the affordability of Dental Care services

In order to understand the current affordability of dental healthcare services in India, it was important for the research team to use a relevant yardstick. For this purpose, a catastrophic spending method was used for estimating the affordability of dental care services. This method is based on the proportion of population who is able to spend more than a fixed percent of their income for obtaining healthcare services. The PPI based poverty segments were used for estimating the monthly HH expenditure and thereby affordability of dental healthcare across different income groups. The seven segments based classes are given below:

Table 9: Poverty Segmentation and Monthly HH Expenditure

Segment Sr. No	Segments based on Poverty Lines(2011 PPP)	Monthly HH Expenditure Range(Rs.)	Overall Urban India HH Distribution (%)	Sample Population in overall survey (%)
1	<\$1.9	<5,829	<5,829	7.6
2	\$1.9-NPL	5,829-8,408	5,829-8,408	23.4
3	NPL-\$3.1	8,408-9,509	8,408-9,509	10.7
4	\$3.1-\$3.8	9,509-11,655	9,509-11,655	18.9
5	\$3.8-\$4	11,655-12,270	11,655-12,270	3.9
6	\$4-\$5	12,770 -15,336	12,770 -15,336	15
7	>\$5	>15,336	>15,336	20.5

For the purpose of calculation of monthly HH expenditure of different segments, the following steps were taken:

- An average of the upper and lower expenditure for urban areas was taken for segments **2,3,4,5** and **6**
- The upper limit of annual expenditure was used for Segment 1 and lower limit alone for Segment 7.
- To arrive at household level values, we multiplied the per capita values by the average household size in urban India which is at 4.2
- · For estimating affordability, an operational definition of out of pocket expenditure up to 10% of the total household consumption budget was fixed based on the available literature. 58

The 10% cut off is indicative of the catastrophic health expenditure for low income households which occurs if the out-of-pocket payments for health services consume such a large portion of a household's available income that it might push the household into poverty. It is important to note that dental healthcare expenditure forms a part of the out of pocket expenditures and is included in the 10% cut off along with other healthcare needs. Given this threshold, the cost of dental care does not seem to be affordable for most segments. Moreover, with other critical healthcare demands and the general tendency to peg dental healthcare as a low priority not just by low income segments but by the general population as a whole, the overall affordability of dental care poses a big question for the concerned stakeholders. The regression analysis on dental ailments and poverty levels reveals that incidence of poverty increases the likelihood of the occurrence of dental ailments. Hence, if the poor are more susceptible to dental ailments, then affordable options for treatment are critical.

Table 10: Affordability of Dental Care at 10% cut off of monthly HH Expenditure

Economic Segments	Average monthly Expenditure (Rs.)	10% cut off (Rs.)	% of threshold amount with average cost per visit (Rs. 442.7)
<\$1.9	5,829	583	76%
\$1.9-NPL	7,118.5	712	62%
NPL-\$3.1	8,958.5	896	49%
\$3.1-\$3.8	10,582	1058	42%
\$3.8-\$4	11,962.5	1196	37%
\$4-\$5	13,803	1380	32%
>\$5	15,336	1534	29%

Alam M, Tyagi RP. A study of out of pocket household expenditure on drugs and medical services. An exploratory analysis of UP, Rajasthan and Delhi. 2009. Population Research centre

While the study findings indicates affordability of dental health services, a few limitations of the study and realities of low income household budgets must be kept in mind while interpreting these results. The first and foremost is that we collected information on the cost of care that was incurred during the last visit to the dental clinic and not for the entire procedure. Of all the respondents who visited a dental clinic, about 68% had follow-up visits scheduled /recommended to them by the dentists which indicates the seriousness of the ailments the patients were undergoing. With multiple visits and the cost of care can accrue ending up crossing the average affordability levels considered in Table 10.

Another important aspect to be considered while assessing affordability is the level of catastrophic expenditure that is used in the study. A 10% cut off of the average household expenditure is indicative of the catastrophic medical expenditure and not just dedicated to dental expenditures. The medical budgets of a low income household has to account for the medical expenses of all the household members (average urban family size- 4.2) and in this light dental treatment which may require multiple visits to the dentist become unaffordable. In fact, with low significance given to dental problems, it is highly likely that dental expenditures will be given least priority especially if there is another pressing medical issue or expenditure on drugs that the HH is incurring. The community interviews show that half of those who reported a dental ailment did not visit a dentist.



The perception that dental treatment is expensive can also contribute towards delay in seeking care. Most dentists who were interviewed, articulated that patients delay their visits till the symptoms are unbearable. In the last stages of tooth damage, extraction or removal of tooth is one treatment option along with more expensive treatment alternatives like root canal treatment. Interviewers opined that patients usually preferred removal of tooth that is less expensive a procedure when compared to restoring tooth function. Even in the patient exit interviews we found that about 60% of the respondents had chosen to explore alternative options instead of visiting a dental clinic immediately for seeking medical care.

In-depth interviews with dental healthcare providers indicate that cost is indeed a barrier for accessing services when it comes to complicated procedures that may require more than one dental visit. Such accrued costs can be a barrier for seeking care and could be one of the reasons for decreased follow up among patients.

A review of studies exploring oral health seeking behaviour in India makes such a gap conspicuous as none of the studies mentioned in the review explore the issue of pricing of dental care as a barrier. There is a lack of structured information on the cost of dental healthcare and pricing practices employed by private dental clinics as most of the dental care providers do not publish their standard treatment charges. In a largely unregulated sector, the pricing of services is arbitrary often reflecting presence of services and facilities that are not directly linked with provision of dental healthcare services but such facilities exist to improve the overall experience of customers at the dental clinics.



Through a web search, rate lists of private dental service providers were studied to understand the difference in treatment cost for simple procedures such as tooth fillings and for slightly complex ones such as root canal treatments. Very few private dental health care providers publish such information, and so the analysis is not very comprehensive. It was found that the listed price for basic fillings ranges from **Rs**. **500** to **Rs**. **1000** and for root canal treatment the cost varied from **Rs**. **1675** to **Rs**. **6000** wherein the cost of crowns was separate and started at **Rs**. **5000**. It is important to note that the cost of basic fillings listed on the web was found to be higher than the average cost of dental treatment reported by the respondents in the study.



In comparison the rate list of government facility called All India Institute of Medical Sciences (AllMS)⁶⁰ located in the country capital- New Delhi was **RS. 100** for filling and **RS. 250** for root canal treatment and porcelain full crown for **Rs. 250**. The private dental treatment is definitely expensive when compared to the household expenditures of low income segments and cross the affordability levels indicated in *Table 10*. Government facilities are cheaper and affordable but are limited and the patient load at such facilities is extremely high. When such findings are juxtaposed with the choice of dental healthcare facility, the concern around service affordability gains more significance as **47%** of the respondents covered under this study preferred private facilities as compared to **15%** that access government facilities for dental healthcare.

Gambhir RS et al. Utilization of dental care. An Indian Outlook. J Nat Sci Biol Med. 2013 Jul-Dec; 4(2): 292–297.

⁶⁰ http://www.aiims.edu/aiims/hosp-serv/hosp-rates/revised_rates_of_operative_procedures.htm#_Toc471767154

Finally, another aspect linked to the construct validity of the study should be noted which is also stated as a limitation of the exit interviews with dental patients. Patients those who have undergone a lengthy procedure (that may actually cost more) were reluctant to be interviewed during the patient exit interviews. It has to be noted that simple procedures like a filling or tooth extraction might cost less and be still within the reach of most of the population however, more complex and time consuming procedures like Root canal treatment or orthodontic treatment require multiple visits to the clinic and the treatment is rigorous and therefore expensive. Patients undergoing such procedures were reluctant to be interviewed due to the physical discomfort that accompanied such procedures and therefore have limited coverage under this study.

Overall, affordability of dental health care is a critical concern and it becomes a serious barrier for low income segments who were found to be more susceptible to dental ailments than the general population. Affordable models of dental health care is required to ensure good oral health for the general population. Government run clinics or hospitals that seem to be affordable option for low income groups are just not present everywhere and are plagued by their own issues of physical infrastructure, overcrowding and human power limitations. A public private partnership model which leverages the presence of private players in the dental health care industry supported by government's commitment to serve the low income segments is one of the immediate solutions that stakeholders can start with.

3.4.3. Financial sources for accessing treatment

More than 90% of the 1,789 respondents who sought dental care referred to general personal savings as their source of money for accessing treatment. Health savings or insurance was a minor source of money.

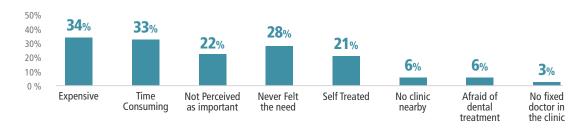
Table 11: Source of Money for treatment

	(7)		T	7
SOURCE OF MONEY	HEALTH SAVINGS	REGULAR SAVINGS	INSURANCE	BORROWED FROM OTHERS
PATIENT EXIT	4%	93%	1%	2%
COMMUNITY	10%	85 %	2%	4%
GRAND TOTAL	5%	91%	1%	2%

3.5. Access to dental care

Of the **714** community respondents who suffered from an oral ailment in the last 12 months from the time of survey, 54% chose not to seek care from a dental healthcare facility and pursued alternate options. Dental treatment being expensive and time consuming were the two most important reasons for not seeking care. Nearly 50% of non users also gave the reasons of dental treatment not being perceived as important or never having felt the need for pursuing treatment.

Figure 27: Reasons for not seeking treatment



However, 55% of these respondents mentioned that they will definitely visit a dentist if the problem reoccurs, while 23% intend to resort to the same solution they preferred earlier be it a home remedy or self treatment and 14% plan to visit a dentist if the condition exacerbates.

Of those who had not experienced an oral ailment in the last 12 months, 61% had never visited a dentist and 13% had visted a dentist almost 5 years before the time of survey.

Table 12: Last visit to the dentist (n-750)

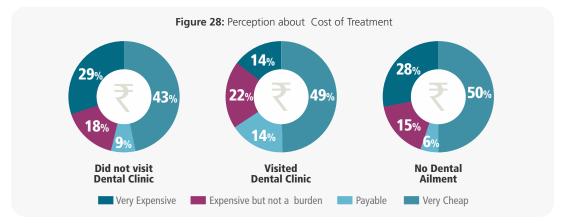
Last Visit to the dentist	% of Respondents	
Never visited a dentist	60.79%	
>5 years ago	13.11%	
2-5 years ago	6.36%	
Less than 2 years back	4.24%	
Don't know/don't remember	3.97%	
No answer	11.52%	

3.6. Perceptions about dental treatment

(Community and Patient Exit respondents)

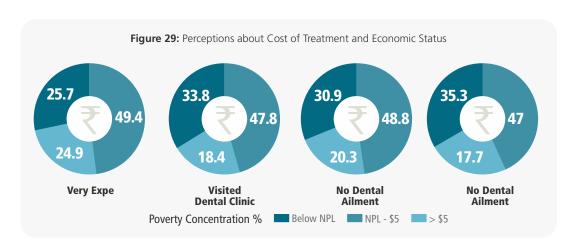
Cost of care

On an overall basis, 20% respondents found the treatment to be very expensive. **19.6%** found it to be expensive but not a burden while **49%** found it to be payable. Percentage of respondents who found it to be very cheap was very low at 12%. Perception about cost of treament for respondents basis visit to dental clinic is also presented in Figure 28.



We further explored the linkages between perceptions about treatment and health seeking behaviour. The perception that dental treatment is very expensive was highest among those who had never visited a dental clinic. Among those who visited a dental facility, nearly 63% thought that cost of care was payable/cheap.

It is also interesting to note the perception about cost of treatment for respondents who belong to different economic segments (Refer table 9) and is presented in Figure 29. The sub group of respondents who perceive cost of treatment as very cheap had higher proportion of respondents who were below the NPL and the \$5 PL as compared to those who felt that the treatment was very expensive. The assumption that more poor people will find the treatment expensive does not hold true. Thus, it is once again observed that economic status of respondents does not define perceptions about dental treatment cost.



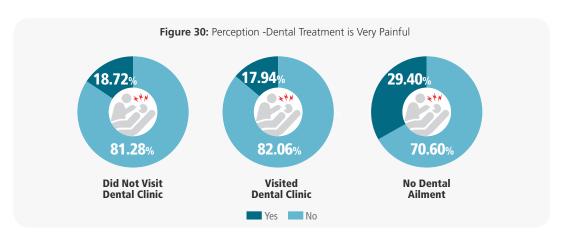
As seen in Table 13, irrespective of the perception of cost of dental treatment, majority of the respondents visited the private clinics. Among patients who perceived dental treatment to be very expensive, 46% visited a private clinic and among those who perceived dental treatment to be cheap, 44% visited a private clinic.

Table 13: Perception about Cost of treatment by dental care facility

	TYPE OF FACILITY VISITED	PERCEPTION ABOUT TREATMENT COST		
		Cheap/ Payable	Expensive but not a burden	Very Expensive
	Government Facility	18%	4%	21%
0	Private Clinic	44%	58%	46%
	Government Dental College	22%	18%	11%
•	Private Medical College	10%	10%	5%
	Trust/NGO	2%	5%	14%
d	Others	1%	2%	0%
Ø	No answer	3%	4%	3%
	Overall	100%	100%	100%

Dental treatment being very painful

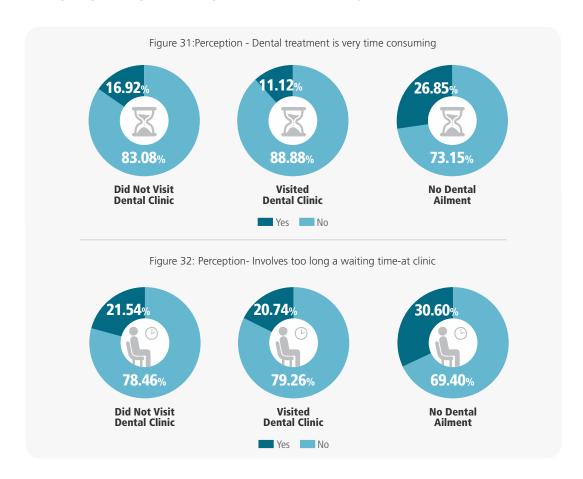
The perception that dental treatment is very painful was highly prevalent **b**. It was highest among those who have already visited a dental clinic and who have availed a treatment. Nearly 82% of those who have visited a dental clinic, perceived it to be very painful.



The perception that dental treatment is very painful is largely true for majority of the respondents, however it has not acted as a deterrent to health seeking behaviour.

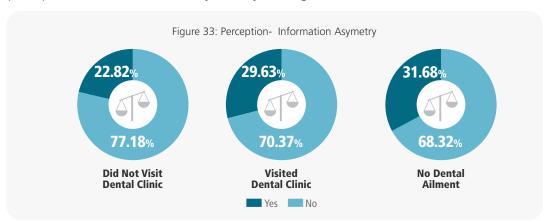
Dental treatment is time consuming

We obtained similar results for the perception that dental treatment is very time consuming. Overall, 84% felt that it consumes too much time and 77% felt it involves too long a waiting time. Again, these perceptions about treatment and waiting time being long was highest among those who have already availed dental treatment.



Dental treatment involves information asymmetry

Overall, 71% respondents felt that an information asymmetry exists as enough information was not available to make an informed choice related to dental treatment and cost of dental health care. This perception was highest (77%) among those who had not visited a dental clinic. Even among those who had visited a dental clinic, the perception about information asymmetry was high at 70%



It is observed that the information gap begins to get addressed once the patient visits a clinic and seeks professional care. However, information sharing with patients is critical and practitioners should take initiatives to explain the course of treatment and associated risks and costs as well.

In summary, the difference in the economic status (analysis for NPL and \$5 PL) was found substantial only when we studied perception about cost of treatment, for the remaining questions of perceptions the differences were very small.

3.7. Response to dental ailments of children

In the community survey, details about the most recent dental checkup for children below 15 years was collected. Of the total sample, 880 respondents shared this information for children in their families, the question were not applicable to the other respondents. Of the 880, 40% respondents reported that children had never visited a dentist and only about 20% respondents shared that the children in their household had visited a dentist in the last 1 year.

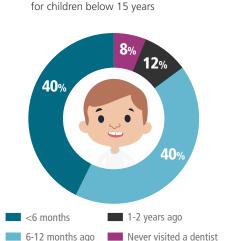


Figure 34: Most Recent Dental check-up

The respondents who reported that the children were taken to a dentist, also shared the reason for seeking dental care, top two reasons reported were tooth cavities and bleeding gums. It was also important to understand the immediate response of the respondent households to dental ailments among children. About a quarter of respondents report that they promptly visited a dentist for the child's dental ailment. Selfmedication and home remedies were reported by about 46% of the respondents and is a critical point to note. Awareness generation towards importance of seeking timely professional medical care is extremely important and the harmful effects of negligence of oral.

Reason for Seeking Dental Care	
Tooth Cavities	34.35%
Bleeding Gums	18.70%
General tooth ache	12.98%
Loose tooth/teeth	9.16%
Oral Ulcers	8.02%
Fractured Tooth	5.34%
Sensitivity	2.29%
Ortho treatment	1.53%
Others	7.63%

What was the immediate reaction when the child had developed the symptoms	
Took some pain medication and waited for the symptoms to subside	15%
Tried Home remedies	31%
Did not do anything	16%
Visited health care provider promptly	26%
Visited health care provider when symptoms exacerbated	9%
Others	3%
Grand Total	100.00%

3.8. Determinants of dental health seeking behaviour- findings from multiple regression analysis.

Using multiple regression method which helps predict an outcome using one or more independent variables, the health seeking behaviour among community respondents was analysed. The decision to seek care from a dental clinic was the dependent variable and the independent variables such as demographic and socio economic variable, prevalence of conditions and perceptions were included in the analysis. Only the statistically significant variables which influence the dental health seeking behaviour are listed below:

- Level of education- Those with no formal schooling were found to have a lesser likelihood of seeking dental health care
- Occupation- People involved in a private job, or labour tend to have a lower likelihood of seeking dental healthcare. Also, being a homemaker or student also reduces the likelihood of availing dental care.
- Oral conditions- People suffering from cavities, general tooth ache, bleeding gums, loose teeth, fracture and sensitivity are more likely to be treated at home or self-treated than at a dental health facility

- Perception about seriousness of dental ailments- Someone who perceives that dental diseases are not serious and can be treated at home was less likely to opt for professional health assistance in case of an issue.
- Perception about cost of dental healthcare- People who perceive that the cost of dental treatment is high are also likely to uptake dental health services. Thus, the cost of treatment was not a deterrent in uptake of dental health care.
- Perception about time- Even the people who believe that the dental treatment process is time consuming are likely to uptake dental health services.
- Oral problems affecting routine life- Someone with an experience of a dental ailment affecting their routine life is more likely to opt for professional health consultancy as compared with people without any such experience.

None of the other variables like social category, other occupation types, and economic status were found to influence the decision to seek care from a dental healthcare facility in this model. This analysis highlights the need for improving the overall attitude of the people towards dental health care, irrespective of economic status, it is only when the awareness towards oral health care improves, and people will understand the value of seeking timely medical care for treating dental ailments.



The following table summarizes the findings from the regression model build for dental care seeking behaviour. Any stakeholders who are interested in understanding the dental care landscape in urban India and contributing to improving the dental health care seeking behaviour among the low income segment should work with the key variables which were found to be significant for availing dental care.

Table 16: Regression analysis on dental healthcare seeking determinants

Independent Variable	Dependent Variable	Significance
Age	Visited Clinic	No
Gender	Visited Clinic	No
Education	Visited Clinic	Yes
Occupation	Visited Clinic	Yes
Economic Status	Visited Clinic	No
Oral Problems affecting routine life	Visited Clinic	Yes
Perceptions about dental treatment	Visited Clinic	
-Cost of treatment	Visited Clinic	Yes
-Very Time Consuming	Visited Clinic	Yes
-Very Painful	Visited Clinic	No
-Involves long waiting time	Visited Clinic	Yes
-Lack of information for decision	Visited Clinic	No
Symptoms experienced in the last 12 months	Visited Clinic	
-Tooth Cavity	Visited Clinic	Yes
-Bleeding	Visited Clinic	Yes
-Loose Tooth	Visited Clinic	Yes
-Oral Ulcer	Visited Clinic	Yes
-Fracture	Visited Clinic	Yes
-Sensitivity	Visited Clinic	Yes
-General Tooth ache	Visited Clinic	Yes
-Bad Odour	Visited Clinic	No



Burden of disease:

The burden of dental ailments was found to be guite high among the communities that were included in the study. Nearly 49% of the respondents from community surveys reported experiencing an oral ailment in the last 12 **months.** Considering the perception of low significance attached to oral ailments among respondents, it is highly likely that the actual prevalence of oral ailments will be much higher than the 49% self-reported prevalence.

Health seeking behaviour:

Dental health seeking behaviour was also found to be poor, with over 50% not seeking care from a healthcare provider even when they experienced the symptoms. Resorting to home remedies or self-treatment using pain killers was also found to be common practice among the respondents. Education, occupation, seriousness of the ailment, perceptions about seriousness of dental ailments were some of the key determinants of health seeking behaviour. Economic status of respondents who availed dental treatment was similar to those who chose not to visit a dentist. Even dental ailments among children were not treated very seriously, only 20% of the children (below 15 years) had visited a dentist in the last one year.

Type of health care facility:

It is important to note that among those who decide to seek care, private dental clinics are the most popular options irrespective of the economic status, even when the cost of care in those clinics are on the higher side. This is the case in urban areas where there are a number of private clinics that are offering their services whereas people in rural areas are not left with any choice. This is also because of the lack of infrastructure, commitment and human resources in the government sector both in rural as well as urban areas. Since, dental care is not part of most public healthcare facilities, people are forced to depend on private entities for healthcare.

Awareness:

Along with the determinants that are highlighted in the study findings, one significant aspect is the actual awareness and knowledge about dental health ailment and healthcare. The level of awareness is considerably low which influences perceptions towards dental care. The perception that dental health is insignificant also deters people from gaining more awareness about dental health and services available.

Affordability of care:

The burden of costs for accessing dental healthcare is only a part of the overall healthcare expenditure for a typical household. Any healthcare expenditure exceeding 10% of total household expenditure is considered 'catastrophic' and the analysis presented in this report shows that for most low income segments, dental healthcare is unaffordable. For a country that is still struggling to institutionalize procedures such as childbirth, especially in rural areas, affordability of dental health services remains a significant issue both in terms of the way it is prioritized as well as the price of treatment that crosses the thresholds of catastrophic medical expenditure of low income households. Dental treatment is a low priority for most of these households as evident from the study where over 50% of respondents report they did not avail any dental care. Also, many of the dental treatments require multiple visits to the clinic which means that the cost of treatment accrues and effectively such treatments turn out to be unaffordable. The tendency to delay medical intervention is common irrespective of the economic status of the respondents which leads to increasing the severity of the ailment often increasing the cost of treatment. For the poorest, who were found to be more susceptible to dental ailments, even the one-time cost of visit to a dental clinic is barely affordable.

RECOMMENDATIONS

Improving awareness on oral health

One of the major recommendations that emerged from dental care providers was concerning the awareness levels. Every interview with health care providers pointed out the low level of awareness among the population especially among the lower income segment about dental ailments and preventive measures. The awareness levels also affect their perception about low significance of dental health care and also perpetuate negative impressions about dental treatment. Generating demand among low income segment will require negating these perceptions and improving awareness about general oral health, preventive measures and treatment options. It is also significant to address the issues of tobacco and other addictions that can adversely affect oral health. School children were identified as an important target population by the providers. Improving their awareness about oral health will not improve their dental health but will also influence the dental health and health seeking behaviour of others in the family. Conducting dental camps and awareness campaigns was also identified as important ways of improving awareness and promoting preventive measures.

Programmes that can specifically benefit urban population

One of the major theme that came up in the interviews with dental care providers was about the opportunity cost involved in seeking dental healthcare especially for low income groups. It was opined that starting programmes like mobile dental clinics that can make dental health care more physically accessible to urban slums during hours that are convenient for them will improve their health seeking behaviour. Another aspect that can be looked into is a systematic documentation and study of best practice models of affordable care that exist in some of these cities. For example, there are models of combining dental health clinic with general health clinic thereby reducing the overhead cost and delivering care at more affordable and cross subsidised rates to the urban poor.

Children as influencers for oral care

Introduction of dental care and its importance to children was recommended by several dentists during the discussions. They believed that educating at young age would make maximum impact than at older ages. Following are some of the examples from secondary literature which further strengthen this feedback.

Dental Care policy for children

Under a reform of Israel's National Health Insurance Law in 2010, free dental services were offered to children up to age 12.⁶¹ A survey was conducted to examine the use of dental services for children and the factors affecting mothers' decision to take their children for routine check-ups. It was found that mothers' sociodemographic status and oral health beliefs affected their decision to take their children for dental check-ups. After the reform, the frequency of children's dental check-ups significantly increased among vulnerable populations. Therefore, the reform has helped reduce gaps in Israeli society regarding children's dental health.

Awareness Campaign for behaviour change

UNICEF developed the Meena Communication Initiative (MCI) as a mass communication project aimed at changing perceptions and behaviour that hamper the survival, protection and development of girls in South Asia. The Meena stories were entertaining and fun, but also reflected the realities of girls' lives in South Asia. The stories cover issues such as education, health, gender equity, freedom from exploitation and abuse. The evaluation revealed evidence of changes in practices that mirrored the Meena messages, with indications that the changes were occurring more among children exposed to Meena than among those not exposed to Meena. The evaluation highlighted the need to clearly identify target audiences and their needs and contexts and using effective medium to communicate the messages.

Shahrabani S, Benzion U, Machnes Y, Gal A. The use of dental services for children: Implications of the 2010 dental reform in Israel. Health Policy. 2015;119:117–26

⁶² https://www.unicef.org/evaldatabase/files/ROSA_2004_800_Meena_Comm_Initiative.pdf

A careful review of such models will help in formulating practical and feasible cost efficient strategies especially in the private sector.

Promoting Dental Insurance

Making dental care affordable through subsidised treatment or health insurance schemes could make a difference to the health seeking behaviour. As part of statewide health reform in 2006, Massachusetts expanded dental benefits to all adults ages 19-64 whose annual income was at or below 100% of the federal poverty level. 63 This reform led to an increase in dental care use among the Massachusetts adult population, driven by gains among poor adults. Compared to the pre reform period, dental care use increased by 2.9% points among all nonelderly adults in Massachusetts, relative to all nonelderly adults in eight control states. This experience provides evidence that providing dental benefits to poor adults through Medicaid can improve dental care access and use.

Need for government involvement and improvement of public dental health infrastructure

A major source of dental health services is the private sector where the cost of care is often catastrophic and unaffordable for low income patients. Public health sector role in delivery of dental healthcare is minimalistic with services being limited to dental wings of larger tertiary care hospitals and government dental colleges. A repeated theme that came up in the interviews was about increasing the role of government sector in this field. Recommendations ranged from opening of dental clinics near urban slum areas or provision of services through existing primary or secondary level health care facilities. Filling up vacancies and increasing job opportunities for dental healthcare providers in the government sector was also brought up as possible solutions for addressing the human power issue. Dentists spoke about the increasing number of dental graduates and the lack of opportunities for practice. Expanding government dental health facilities that can provide primary care services and some basic level of curative services will benefit the population as a whole and low income groups in particular.

Another viable option to provide dental health care was Public Private Partnerships (PPPs). The existing plethora of private dental clinics in urban areas can be exploited by the government who can aim at providing cost effective and quality care through these clinics. This can be achieved by government financing and private provision of dental healthcare. Providers opined that this is one mechanism through which government can engage with private sector who enjoys a near monopoly over physical infrastructure and human resources when it comes to dental healthcare.

Nasseh K, Vujicic M. Health reform in Massachusetts increased adult dental care use, particularly among the poor. Health Aff (Millwood) 2013;32:1639-45

Another suggestion that came up in the interviews was about providing subsidies or government co financing dental health clinics which can then be used as avenues for providing subsidised care for low income population. However, mechanisms to ensure accountability and cost containment should be built into any such plan considering the high cost of dental healthcare.

An effective and efficient dental health policy

Most of the dentists were unaware of a dental health policy or programme in the country. They all pointed towards the need for a pragmatic and feasible policy that can be translated into action and which is not just confined to the paper. For this, they suggested an increased cooperation between the government policy makers and private health providers and professional associations. They opined that it should have both short term and long term goals for improving awareness, health seeking behaviour, availability and accessibility of services and the general oral health of the population as a whole.

Another area of improvement is availability of structured information on the list of private dental facilities and the cost of various dental procedures. A nation-wide implementation of the Clinical Establishments Act⁶⁴ with dental clinics being included in the same will be a first step towards bringing the multitude of private dental clinics under the government radar.

CONCLUSION

The research gives us valuable insights about the barriers and facilitators of dental health seeking in the urban setting among low to middle income population. Using a mixed methodology to elicit a more holistic information as well as random sampling of the community households are major strengths of our study. Patient exit interviews depended on multiple factors like gaining access and permission for conducting interviews in the premises and patients who had undergone extensive procedures were unable to participate in the study. Another area for research is the availability, accessibility, attitudes and utilization of services in the rural areas. Quantifying the lack of services and unmet need will be an important step in initiating policy dialogues on oral healthcare in rural and urban India which is now in a neglected state.

ANNEXURES-3 Poverty Probability Index

What is the PPI?

The Poverty Probabability Index® (PPI®) is a poverty measurement tool for organizations and businesses with a mission to serve the poor. With the PPI, organizations can identify the clients, customers, or employees who are most likely to be poor or vulnerable to poverty and integrate objective poverty data into their assessments and strategic decision-making.

How does the PPI work?

The PPI was designed with the budgets and operations of real organizations in mind; its simplicity means that it requires fewer resources to use. The PPI is a set of 10 easy-toanswer questions that a household member can answer in 5 to 10 minutes. A scoring system provides the likelihood that the survey respondent's household is living below the national poverty line and internationally-recognized poverty lines.

The PPI is country-specific. There are PPIs for 55 countries, and a similar poverty scorecard with a different creation methodology exists for use in China. Altogether, Grameen Foundation has developed poverty measurement tools for the countries that are home to 90 percent of the people in the world who fall under \$1.25/day 2005 PPP.

The PPI serves as a poverty score to measure poverty outreach in a given population. When it is used to capture data over time, it serves to measure potential changes in poverty level-

More information about the PPI



Please visit https://www.povertyindex.org/ for more information about the PPI, FAQs and resource documents.

Key Poverty Lines used in the report

Poverty lines are cut-off points separating the poor from the non-poor. They can be monetary (e.g. a certain level of consumption) or non-monetary (e.g. a certain level of literacy). The use of multiple lines can help in distinguishing different levels of poverty. There are two main ways of setting poverty lines—in a relative or absolute way.

Relative poverty lines

These are defined in relation to the overall distribution of income or consumption in a country; for example, the poverty line could be set at 50 percent of the country's mean income or consumption.

Absolute poverty lines

These are anchored in some absolute standard of what households should be able to count on in order to meet their basic needs. For monetary measures, these absolute poverty lines are often based on estimates of the cost of basic food needs (i.e., the cost a nutritional basket considered minimal for the healthy survival of a typical family), to which a provision is added for non-food needs.

This report examines microfinance performance for the following absolute poverty lines:

Definition	All India Poverty Rate	All India Urban Poverty Rate	All India Rural Poverty Rate
Households below \$1.9/day poverty line(is the current international extreme poverty line)	5.6	6.2	5.4
Households between \$1.9/day 2011 PPP and National Rangarajan Line is the national poverty line for India.	24.0	19.8	25.9
Households that, based on their PPI scores, fall between the NPL and \$3.1\$/day 2011 PPP Poverty Line.	33.0	26.1	36.1
Households that, based on their PPI score, fall between the \$3.10 PL and \$3.8/day 2011 PPP Poverty Line.	50.3	38.6	55.6
Households that, based on their PPI scores, fall between the \$3.8/day 2011 PPP and \$4.0/day 2011 PPP Poverty Line.	54.3	41.9	60.0
Households that are above \$4 2011 PPP Poverty Line	45.7	58.1	40.0

Rupee Values for Global Poverty Lines

For the purpose of PPI, dollar-based poverty lines defined by the World Bank are used. Poverty measures based on an international poverty line attempt to hold the real value of the poverty line constant across countries, as is done when making comparisons over time. The internationally comparable lines are useful for producing global aggregates of poverty. In principle, they test for the ability to purchase a basket of commodities that is roughly similar across the world.:

What is ICP?

The international Comparison Program, which estimates PPP, coordinates the collection of price data for a basket of goods and services in countries outside the jurisdiction of Eurostat (Statistical Office of the European Union) and OECD (Organization for Economic Cooperation and Development), used for comparison purposes. The data collected are combined with other economic variables to calculate **Purchasing Power** Parity (PPPs).

What is PPP?

Purchasing Power Parity (PPP) is an economic theory and a technique used to determine the relative value of currencies, estimating the amount of adjustment needed on the exchange rate between countries in order for the exchange to be equivalent to each currency's purchasing power. It asks how much money would be needed to purchase the same goods and services in two countries. The PPP-based exchange rate is entirely different from market exchange rates. Market-based exchange rates should not be used while defining national currency equivalent for dollar-based poverty lines. For India, the PPP of the Rupee to the US\$ was Rs. 16.28 compared to the market 11 exchange rate of Rs. 48.5 in 2009.

ANNEXURES-4 List of State wise spread of private and Govt. dental colleges in India (as per DCI website data)

W	_		

State	Private College	Government College	Total
Karnataka	42	1	43
Maharashtra	28	4	32
Tamil Nadu	26	2	28
Uttar Pradesh	23	3	26
Kerala	20	3	23
AP	15	3	18
	13	1	14
Punjab	11	2	13
Rajasthan	12	1	13
Gujarat	8	3	11
Haryana	7	1	8
Chattisgarh	5	1	6
Bihar	4	1	5
Himachal Pradesh	4	1	5
West Bengal	2	3	5
Odisha	3	1	4
Delhi		3	3
Jammu Kashmir	1	2	3
Jharkhand	3	0	3
Pondichery	2	1	3
Telangana	3		3
Uttarakhand	2		2
Assam		1	1
Chandigarh		1	1
Daman Diu	1		1
Goa		1	1

ANNEXURE 5: Qualitative Tool

Key Informant Interview

Instructions for the Interviewer:

The following is to be read verbatim to the respondent prior to the interview. If the subject then agrees to participate, you must sign on the line marked "Witness to Consent Procedures" at the end of this form. Also, mark the date on the appropriate line.

PURPOSE

You are invited to take part in a study to understand the barriers to uptake of dental health services among the low-income population in urban and periurban areas of Mumbai, Banglore, Pune, Ahmedabad/Delhi and Surat. This interview is aimed at understanding the trends and challenges in the dental care market. And also gauge the understanding of practitioners around prevalence of dental healthcare issues among low income segments and redressal thereof.

PROCEDURES

The interview will take about 1 hour of your time. With your permission, we will record the interview with a digital recorder. You do not have to answer any question that you feel uncomfortable with and you are free to stop the interview at any time.

RISKS/DISCOMFORTS

We do not think that being part of this project will create any risk for you. If at any point you feel uncomfortable, do not want to answer a specific question, and or decide you no longer want to participate, just let us know and we will skip the question or end the interview. You do not have to answer any questions you would prefer not to answer.

We will do everything we can to prevent individuals outside of our project team from learning about your participation and the client's participation in our project. We will not collect any identifying information from you, such as your name or names of your family members.

VOLUNTARY PARTICIPATION

You do not have to agree to participate in this project, and you may change your mind at any time.

If you have any questions or problems, please contact our Lead Investigators (Provide details, if asked)

PERMISSION TO PROCEED

s it okay to	proceed with	the interview?	
--------------	--------------	----------------	--

Witness to Consent Procedures (to be signed by interviewer after subject has verbally consented)

Name **Date**

General Information

Interviewer				
Name of the Respondent				
Organization of respondent				
Type of Organization	 a. Private Dental Clinic b. Government Hospital with Dental Service c. Dental College d. Private Multispecialty Hospital with Dental Health Service 			
Contact Details				
Position of Respondent				
Highest qualification of the respondent	BDS 2- MDS 3- Other, please specify			
Location of interview				
Date of Interview	Day	Month	Year	
Start time (hh:mm)				
End time (hh:mm)				

- 1. Can you please give us an overview about the facility? Probes can be humanpower, year of establishment, number of dental chairs (in case of clinics), departments and other facilities (in case of dental colleges), average patient load in a day etc., How long since the facility been established? How many dentists and assistants are currently working in the facility now? Do you have specialists or consultants coming on specific days in a week or a month? For eg: Is there a specialist for providing services to children?
- 2. Can you please tell us a bit about your professional experience? How many years of experience do you have? How long have you been associated with this facility? How many years of experience do you have in this field?
- 3. How many patients on an average do you receive in a week? Can you please tell us about the usual patient profile of this clinic? In your experience here, do you see more male/female/ elderly patients? If you have to approximately give percentage wise split of male female patients attending the clinic, how would it be?
- 4. What are the services that are usually sought? Are those regular dental checkups or do patients come for specific services? What is the percentage of patients that visit the clinic for regular dental checkups and how often do they visit in a year? Related to the profile of the patients seeking services, in your opinion which income category people usually seek services from this clinic? (I understand that this would require some generalization and assumptions on your part).
- 5. In your opinion, what are the reasons that encourage patients to seek care from this particular facility? Probes cost of care, ease of reaching the place, presence of experienced doctors, specialists etc.. Since the study is focusing on barriers faced by low income group in seeking oral health care, would like to focus the remaining questions on them.
- 6. On an average, what would be the percentage of patients from low income group that would be visiting the clinic in a month?
- 7. Which services are usually sought by the low income group of patients? Probe- Do they seek preventive care or do they seek care when pain or discomfort is unbearable?
- 8. Does your facility offer any kind of subsidized services for low income segments? What all does it entail?
- 9. What is the usual cycle of association for patients that visit your facilities? What percentage of patients continue making visits beyond procedures? How is it different for low income patients?
- 10. What do you think of the prevalence of high risk habits like use of tobacco, smokeless tobacco etc. among the low income groups? Do you think there is a difference between the prevalence of high risk habits like consumption of sweets, fizzy drinks, tobacco etc, among low and high income groups?

- 11. In your opinion and experience, what are the major complaints from the low income group? What are the major oral health care issues among low income groups? Probe-caries, gum related, extraction, oral lesions like leukoplakia etc.
- 12. Have you noticed any difference in the prevalence of complaints and in services sought between high and low income groups?
- 13. In your opinion, what are the most important barriers that patient from low income group face while seeking oral health care? Probes- cost, opportunity cost (cant afford to seek care in the day and lose pay for a day or loss of a work day for the attendant), lack of information about dental health care and services, dental services not being perceived as important etc.
- 14. Do patients from low income group regularly seek follow up care? In general, do they adhere to treatment schedules and return to complete the treatment (in case of those treatments that require multiple visits)?
- 15. What do you think are the reasons for them missing the follow up care appointments? (if they are lost to follow up)
- 16. What are the reasons that encourage patients to seek follow up care from the clinic?
- 17. Do you have any special services like camps, oral health education program etc. for the adjacent slum areas? The clinic (only for those which are near the slum areas) is situated near the settlement of low income groups. Do you think you get more patients coming from that segment? How are they made aware of the schemes/subsidies that your facility has for low income segments?
- 18. What do you think is the general attitude of low income group patients towards oral health services? Probes- Do they perceive oral health as insignificant? Dental health care as expensive and not necessary?
- 19. In your opinion, what can be done to improve the oral health and health seeking behavior among low income groups?
- 20. Do you think there are enough services- dental health care facilities, dentists and other services that are made available to low income groups? If no, what are the reasons for this neglect in this area?
- 21. What do you think should be the efforts at a larger level- Government and health policy level in order to influence and improve the oral health status?
- 22. Would you like to add any more information that you think will help us in this research?

Thank you for your time.

ANNEXURE 6: Sampling Note and Mapping



Bangalore city was divided into four zones based on number of parliamentary constituency and then from each zone list of the notified slums were collected from authorities. All the slums with the population more than 4000 were shortlisted and using random number table four slums were selected one from each zone. The selected slums were the basis to select the ward for community survey interview. The numbers of interviews in each zone were calculated proportional to population in selected slums



Delhi has eleven districts. Based on Geographical location four districts randomly selected. Notified JJ Colonies were selected from these each districts. All the JJ Colonies with the population more than 5000 were shortlisted and using random number table four JJ Colonies were selected one from each selected districts. The selected JJ Colonies were the basis to select the ward for community survey interview. The numbers of interviews in each zone were calculated proportional to population in selected wards.



Kolkata City under Kolkata Municipal Corporation is divided in to 15 Borough. There are 141 Municipal Wards under this 15 borough. Four Boroughs were selected on the basis of their geographical location. Notified Bustees under Kolkata Municipal Corporation were selected from these Boroughs. All the Bustees with the population more than 5000 population were shortlisted and using random number table four Bustees were selected, one from each selected Borough. The selected Bustees were the basis to select the ward for community survey interview. The numbers of interviews in each zone were calculated proportional to population in selected slums.



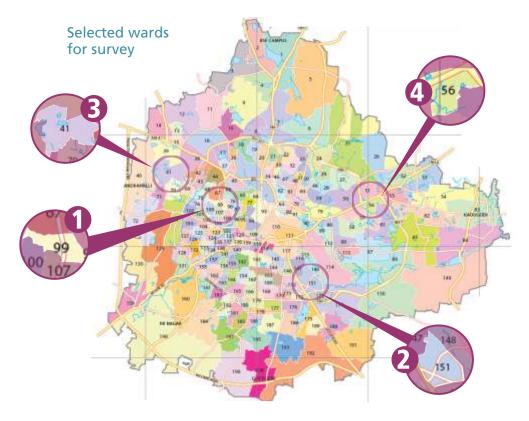
Mumbai city was divided into Six zones as per administrative division of Brihanmumbai Municipal Corporation (BMC). Four zones were selected out of these six zones and then from each zone list of the notified slums were collected from authorities. All the slums with the area of more than 5000 Sq.m. were shortlisted and using random number table four slums were selected one from each zone. The selected slums were the basis to select the Municipal Wards for community survey interview. The numbers of interviews in each zone were calculated proportional to population in selected slums.



Surat City under Surat Municipal Corporation is divided in to Seven Zones. There are 89 Municipal Wards under this seven zones. Four zones were selected on the basis of their geographical location. There are 284 notified slums under Surat Municipal Corporation, out of which eighty four slums shortlisted which has more than population of 1500. Out of these 84 slums, four slums selected randomly, one from each zone. The selected slums were the basis to select the ward for community survey interview. The numbers of interviews in each zone were calculated proportional to population in selected slums.



BANGALORE MAPPING EXERCISE



SI. No.	Parliamentary Constituency	Parliamentary Constituency	Parliamentary Constituency
1	Bangalore Central	Indiranagar W.C. Road 3rd Phase	Rajaji Nagar
2	Bangalore South	Lakshman Rao Nagar,	Koramangla
3	Bangaore North	Peenya Plantation	Peenya Industrial Area Ward
4	Bangalore Rural	Pragathipur, Sarabande	Banshankari Stage II

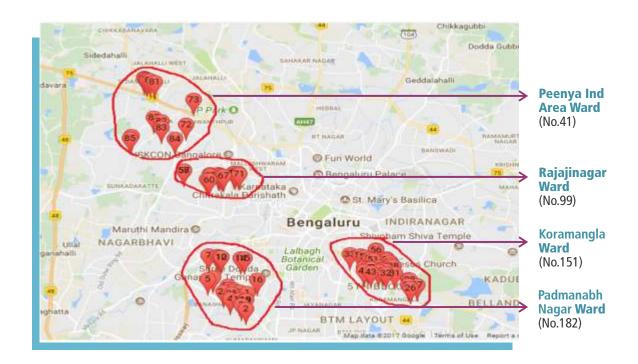
SI. No.	Ward	Slum Name	Huts	Population	Number of household from each area
1	Rajajinagar (Ward no.99)	Indiranagar W.C.Road 3rd Phase	927	6352	51
2	Koramangla Ward (Ward No:151)	Lakshman Rao Nagar, Koramangla	3065	14958	120
3	Peenya Industrial Area Ward (Ward No:41)	Peenya Plantation Pragathipur,	1077	6500	52
4	Padmanabh Nagar (Ward No 182)	Sarabande	1190	7065	57
			Total		280

SI. No.	Area	Sample for Patent Exit interview
1	Medical Colleges	140
2	Rajajinagar (Ward no.99)	26
3	Koramangla Ward (Ward No:151)	60
4	Peenya Industrial Area Ward (Ward No:41)	26
	Padmanabh Nagar (Ward No 182)	28
	Total	280

Mapping of Dental Health Services in Bangalore

Mapping of Dental Health Facilities were done in and around the wards which were selected for Community Survey. Besides these separate mapping of dental colleges also done in Bangalore City.

Mapping of Dental Health Centres in the selected Wards in Bangalore City



Mapping of Denatl Health facilities were done in four selected sampling ward and its surrounding area.

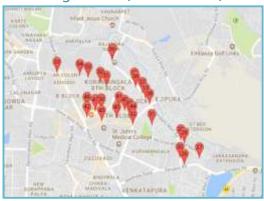
SI. No.	Area	No. of Health Facilities Mapped	Ward population
1	Rajajinagar (Ward no.99)	14	33084
2	Koramangla Ward (Ward No:151)	28	38316
3	Peenya Industrial Area Ward (Ward No:41)	15	57814
4	Padmanabh Nagar (Ward No 182)	23	41037
	Total	80	170251

Note: Population as per census 2011

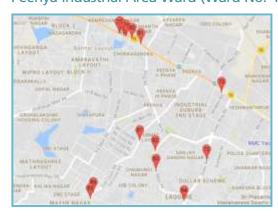
Rajajinagar Ward (Ward No. 99)



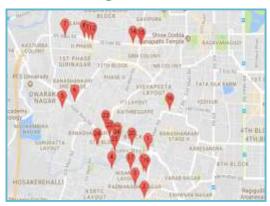
Koramangla Ward (Ward No. 151)



Peenya Industrial Area Ward (Ward No. 41)



Padmanabh Nagar (Ward No. 182)



Mapping of Dental Colleges in Bangalore



There is One Government Dental College and 14 Private Dental College in Bangalore City.

List of Dental Health Facilities Mapped-Bangalore

SI. No.	Dental Facilities	Location
1	Sagar Dental Clinic	Devegowda Petrol Bunk
2	Vishruth's Dental Clinic	Padmanabha Nagar, Kadarena Halli
3	Ganesh Central Care	Ittamadu, Padmanabha Nagar
4	Jaya Dental Clinic	12th A Cross, Hanumagiri Layout, Padmanabha Nagar
5	Vajradanta Dental Clinic	No. 1, 3rd Main Road, BSK 3rd stage

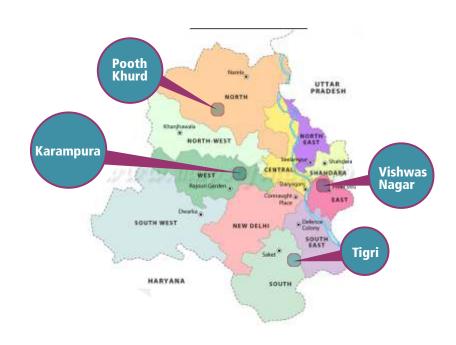
6	5	Jay Krishna H.J.M.D.S. Dental Clinic	6, Jai Plaza, 80 ft Road, BSK 3rd stage
7	,	Smile Care Dental Clinic	Avalahalli, BDA Layout
8	3	My Dentist Clinic	Muneshwara Block, Girinagar, BSK 3rd Stage
9)	Shree Dental Clinic	#22,23 Main Road, Muneshwara Block, BSK 3rd Stage
10	0	Ultra Smile Dental Clinic	50 ft Road, Muneshwara block, BSK 3rd Stage
1	1	Sri Raghavendra Dental Clinic	Muneshwara Block, Girinagar, BSK 3rd Stage
12	2	Ultra Smile Dental Clinic	50ft Road, Muneshwara block, BSK 3rd Stage
13	3	Cosmetic Dental Clinic	6th block, Koramangala Bangalore 95
14	4	Sri Sai Dental Care	Hanumanth Nagar
15	5	Rajiv Dental Clinic	Hanumantth Nagar
16	6	Shree Sai Dental Clinic	#3780,Banashankari 2nd Stage
17	7	Tarana Dental Clinic	Padmanabha Nagar,17th Main Road
18	8	Srujan Dental Care Centre	#24,C.J. Venkatesh Das Road,Padmanabha Nagar
19	9	Care Dental Hospital	Padmanabha nagar ,7th Main Road
20	0	Smile Curve Dental and Orthodontic Centre	e#190/B,100ft Main Road,BSK 3rd stage
2	1	Dental Health Care Centre	Banashankari 1st stage, Opp to JSS Towers,
22	2	S.N.Dental & Implantology Centre	Banashankari 1st stage , Near Brand factory
23	3	Sri Venkateshwara Dental Clinic	Next to Woodland Showroom Banashankari
24	4	Hi Tech Dental Clinic	Bhuveshwari Nagar,3rd Stage
2!	5	Smile Care Dental Clinic	#3, 7th cross ,5th block ,Kamakya Layout
26	6	The Dental Venue	1st Block Koramangala Bangalore
27	7	Smile Dental Clinic	1st block Koramangala Bangalore
28	8	I- smile Align Dental Clinic	1st block, Koramangala Bangalore
29	9	Cosmodent Dental Implant	1st block, Koramangala, Bangalore
30	0	Dental Diagnostic Centre	3rd block, 80 feet road, Koramangala, Bangalore
3′	1	Handent Dental Clinic	4th block Koramangala Bangalore
32	2	Pearl Dental Clinic	5th A blk 100 feet road, Koramangala Bangalore
33	3	Complete Dental & ENT Care	Kormangala, Bangalore
34	4	Sumukha Dental Clinic	No.21,5th Block ,3rd Stage ,Banashankari
3!	5	Saba Dentist	Kormangala Bangalore

36	Sathyas Dental Clinic	6th block Kormangala Bangalore
37	N.A Dental & Polyclinic	80 feet Road, Koramangala, Bangalore
38	Cosmodent Dental Care	Kormnagala Banglore
39	Denty's	Kormangala Banglore
40	PSN Dental Clinic	6th Block Kormangala Banglore
41	Dental Health Clinic	Kormangala Banglore
42	Vidhya Dental	Raheja Complex, Koramangla
43	Apollo White Dental	Kormangala Banglore
44	Dental and Maxillofacial Surgeon	Kormangala Banglore
45	Dental Clinic and Implant Center	KHB Colony Kormangala Banglore
46	Dental Arena	Koramangla, Bangalore
47	Care Dentaire	Koramangla, Bangalore
48	Dental Alliance	Koramangla, Bangalore
49	V care Dental Clinic	Koramangla, Bangalore
50	Reginolds Dental Clinic	KHB Colony 6th Block Kormangla Banglore
51	Sri Sai Speciality Dental Clinic	347, 8th Block Komangala Banglore
52	JP Dental Clinic	2nd C Main Road Kormangala Banglore
53	Smile Dental Clinic	#299 8th Block, Kormangala, Banglore
54	Sanjivini Dental Clinic	#10/1 Kormangala Road Banglore
55	R.B Multi splty Dental Clinic	Bazaar Street, Kormangala, Bangalore
56	Shreya Dental Clinic	80ft. Main Road, Rajendra Nagar, Kormangala, Bangalore
57	Sreedental Clinic	8th Main Road Basaweshswaranagar
58	Kirthi Dental Clinic	8th Main Road. Near Bus Stop, Rajaji Nagar
59	Prasad's Dentistry	Rajajinagar, Bangalore
60	Srijayasurya	Rajajinagar, Bangalore
61	Nishka	Rajajinagar, Bangalore
62	Are Kalli Dental Clinic	Rajajinagar, Bangalore
63	Any Dental Clinic	Rajajinagar, Bangalore
64	Shushruths Dental Clinic	Rajajinagar, Bangalore
65	Speciality Dental Clinic	Rajajinagar, Bangalore

66	Dental House	Rajajinagar, Bangalore
67	Ekadanta Dental Clinic	Rajajinagar, Bangalore
68	ESI Hospital	Rajajinagar, Bangalore
69	Mohan's Dental Care	Rajajinagar, Bangalore
70	Magi Dental Care	Rajajinagar, Bangalore
71	Sabka Dentist	Rajajinagar, Bangalore
72	Sai Dental Clinic	Koramangla, Bangalore
73	KLE Dental College and Hospital	Peenya, Bangalore
74	Supriya Dental Clinic	Peenya, Bangalore
75	Sumeru Dental Clinic	Peenya, Bangalore
76	Specialist Dental Clinic	Peenya, Bangalore
77	Supriya Dental Clinic	Peenya, Bangalore
78	Dr Monica Dental Clinic	Peenya, Bangalore
79	Vishrutha Dental clinic	Peenya, Bangalore
80	Hegde Dental clinic	Peenya, Bangalore
81	Srinivas Dental Clinic	Peenya, Bangalore
82	Meenakshi Dental care	Peenya, Bangalore
83	Saptagiri Dental Specialty Clinic	Peenya, Bangalore
84	Keerti Dental clinic	Peenya, Bangalore
85	Hegde Dental Clinic	Peenya, Bangalore
86	Saroj Dental Clinic	Peenya, Bangalore
87	Shrest Dental Clinic	Peenya, Bangalore



Selected wards for survey



SI. No.	DISTRICTS	JJ COLONY	WARD NAME
1	NORTH DELHI	SHAHBAD DAULATPUR	POOTH KHURD
2	SOUTH DELHI	TIGRI PART II	TIGRI
3	EAST DELHI	NEW SANJAY AMAR COLONY	VISHWAS NAGAR
4	WEST DELHI	JAKHIRA	KARAMPURA

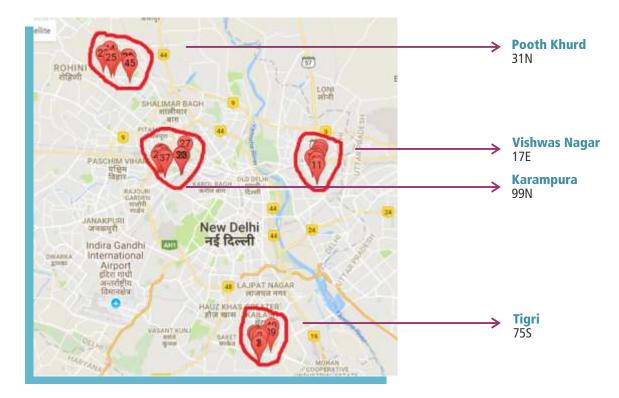
SI. No.	Ward	WARD NO NEW	POPULATION	JJ COLONY	Sample Community
1	POOTH KHURD	31N	57630	SHAHBAD DAULATPU	51
2	TIGRI	75S	66915	TIGRI PART II	120
3	VISHWAS NAGAR	17E	53057	NEW SANJAY AMAR COLONY	52
4	KARAMPURA	99N	73731	JAKHIRA	57
	Total				

SI. No	. DISTRICT	HOSPITAL	SAMPLE EXIT GOVT	WARD NAME SAME	PLE EXIT PVT
1	NORTH DELHI	AMBEDKAR HOSPITAL	16	POOTH KHURD	32
2	SOUTH DELHI	BATRA HOSPITAL	19	TIGRI	37
3	EAST DELHI	HEGDEWAR HOSPITAL	15	VISHWAS NAGAR	30
4	WEST DELHI	DDU HOSPITAL	20	KARAMPURA	41
	DENTAL COLLEGE	MAULANA AZAD	35		
	DENTAL COLLEGE	JAMIA	35		
	Total				140

The sampling for patient exit interview divided in to two groups – government facilities and private facilities. Altogether 280 sample for Patient Exit Interview, out of which 140 sample were from Government facilities and 140 from Private dental facilities. The sample size of each area decided on the basis of population of that ward.

Mapping of Dental Health Services in Delhi

Mapping of Dental Health Facilities were done in and around the wards which were selected for Community Survey. Besides these separate mapping of dental colleges also done in Delhi.

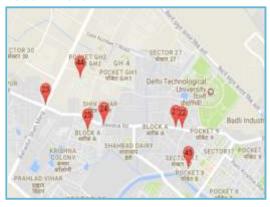


Mapping of Denatl Health facilities were done in four selected sampling ward and its surrounding area.

SI. No.	Area	No. of Health Facilities Mapped	Ward population
1	POOTH KHURD	7	57630
2	TIGRI	13	66915
3	VISHWAS NAGAR	11	53057
4	KARAMPURA	13	73731
	Total	44	251333

Note: Population as per census 2011

Pooth Khurd



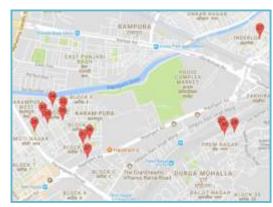
Tigri



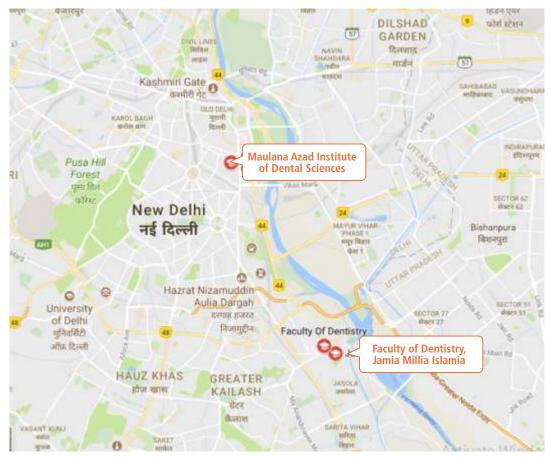
Vishwas Nagar



Karam Pura



Mapping of Dental Colleges in Delhi



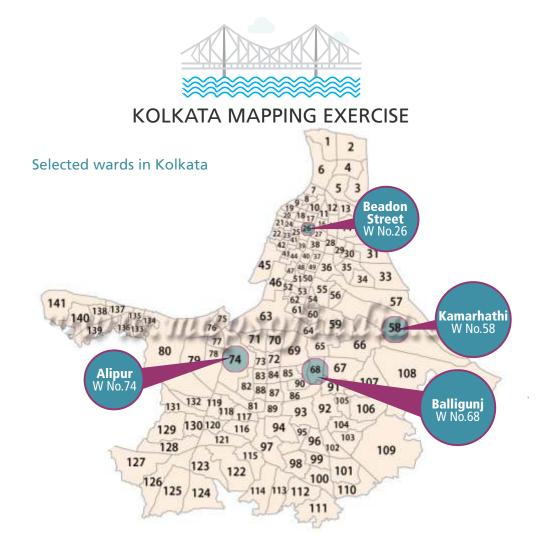
There is only two government dental colleges in Delhi. There is no private dental colleges in Delhi.

List of Dental Health Facilities Mapped

SI. No.	Dental Facilities	Location
1	DELHI DENTAL CLINIC	B-1499, TIGRI COLONY NEW DELHI
2	ARORA DENTAL CLINIC	A-198 , J.J COLONY NEAR SBI TIGRI NEW DELHI
3	FAMILY DENTAL CARE CLINIC	B-868, AMAR SINGH MARKET, TIGRI
4	ARCHNA DENTAL CLINIC	C-1254, TIGRI COLONY, NEW DELHI
5	BALKISHAN MEMORIAL HOSPITAL	C-1375, J. J COLONY, TIGRI, NEW DELHI
6	ANAND DENTAL CLINIC	C- 1540, TIGRI, NEW DELHI
7	Complete Dental Care	G-1916, Shop No-2,, J.H Colony, Tigri, New Delhi
8	Dr Hedgewar Arogya Sasthan	Karkarduma, Delhi
9	Dental Important Institute, Dr Nagpal	East Krishna Nagar Metro Pillar 83, opp. Vishwasnagar, Delhi

1	0	Delhi Dental Centre	Radhey Puri Extension, Opp Dr Headgwar Arogya Sasthan, Delhi
1	1	Dr Anil Dental Clinic	Gali No 10, Near Madini Masjid New Sanjay Amar Colony Vishwas Nagar, Delhi
1	2	Janta Dental Clinic	33/18 gali no 9 Bhikam Singh Colony, Vishwas Nagar, Delhi
1	3	M R Dental and Polyclinic	Jwala Nagar, Shahadra, Delhi
1	4	Jain Dental Clinic	Bheem Gali Vishwasnagar, Delhi
1	5	Shubham Dental Centre	Gali no 2 1/58 Vishwasnagar, Delhi
1	6	Dental Clinic (Dr Ashish Singh)	7 foota Road, Vishwasnagar, Delhi
1	7	Om Clinic	Gali no 11, Vishwasnagar, Delhi
1	9	Aman Dental Clinic	Vishwasnagar, New Sunjay Amar Colony
2	20	Saini Dental Clinic	428, Opp,SBI ATM, Main Bus Stand Shabad Daulatpur, Rohini-Bawana Road, Delhi
2	21	Elegant Smile Dental Clinic	Main Bawana Road, Opp. bank of Baroda, Sahbad Daulatpur, Delhi
	22	Dharma Dental Clinic	A-37, Mandir wala bus stand, Sahabad dairy, Delhi
	23	Bhaskar Dental Clinic	C-61, Near Sunahri Chowk, Sahabad Dairy, Delhi
	24	Chand Dental Clinic	A-297, Main Sabji Bazar Chowk, Sahabad Dairy, Delhi
	25	Acharya shri bhikshu Gov hosital	Motinagar, Delhi
	26	good will dental clinic	A 11/83 DDA Inderlok, Delhi
	27	Bala Ji Care Dental Clinic	Main Road H No 2085 Perm Nagar New Delhi
	28	Shlvam Dental Clinic	Raiy Corrsing Road Prem Nagar. New Delhi
	29	Bansal Dental Clinic Dr. Praveen Bansal	2088 2-APrem Nagar, Near Railway Gate
	30	Dr. Pawan Dental Care	T51/52 New Motinagar, Near Milan Cinema
	31	Mahashakti Dental Clinic Dr. Jyoti Yadav	E Block New Motinagar, Near Milan Cinema
	32	Balaji Denta Clinic	B1/127, Shop No 5, New Motinagar
	33	Nijhawan Clinic and Dental Care	H 25 Karampura, Delhi
	34	Braham Vidaya Dental Centre	B Block New Moti Nagar, Near Grudwara, Delhi
	35	Dr. chopra, s denta clinic	G11 Shivlok House ll Karampur, Delhi
	36	ESI Hospital	Karrampura 1, New Delhi
	37	Gautam Dental Clinic	38/551 New Motinagar Milan Cinema Road
	38	Majeedia hospital Jamia Hamdard	Tughlakabad institutional Area opposite Tigri ITBP Camp
	39	Batra Hospital & medical Research	Tughlakabad Institutional Area

40	Shri Sai Clinic	189. Khanpur Ext. Near Khajani Womspe polotiey, Delhi
41	Janta Dental Clinic	191. Khanpur Ext, Delhi
42	American Dental Clinic	Khapur Ext,, 191, Delhi
43	Yogesh dental clinic	Shop no.B3, Near Aggarwal Sweets, Shahabad Dairy, Delhi
44	Air Rica Dental and Medical Center	A7/187 Sector- 17, Rohini, Delhi



SI. No.	DISTRICTS	Borough No.	Name of Bustee	Area Description	Ward No	Ward Name
1	EAST	VII	H-1 TO H-507 DHAPA ROAD	2 NO DHAPA RD	58	KAMARHATI
2	WEST	IX	3 DURGA PUR LANE	18 19 19A 19B 20 20\1 CHETLA HAT RD	74	ALIPUR
3	NORTH	IV	35 BETHUNE ROW	RAMESH DUTTA STREET	26	BEADON STREET
4	SOUTH	VIII	1 3 23B KANKULIA RD	1 3 23B KANKULIA RD	68	BALLIGUNJ

SI. No.	Borough No.	Ward No	Ward Name	Name of Bustee	Population	Sample Community
1	VII	58	KAMARHATI	H-1 TO H-507 DHAPA ROAD	6614	74
2	IX	74	ALIPUR	3 DURGA PUR LANE	6053	68
3	IV	26	BEADON STREET	35 BETHUNE ROW	5313	60
4	VIII	68	BALLIGUNJ	1 3 23B KANKULIA RD	6944	78
			Total		24924	280

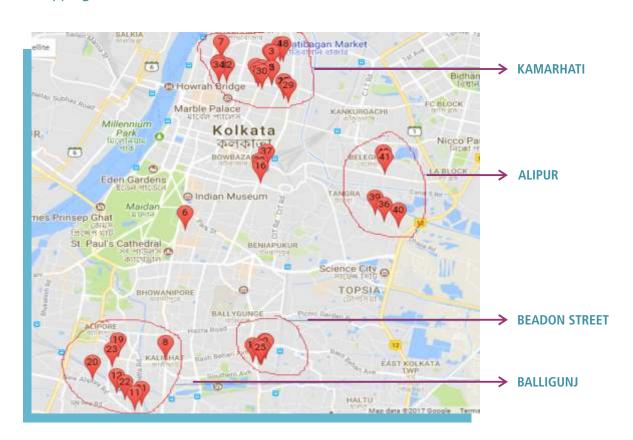
SI. No.	HOSPITAL	SAMPLE EXIT GOVT	WARD NAME	SAMPLE EXIT PVT
1	Dr. R Ahmed Dental College	70	KAMARHATI	37
2	R.G.Kar Medical College	70	ALIPUR	34
3			BEADON STREET	30
4			BALLIGUNJ	39

The sampling for patient exit interview divided in to two groups – government facilities and private facilities. Altogether 280 sample for Patient Exit Interview, out of which 140 sample were from Government facilities and 140 from Private dental facilities. The sample size of each area decided on the basis of population of the selected Bustee

Mapping of Dental Health Services in Kolkata

Mapping of Dental Health Facilities were done in and around the wards which were selected for Community Survey. Besides these separate mapping of dental colleges also done in Kolkata

Mapping of Dental Health Centres in the selected Wards in Kolkata



Mapping of Denatl Health facilities were done in four selected sampling ward and its surrounding area.

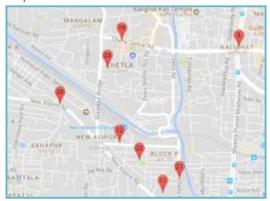
SI. No.	Area	No. of Health Facilities Mapped	Ward population
1	KAMARHATI	7	42176
2	ALIPUR	10	20724
3	BEADON STREET	17	25371
4	BALLIGUNJ	7	54090
	Total	41	142361

Note: Population as per census 2011

Kamarhati



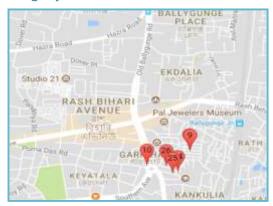
Alipore



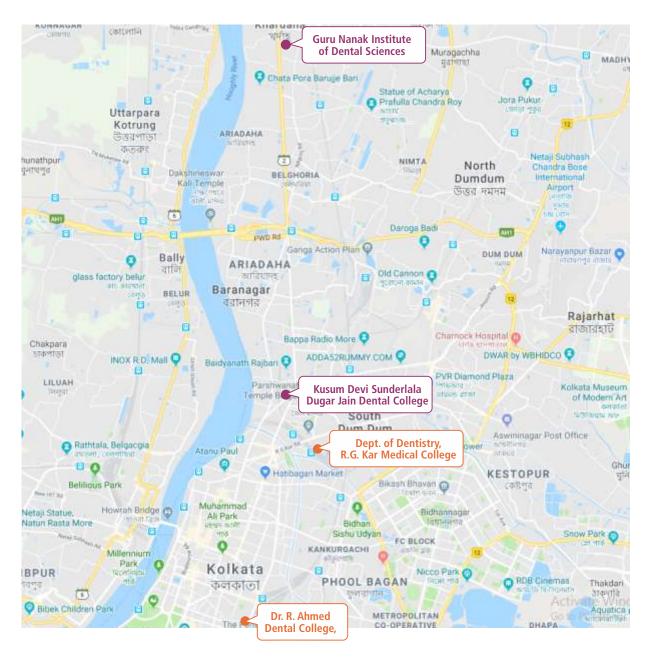
Beadon Street



Baligunj



Mapping of Dental Colleges in Kolkata



There is two government and two private dental colleges in Kolkata.

List of Dental Health Facilities Mapped

SI. No.	Dental Facilities	Location
1	Dr. Ghose Dental Clinic	84A Vivekanand Road, Kolkata
2	City Dental Clinic	134A, Vivekanand Road, Kolkata
3	MOON DENTAL CLINIC	1, Radhanath Bose Lane, Kolkata
4	ROY DENTAL CLINIC	12D, Sahitya Parishad Street, Kolkata

5	City Dental Clinic	Vivekananda Road, Kolkata
6	Dental Clinic Dr. Pricing Patra	58, Nimtala Ghat Street, Kolkata
7	Healthcare Guidance	1F, Durgapur Lane, Kolkata
8	Divine Dental Clinic	29, Ballygunge Garden, Kolkata
9	Prof. Dr. Amal Kanti Ghosh	Kakuliya Road, Kolkata
10	Shine Dental Clinic	3G Dinesh Das Sarani, Kolkata
11	UR, 'S TOOTHFULLY DENTAL CLINIC	643B, BLOCK - O, NEW ALIPORE Kolkata
12	Smile dental	3/A M M FEEDER ROAD Kolkata
13	Moon Dental Clinic	1, Radhanath Bose Lane, Kolkata
14	CITI DENTAL CLINIC	134A, Vivekanand Road, Kolkata
15	D R Ahmad Dental College & Hospital	142A, A. J. C Bose ROAD, Kolkata
16	Dr. P K Banerjee	30B Mahendra Srimani Street, Kolkata
17	Roy Dental Clinic	12D, Sahitya Parishad Street, Kolkata
18	Smile & Care Dental Clinic	
19	TRUST DENTAL CARE	32B, MONI SARYAN SARANI, Kolkata
20		197, SAEYPUR COLONY, NEW ALIPORE, Kolkata
21	SHINE DENTAL CLINIC	87, DINESH DAS SARANI, CHETLA ROAD KOLKATA
	UR'S TOOTHFULLY DENTAL CLINIC	643B, BLOCK-O NEW ALIPORE CHILDREN PARK KOLKATA
22	DR. S. NANDA	Durgapur Lane, Kolkata
23	NARAYANA HRUDAYALAYA DENTAL	23/54, GARIAHAT ROAD, GOLPARK, KOLKATA
24	AESTHETIC DENTAL CLINIC	23/16, GARIAHAT ROAD, KOLKATA
25	DENTAL REHABILITATION CENTER	23/4, GARIAHAT ROAD, KOLKATA
26	DIVINE DENTAL CLINIC	29, BALLGUNGE GARDENS, KOLKATA
27	AESTHETIC SMILE CLINIC	30B, MAHENDRA SRIMANI (SUKIA) STREET, KOLKATA
28	SEVA DENTAL	101, A.P.C ROAD KOLKATA
29	Dr. Radhapada Mondal	5B, MADAN MITRA LANE KOLKATA
30	Dr. CHINMOY SEAL	27/1 B, BIDHAN SARANI KOLKATA
31	SHIVAM DENTAL CLINIC	BANARSI GHOSH STREET KOLKATA
32	DR FRANCIS HU	K.K TAGORE STREET KOLKATA
33	CHINESE DENTAL CLINIC	265, RABINDRA SARANI KOLKATA
34	SUMITRA DENTAL CLINIC	267, RABINDRA SARANI KOLKATA
35	Doctor's Camber (Dr. Pradip Kr. Singh)	1 Dhapa Road Kolkata

36	Dental Clinic Dr. S. Halder	2 Dhapa Road Kolkata
37	Dr. R. Ahmed Dental College & Hospital	142/A, A. J. C. Bose Road, Kolkata
38	Dr, R. N. ROY	2, DHAPA ROAD KOLKATA
39	Dr. S. HALDER	43, DHAPA ROAD KOLKATA
40	DENTAL CARE UNIT	P-29, C.I.T ROAD KOLKATA
41	RANA DENTAL CLINIC	14B, HEM CHANDRA NASKAR ROAD, KOLKATA
42	GURUNANAK INSTITUTE OF DENTAL SCIENCE & RESEARCH	157/F, NILGUNJ ROAD PANIHATI SODEPUR KOLKATA



MUMBAI MAPPING EXERCISE

Selected wards/Areas for Survey



SI. No.	Zone	Slum Name	Ward Name	Area/Ward
1	Zone 3	Nargis Dutt Nagar	H West	Bandra West Ward No. 97
2	Zone 5	Mankhurd- Sathe Nagar	M East	Mankhurd – Chembur, Wrd No. 139
3	Zone 1	Ganeshmurthi Nagar	A Central	Colaba, Ward No. 227
4	Zone 4	Malvani Nagar	P North	Malad West, Ward No. 37

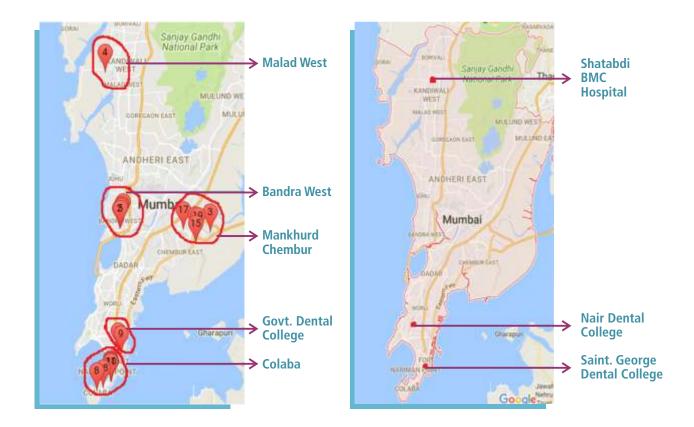
SI. No.	Ward	Area	Area Sq. Mtr	Sample Size
1	Nargis Dutt Nagar	Bandra West Ward No. 97	16412	56
2	Mankhurd- Sathe Nagar	Mankhurd – Chembur, Ward No. 139	18985	70
3	Ganeshmurthi Nagar	Colaba, Ward No. 227	120771	109
4	Malvani Nagar	Malad West, Ward No. 37	13731	45
Total				280

SI. No.	Dental College / Ward Name	Facility	Sample Size
1	Saint. George Dental College (CST)	Dental College (Govt.)	70
2	Nair Dental College (Mumbai Central)	Dental College (Pvt.)	50
3	Shatabdi BMC Hospital (Govandi)	Dental Services (BMC)	20
3	Mankhurd – Chembur, Ward No. 139	Private Clinics/Hospitals	40
4	Bandra West Ward No. 97	Private Clinics/Hospitals	30
5	Colaba, Ward No. 227	Private Clinics/Hospitals	55
6	Malad West, Ward No. 37	Private Clinics/Hospitals	25
	Total		280

Mapping of Dental Health Services in Mumbai

Mapping of Dental Health Facilities were done in and around the selected wards which were selected for Community Survey. Besides these separate mapping of dental colleges also done in Mumbai City

Mapping of Dental Health Centres in the selected Areas/Wards in Mumbai City

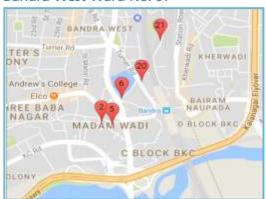


Ward Wise Mapping of Dental Health Facilities

Mapping of Denatl Health facilities were done in four selected sampling ward and its surrounding area.

SI. No.	Area	No. of Health Facilities Mapped
1	Bandra West Ward No. 97	5
2	Mankhurd – Chembur, Ward No. 139	5
3	Colaba, Ward No. 227	7
4	Malad West, Ward No. 37	1
	Total	18

Bandra West Ward No. 97



Mankhurd - Chembur, Ward No. 139



Colaba, Ward No. 227



Malad West, Ward No. 37

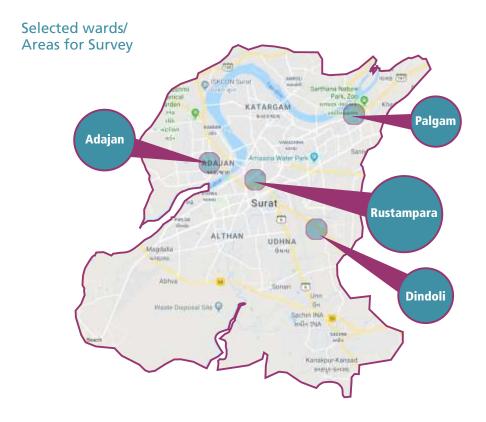


List of Dental Health Facilities Mapped

SI. No.	Dental Facilities	Location
1	Shatabdi BMC Hospital	W N Patil Road , Govandi East, Opp Amar Cinema, Mumbai
2	Shree Sambhavnath Jain Medical and Dental Centre	309, Bazar Road , Jain Mandir Marg Bandra West Mumbai
3	Lallu Bhai Compound Health Centre	Lallu Bhai Compound, Mankhurd West, Mumbai
4	Dr. Vishals Dental Care	Shop No. 539, BMC Colony Gate No.3, Malvani, Malad West, Mumbai
5	Confidental Care Clinic	Shop No. 13, Madam Wadi, Madhavrao Sawant Road , Opp Jamat Khana, Bandra West , Mumbai
6	BTC Lions Medical Centre	Lions Club of North Bombay Project , Opp LIC office, SV Road, Bandra West, Mumbai
7	Government Dental College and Hospital	St George Hospital, Near CST Area Fort, Mumbai
8	Elite Dental Clinic	Behind Saibaba Mandir, 1st Floor, Gali no.3, Navy Nagar Police Station, Colaba

9	Vakratunda Dental Clinic and Implant Centre	4, Gala House, Rajwadkar Street Ganesh Lane, Ground Floor Shop No. 10, Colaba
10	Smile Dental Clinic	Paras Bhawan, Opp Jain Mandir, Colaba
11	Rathods Dental Clinic	5, Bora St, Mahavir Mansion, Colaba
12	Smile World Dental Clinic	B/6, Sukh Niwas, 3rd Pasta Lane, Colaba
13	Om Dental Clinic and Diagnostic Centre	1/A Bandhus Court, Ground Floor, 1st Pasta Lane, Kailash Parbat Hotel Lane, Colaba
14	Indu Dental Clinic	No. 58, Ground Floor, Royal Terrace, Woodhouse Road, Colaba
15	Sabka dentist	Shop No. 10, Srisundar CHS Ltd. Sion Trombay Road , Near Barista, Opp Diamond Garden, Chembur East
16	Sabka Dentist	Shop No. 2, Daulat Shirin CHS Near Colaba Post Office, Opp Baptist Church, Colaba
17	Shah Dental Clinic and X-ray Centre	Opp USB Pvt. Ltd., Govandi Station Road Govandi, East
18	West Lake Dental Clinic	Dr Khalid Laheji, Bandra West, Mumbai
19	Sabka Dentist	Room No. 45, 1st floor, Gopal Mansion , Above Janta Book Depot, Near bandra Talaav, Gurunanak Station Road, Bandra West





SI. No.	Zone	Slum Name	Population (Approx as per SMC)	Ward
1	East	Halpatiwas, Navi Tanki Pal, Further to Varigruh	8070	Palgam
2	Central	Akbar Shahid No Tekro-1, Gopitalav	1500	Rustampara
3	North	Nehru Nagar,Pala wali Jgya, Shahil Nagar	2500	Dindoli
4	West	Site & Service, H-8	3255	Adajan - Palanpor

Sl. No.	Zone	Ward	Sample Size for Community Survey
1	East	Palgam	147
2	Central	Rustampara	27
3	North	Dindoli	47
4	West	Adajan - Palanpor	59
		Total	280

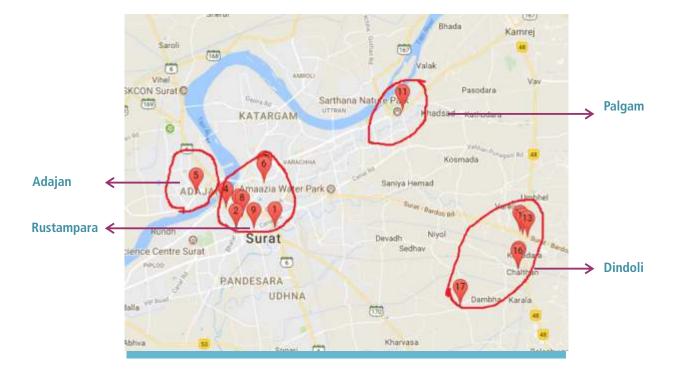
Government Dental Facilities	Sample	Ward	Sample Size
Surat Civil Hospital Majura Gate	35	Palgam	7108
Surat Civil Hospital & Medical College	20	Rustampara	20
Maskati Hospital, Navsari Bazar	20	Dindoli	33
		Adajan - Palanpor	44
Total	75		205

The sampling for patient exit interview divided in to two groups – government facilities and private facilities. Altogether 280 sample for Patient Exit Interview, out of which 75 sample were from Government facilities and 205 from Private dental facilities. The sample size of each area decided on the basis of population of the selected slums.

Mapping of Dental Health Services in Surat

Mapping of Dental Health Facilities were done in and around the wards which were selected for Community Survey. Besides these separate mapping of government dental facilities also done in Kolkata

Mapping of Dental Health Centres in the selected Wards in Surat

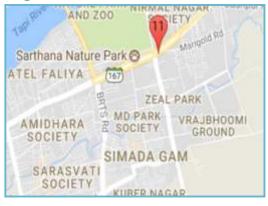


Mapping of Denatl Health facilities were done in four selected sampling ward and its surrounding area.

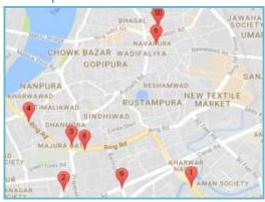
SI. No.	Area	No. of Health Facilities Mapped	Ward Population
1	Palgam	1	36107
2	Rustampara	8	48718
3	Dindoli	6	75092
4	Adajan	1	196970
	Total	16	356787

Ward Wise Mapping of Dental Health Facilities

Palgam



Rustampura



Dindoli



Adajan



List of Dental Health Facilities Mapped

SI. No.	Dental Facilities	Location
1	Dental Clinic Dr. Sanjay N Patel	Hash Shopping Complex, Near SMC South Office, Surat Navsari Road, Surat
2	Shree Gurunanak Hospital	Yogikrupa Society, Bhtar Road, Surat
3	Sabka Dentist	Swaminarayan Complex, Majura Gate, Surat
4	Mahavira Jarnal Hospital	Ring Road Opp. Vanita Visram Ground, Surat
5	Smile Dental & Homeopathy	Shila Tower, Samara Park, Adajan Pal RTO Road
6	Dixit Dental Care and Implant Centar	Ruchi Complex, Adajan, Hazira Road, Surat
7	Smile Signature Dental Care	Karwa Road, Zampa Bazar, Begumpura, Surat
8	New Civil Hospita	Majura Gate, Surat
9	Unique Hospital	CanalRoad, Surat
10	Maskati Hospital	Station Road, Surat
11	Gajera Dental Clinic	Sarthana Jakatnaka, Gokulam Orcade, Surat Kamrej Highway, Surat
12	Dentricks Dental Clinic	Bardoli, Surat Khadodra Road, Surat
13	Aashirvad Dental Clnic	UG -25 Shyam Orcade, Bardoli, Surat
14	Shri Gajanan Dant Ka Dawakhana	Swagat Complex, Kadodra NH 8, Surat
15	Sai Dantnu Davakhana	Near Railway Phatak, Chalthan Road, Surat
16	Ambika Dental Care	Main bazar, Opp Althan Bus Stand, Chalthan Ring Road, Surat
17	Prathmik Aarogya Kendra	Mohini, Nioyi Mohini Road, Suratt Floor, Gali no.3, Navy Nagar Police Station, Colaba

ANNEXURE 6:

Evolution of National Oral Policy of India

Oral health policy by IDA in 1986
National Oral Health policy by DCI in 1994
WHO oral health year 1994
1995- OHP becomes part of National Health Policy
1998- Launch of National Oral Health care Program - NOHCP by Directorate General of Health Services and MOHFW
NOHCP handed over to AIIMS who implemented pilot project in 5 states Developing IEC materials Basic rural health care package Developing human resources and infrastructure Mobile dental clinic services in rural areas Research monitoring of services
2004- Review of the project by NIHFW
2006- GOI and WHO recommended increasing the role of dental work force in NRHM
Currently the implementation of National Oral Health Program is merely confined to paper mostly





