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**Explore and develop a model to maintain and build upon dental clinic open for all in the developing regions with primary focus on India**

Sugandhi A *et al.* Dental clinic in the developing regions

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**Abstract**

**AIM:** To study a service model that enables clinic to be open to all members of the community irrespective of their ability to pay.

**METHODS:** Sampling methodology was used to gather information in two phases, with city of Indore as the target region. In first phase dental professionals were surveyed to gather the cost of facility, land, equipments and cost of sustaining the practice. While in second phase we surveyed the residents of Indore to collect information regarding their oral health problems and their expenditure for the same. Assessing the current situation: what are the questions we are trying to answer? These are related to following issues: Dental health care access problems, Resources required: human and financial.

**RESULTS:** (1)People of less than 20 years of age form a large fraction (43%) of the population of city and also a large fraction (54%) of the people who visit dental clinics; (2) Dental caries is commonly found in the population of less than 20 years of age and Mobile tooth in more than 50 years of age; (3)Dental caries and mobile tooth are almost equally found in people of age group 20-50 years of age; (4)A significant large fraction of the more than 50 years age group has all their teeth extracted; (5)A significant large fraction of the 20-30 years age group does not have any of their tooth extracted.

**CONCLUSION:** The model which we have proposed works well for the low income patients; however it places a lot of extra burden on the higher-income group. In such a case a lot of effort can be put into generating revenue from other sources, which include events and donations.

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**Key words:** Dental clinic; Dentist; Dental health; Population; Dental treatment

**Core tip:** One of the primary reasons for the challenges faced by dental health care in developing country like India is that when primary health care systems were being implemented, dental health care was not included. Also, expenditure on health care systems form a significant percentage of the Gross Domestic Product (nearly 5%), it is very small as compared to the total population of the country. On top of that the amount of money spent on dental health care is very less as compared to some of the other nations. This has left dental health care in India far behind other health services. Following are some of the challenges faced by the dental health care in India: (1) Expensive treatment; (2)Unbalanced distribution of clinics; (3) Unawareness; (4)Skewed population to dentist ratio; and (5)Changing disease pattern and treatment needs.People in developing regions suffer from different types of dental diseases, which although are curable through treatment but are not affordable by most of the people. In this study we have developed a service model that enables clinic to be open to all members of the community irrespective of their ability to pay.

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## INTRODUCTION

In developing nations such as India, where 70% of people live in rural areas and nearly 35% of population is below poverty line. In 2004–2005, around 39 million (30.6 and 8.4 million in rural and urban areas, respectively) of Indians fall into poverty as a result of out-of-pocket expenditures each year[1,2]. People either don’t have funds for eating let alone dental and other medical health care. The impact of health expenditures are greater in rural areas and in poorer states, where a greater proportion of the population live near the poverty line[2]. The total expenditure on health was estimated at 4.13% of the Gross Domestic Product (GDP) in 2008–2009, with public expenditure on health being 1.10% of the share of GDP[3]. Private expenditures on health have remained high over the last decade[4]. A greater proportion of resources are directed towards urban-based services, and higher level services, with 29.2% of public expenditures (both Central and State) allocated to urban allopathic services compared to 11.8% of public expenditures allocated to rural allopathic services in 2004–2005. This imbalanced allocation is compounded by the private sector’s bias toward higher level curative services, which determined by market forces, tend to be centered in wealthier urban area[5]. Most public health facilities lack efficiency, are understaffed and have poorly maintained or outdated medical equipment. In addition to the lack of fund and poor infrastructure, India faces a shortage of medical staff for these facilities especially in rural regions where access to medical care is limited. Thus it is important to build a model clinic that would not attempt to segregate the poor, but would be open to all, have a sliding-fee schedule to make dental care affordable for poor and uninsured.

## WHAT DO WE MEAN BY DEVELOPING REGIONS?

Development of a country is measured with the help of statistical indexes such as per capita income (GDP), life expectancy, the rate of literacy, educational attainment, etc. The UN has developed the *Human Development Index* (HDI)[6], a standard mean of measuring human development. Thus it helps in determining whether a country is developed, developing or underdeveloped country.

A developing country is the one that has low standard of democratic governments, industrialization, social programs and human rights guarantees.In other words we can say that developing country has an undeveloped or developing industrial base and an inconsistent varying HDI. However, countries have more advanced economies than other developing nations, but haven’t fully demonstrated the signs of a developed country are called *newly industrialized countries*. And the countries that have sustained good economic growth over a long period of time and have a good economic potential are termed as *emerging markets*. India falls under this category of *big emerging markets* and we will be focusing our work targeting India.

## WHY INDIA

Over the years, Indian economy has grown a lot, however differences between the rich and poor have only widened. In India government and private sector provide health care jointly. The poor who were not able to afford an expensive medical treatment earlier are still not able to afford it. And since the oral health care is still in the developing stage in India, it is comparatively expensive to other medical treatments, putting it out of the reach of common man. The private sector hospitals are primarily motivated by profit, thus leaving a majority of population unattended; public health institutions are the only hope for such underprivileged people. And since these people form a large chunk of Indian population (over 35%), the cost of such a treatment becomes all the more important.

## CHALLENGES TO DENTAL HEALTH CARE IN INDIA

One of the primary reasons for the challenges faced by dental health care in India is that when primary health care systems were being implemented, dental health care was not included. Also, expenditure on health care systems form a significant percentage of the GDP (nearly 5%), it is very small as compared to the total population of the country. On top of that the amount of money spent on dental health care is very less as compared to some of the other nations. This has left dental health care in India far behind other health services. Following are some of the challenges faced by the dental health care in India.

***Expensive treatment***

The increasing cost of oral healthcare that is paid as “out of pocket‟ payments is making oral healthcare unaffordable for a growing number of people. The number of people who could not seek oral care because of lack of money has increased significantly between 1986 and 1995. The proportion of people unable to afford basic oral healthcare has doubled in last decade. Over 20 million Indians are pushed below the poverty line every year because of the effect of out of pocket spending on health care[7].

***Unbalanced distribution of clinics***

In India up to 80% of population lives in rural areas do not have any access to dental health care[8]. Community oriented health programs are seldom found in rural areas. For any type of dental health care they need to go to urban areas, thus compounding upon the cost of treatment, which makes them unwilling to go for the treatment.

***Unawareness***

It has been found that 30% of population were unaware about the ideal ways of avoiding tooth decay, gum diseases and oral cancer[9]. And only a small number of people ever go to dentist on a regular basis or even in case of some medical emergency.

***Skewed population to dentist ratio***

The current dentist to population ratio in India is 1:10000 [10] in urban and 1: 2.5 lakh in rural areas[11]. This has been a significant improvement from 1980s when it was 1:80000. However, with geographical imbalance amongst situation of dental colleges, the ratio varies significantly in rural and urban areas.

***Changing disease pattern and treatment needs***

The effectiveness of preventive dentistry is leading to change in the disease pattern; also people are becoming more aware and concerned about dental health care. Although this number is small, but it is increasing thus it has lead to decrease in demand of tooth extraction to increase in demand of conservative modalities such as root canal treatment. This is putting a lot of pressure on already stressed out system to introduce different specializations in postgraduate courses.

## FUNDAMENTAL CAUSES OF HIGH COST OF TREATMENT

The cost of treatment is one of the major concerns of Indian population, which forces them to avoid the treatment if at all possible. Following are some of the major reasons for high cost of dental treatment in India: (1) A skewed dentist to population ratio leading to a lot of demand for better care; (2) Rapidly changing technology and cost to keep up with it; (3) More remuneration for qualified professionals; (4) High demand for better care; and (5) A lot of aging population who needs special attention.

## OBJECTIVES OF THE STUDY

***Primary objective***

To explore and develop a model to maintain and build upon dental clinic open for all in the developing regions with primary focus on India

***Secondary objective***

To study the challenges in dental health care in India; To study the cost of setting up and maintaining a dental health care clinic in India; To study the common dental ailments prevailing in Indian patients; To study the needs of different types of patients.

## METHODOLOGY

The underlying challenge to our study was to understand how could we achieve balance between providing dental care to low-income patients and financial stability of the clinic. Thus it was needed of us to assess the factors that affect the patient care revenue, including the start-up and maintenance cost. Following sequence of steps were followed to achieve our goal: (1) Assessing the current situation: what are the questions we are trying to answer? These are related to following issues: Dental health care access problems; Resources required: human and financial; (2) Envisioning the desired solution: defining what we want to achieve

All of our studies and surveys are carried out in the city of Indore. It is the most populous city in Madhya Pradesh with population of about 3600000[12]. It has a mix of low-income and high-income population. Although we don’t have any specific data regarding the income of people in Indore, a survey on population of Madhya Pradesh indicated that 38 % of urban population in Madhya Pradesh[13] lives below poverty line. Thus assuming that this data can be extended to population in Indore this number is significantly large fraction of population. It has four dental colleges along with several public and private dental clinics around the city.

### HOW DO WE ASSESS THE NEEDS FOR SUCH A CLINIC?

As a first step we needed to determine the needs of a dental clinic. Such an assessment considers following factors: (1) Population demographics: Collecting information regarding poverty, age, insurance, is helpful in providing perspective about the underlying population because dental disparities occur in many population subgroups; According to census of India 2001 [14] following information is available to us (Table 1); (2) Dental needs of the target population; (3) Accessibility of current dental care resources for target population, this includes availability and utilization of public and private dental care units; and (4) Community perceptions of the need for dental care resources.

In order to determine dental needs of the people of Indore and status of current dental health care in the city we conducted a survey at four medical hospitals and several dental clinics to collect responses from 40 dentists across the city. Survey included a questionnaire (Table 2) to be filled in by the dentist.

The reason behind carrying out the survey was to identify the dental health care needs and problems of different age groups. And also to identify the minimum level of care to be provided at the clinic we are aiming to develop.

Following section summarizes the results of the survey.

**RESULTS OF TABLE 3-6**

Table 3-6 and Figures 1–2 contain an average of the responses received from various sources for Question 1–7 in the survey (Table 2). Results from the above-observed data are: (1) People < 20 years of age form a large fraction (43%) of the population of city and also a large fraction (54%) of the people who visit dental clinics; (2) Dental caries is the most wide spread dental disease (or ailment) faced by the population of < 20 years of age; (3) Mobile tooth is the most wide spread disease (or ailment) faced by the population > 50 years of age; (4) Dental caries and mobile tooth are almost equally found in people of age group 20-50 years of age together they form the most wide spread disease (or ailment) in the age group; (5) A significant large fraction of the > 50 years age group has all their teeth extracted; and (6) A significant large fraction of the 20-30 years age group does not have any of their tooth extracted.

Based on these results we identify following level of service we want to provide at the clinic.

***Basic oral health care service***

Services provided early in the disease process and which limit the disease from progressing further. These include diagnostic procedures, simple restoration of diseased teeth, early treatment of periodontal disease and many surgical procedures needed to treat oral pathologies.

***Preventive oral health services***

These include the services which prevent the onset of dental disease process.

**METHODOLOGY FOR EXPENSES OF A DENTAL CLINIC**

Next step was to estimate the expenses of a dental clinic. We conducted another survey (Table 7) to estimate start up and operational cost of a dental clinic. To determine the cost of commodities we conducted this survey with the suppliers for each of these commodities. And for determining the operational costs, we asked dentists to determine the average operational costs. Table 8 summarizes the result of the expense survey.

By Equipment reserve fund we mean the money which is set apart for buying an expensive equipment in future. And the list of essential dental equipments (Table 9) was determined by getting reference from one of the dental clinic in Indore in which we asked them to list the supplies and instruments in their clinic. Apart from these dental instruments and supplies a dental chair is also present at the clinic.

### METHODOLOGY FOR REVENUE FROM ALL SOURCE

In order to design a sliding fee model we should be aware of the expected revenue of the clinic so as to have a sliding fee model which should perform as good as that, so that we are able to sustain the clinic. Thus our next step was to estimate the revenue of a dental clinic from different resources. We conducted a survey (Table 10) to determine the revenue of clinic from different sources. This survey was also conducted at all the hospitals and clinics where the first survey was conducted. Table 11 contains the result of dental clinic revenue survey.

**RESULT OF REVENUE SURVEY IS GIVEN IN TABLE 11**

### *Do we need a mobile or fixed dental clinic?*

While calculating the expense of a clinic we observed that initial cost of starting the clinic was a major component (nearly 66%). Thus we asked ourselves the question, do we necessary need a fixed dental clinic or we can do away with the mobile clinic thus reducing the initial start-up cost. Mobile clinics are used when we want to serve small packets of patients who are scattered over a geographic area. The greatest advantage of such a clinic is that initial cost of setup is low, however the future cost of maintenance is high. Also the life of a mobile facility is shorter than a fixed facility. One of the aims of our open-to-all clinic is to provide care to as many people so as to increase the revenue as much as possible, which would be otherwise difficult in a mobile clinic. Thus it makes more sense for us to go for a fixed facility that can serve a large number of people.

### *How to determine the patient charges?*

Once we had determined the expenses and revenue of a dental clinic, next step was to develop a sliding fee model for patient charges, which was our goal to begin with. However to build such a model we still needed information like what is the average number patients of different income groups who visit dental clinics (Table 12). We conducted another survey to determine this. The results of the survey are presented below in Table 13.

After gathering all the relevant data we then proceeded to develop a sliding fee model that can be used for a dental clinic in India. Figure 3 shows a graph from G20 report[15] on poverty and inequality. It shows a distribution of population with their income. It can be seen from the graph that less than one-fifth of the population lies below the two-dollar (Rs. 100) line and around 1 percent lies below the one-dollar (Rs. 50) line. The maximum percentage of the population earns close to Rs. 300 – Rs. 350 (per day) mark.

Now we determined the per visit charge that is charged to patients, which we could take as the basis for providing discount to the low-income group. Note, this had to be greater than the average per visit charge we estimated from our survey, because we want to sustain our clinic financially. The extra amount of money being charged to the high-income group will help us subsidize the fees for low-income group. We now divide population into five different groups on the basis of their income: (1) Low-income group: earning < Rs. 100/d; (2) Lower-middle income group: earning > Rs. 100 but < Rs. 300 /d; (3) Middle-income group: earning > Rs. 300 but < Rs. 400/d; (4) Higher-middle income group: earning > Rs. 400 but < Rs. 1000/d; and (5) Higher-income group: earning > Rs. 1000/d

From Table 13 we know that well-off patients (including the higher middle income group and higher-income group) constitute a significant portion of the population that visits the dental clinics. It is nearly thrice as large as the less-income patients that visit the dental clinics. So, if we want to provide an X% discount to lower-income group we just need to charge X /3% more to the higher-income group. We fix our baseline charge to Rs. 400 per visit. Looking at the Figure we estimate that low-income group would approximately form 10% of the total patients, lower-middle income group would nearly form 16% of the total patients, middle-income would nearly form 35% of the population, higher-middle income would nearly form 22% and higher income would nearly form the 17% of the total population. Now we provide, following discounts to various income groups (Table 14).

The bottom-line in establishing various discounts is that weighted sum of the discount and portion of the population that group forms should be non-negative if we want to sustain our clinic financially. The sliding fee schedule is to be used by totaling the full fees, multiplying the discount factor and subtracting to determine charge to the patient. Note that negative discount for the higher-income group means that an extra fee is charged to them as compared to the other income groups. There are fees for cases, which we would not like to discount in case of very high cost of treatment to the higher income group or giving a very large discount to lower-income group.

**DISCUSSION**

These dental clinics address dental access problems and barriers in several ways. These types of dental clinics should be distributed throughout the state, in urban and rural locations. They will serve communities for many years and maintain adequate hours of practice. Such type of dental clinics providing most common dental services, and when additional services were needed, they could refer to dental colleges. The clinic treated low-income patients who are mainly living below poverty line at very low cost. The clinic also treated low-middle and middle income group patients with sufficient discount. Because most of the such clinics are located within the facilities that provided oral health care service at very low cost specially for low income group, patient might perceive them as being more accessible and familiar. This assistance and familiarity reduce important nonfinancial access barriers. These dental clinics will offer a variety of oral health outreach and educational programs designed to reach broader groups and expand the oral health message, possibly preventing further dental problems.

In this study we found that middle income and higher income group constitute a significant portion of the population visit the dental clinic which is about thrice as large as low income group according to the result of survey given in Table 13. So it is found that by giving 1/3% of discount to low income group we will provide them a better oral health service as given in Table 14. Almost 75% discount to low income group and 50% discount to lower middle income group gives them hassle free thinking to approach for oral health care. Another interesting point is to charge a slightly higher fee from the patients with insurance to increase the patient care revenue of the patients and reduce the burden on the higher-income group patients.Study limitations: From the higher income group an extra fee is charged as compared to other income group.

## CONCLUSION

One of the important aims of developing such a clinic was to provide dental care to low-income populations who have poor access to the health care. However, we should not forget that a clinic is of no use to anyone if it cannot keep its door open. The more inclusive a clinic seeks to be in providing access, the greater is the risk of operating in the red because of uncompensated care. By the same token, the more a clinic limits uncompensated care, the greater its risk of limiting access to dental care for people with low-income groups. Thus it is always important to achieve a balance between the two. The model which we have proposed in Table 14 works well for the low income patients, in terms of providing them dental care at low and affordable cost, however it places a lot of extra burden on the higher-income group which may not be accepted to them. In such a case a lot of effort can be put into generating revenue from other sources, which include events and donations.

**COMMENTS**

***Background***

This model is build upon to open a dental clinic in the developing region like Indian community irrespective of their ability to pay. So far, however, no such type of survey has been taken place to open such dental clinics in which both lower income and higher income group are considered.

***Research frontiers***

The model which we have given is well for low income group for giving dental care at low and affordable cost, but it also give extra burden on higher income group which may not accept to them.

***Innovation and breakthroughs***

This is the pioneer study, where authors used sampling methodology for survey in which survey was conducted in two phases; first for the dentist to know the cost of facility, land, equipments and cost of sustaining the practice. While in second phase we surveyed the residents of Indore to collect information regarding their oral health problems and their expenditure for the same.

***Applications***

In the developing region like India this model may get success for the people with low income group although extra burden on higher income group can be distributed by generating funds by events & donations.

***Terminology***

GDP: Gross Domestic Product; HDI: Human Development Index.

***Peer review***

The paper is acceptable in its current form.

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**Table 1 Demographics of Indore**

|  |  |  |
| --- | --- | --- |
| **Varible** | **Number** | **%** |
| Population |
| Total | 2465827 | - |
| Males | 1289352 | 53  |
| Females | 1176475 | 47  |
| Rural | 735464 | 29.7  |
| Males | 379624 | 15.3  |
| Females | 355840 | 14.4  |
| Urban | 1730363 | 70.3  |
| Males | 909728 | 36.9  |
| Females | 820635 | 33.4  |
|  Age Distribution |
| < 10 yr | 538943 | 21.8  |
| 10-20 yr | 524116 | 21.2  |
| 20-30 yr | 460948 | 18.6  |
| 30-50 yr | 625071 | 25.3  |
| > 50 yr | 309070 | 12.5  |

### Table 2 Questionnaire to determine health care status and needs

|  |  |
| --- | --- |
| **Age group** | **Percentage** |
| 1 Percentage distribution of different age groups that have visited dentist in previous year  |
| < 10 yr |  |
| 10–20 yr |  |
| 20 – 30 yr |  |
| 30–50 yr |  |
| > 50 yr |  |
| 2 Percentage distribution of different age groups needing dental treatment according to urgency of need |
| < 10 yr |  |
| 10–20 yr |  |
| 20 – 30 yr |  |
| 30–50 yr |  |
| > 50 yr |  |
| 3 Percentage distribution of children < 20 yr of age having following diseases or dental ailments |
| Caries |  |
| Mobile teeth |  |
| Gums pyoreha |  |
| Pulpal infection |  |
| Others |  |
| 4 Percentage distribution of people between 20-50 yr of age having following diseases or dental ailments |
| Caries |  |
| Mobile teeth |  |
| Gums pyoreha |  |
| Pulpal infection |  |
| Others |  |
| 5 Percentage distribution of people above 50 yr of age having following diseases or dental ailments |
| Caries |  |
| Mobile teeth |  |
| Gums pyoreha |  |
| Pulpal infection |  |
| Others |  |
| 6 Percentage of different age groups who had all their teeth extracted |
| < 10 yr |  |
| 10–20 yr |  |
| 20 – 30 yr |  |
| 30–50 yr |  |
| > 50 yr |  |
| 7 Percentage of different age groups who had none of their tooth extracted |
| < 10 yr |  |
| 10–20 yr |  |
| 20 – 30 yr |  |
| 30–50 yr |  |
| > 50 yr |  |

**Table 3 Percentage age wise distribution of people visiting dentist**

|  |  |
| --- | --- |
| **Age group** | **%** |
| < 10 yr | 23  |
| 10–20 yr | 31  |
| 20–30 yr | 19  |
| 30–50 yr | 16  |
| > 50 yr | 11  |

**Table 4 Percentage age wise distribution of people needing dental treatment according to urgency of need**

|  |  |
| --- | --- |
| **Age group** | **%** |
| < 10 yr | 15 |
| 10-20 yr | 24 |
| 20-30 yr | 13 |
| 30-50 yr | 19 |
| > 50 yr | 29 |

**Table 5 Percentage distribution**

|  |  |
| --- | --- |
| **Disease** | **%** |
| **Children < 20 yr of age having following diseases or dental ailments** |
| Caries | 61 |
| Mobile teeth | 20 |
| Gums pyoreha | 4  |
| Pulpal infection | 12 |
| Others | 3 |
| **People between 20-50 yr of age having following diseases or dental ailments** |
| Caries 34 |
| Mobile teeth 25 |
| Gums pyoreha 18 |
| Pulpal infection 23 |
| Others 10 |
| **People above 50 yr of age having following diseases or dental ailments** |
| Caries 24 |
| Mobile teeth 59 |
| Gums pyoreha 3 |
| Pulpal infection 12Others 2 |

**Table 6 Percentage of different age groups**

|  |  |
| --- | --- |
| Age group | **%** |
| **Different age groups who had all their teeth extracted** |
| < 10 yr | 3  |
| 10-20 yr | 4  |
| 20-30 yr | 3  |
| 30-50 yr | 7  |
| > 50 yr | 42  |
| **Different age groups who had none of their tooth extracted** |
| < 10 yr 21 |
| 10-20 yr 33 |
| 20-30 yr 67 |
| 30-50 yr 8 |
| > 50 yr 2 |

### Table 7 Questionnaire to determine expense of a dental clinic

|  |  |
| --- | --- |
| **Expense** | **Cost** |
| Start-up costs |
| Construction (or remodeling cost) |  |
| Dental equipment cost (including supplies and instruments) |  |
| Furniture |  |
| Record filling system |  |
| Phone / intercom system |  |
| Computer / data / billing |  |
| Operating Expenses |
| Dental assistant |  |
| Billing Clerk (or Secretary or Receptionist) |  |
| Clinical supplies |  |
| Office supplies |  |
| Equipment maintenance  |  |
| Housekeeping |  |
| Laundry |  |
| Communications |  |
| Equipment reserve fund |  |

**Table 8 Result of dental clinic expenses survey**

|  |  |
| --- | --- |
| **Expense** | **Cost** |
| **Start-up costs** |
| Construction (or remodeling cost) | Rs. 1205000 |
| Dental equipment cost (including supplies and instruments) | Rs. 924500 |
| Furniture | Rs. 45900 |
| Record filling system | Rs. 12500 |
| Phone / intercom system | Rs. 9300 |
| Computer / data / billing | Rs. 35200 |
| **Total start-up costs** | **Rs. 2232400** |
| **Operating expenses** |
| Dentist | Rs. 750000 |
| Dental assistant | Rs. 24000 |
| Billing clerk (or Secretary or Receptionist) | Rs. 5000 |
| Clinical supplies | Rs. 107900 |
| Office supplies | Rs. 12500 |
| Equipment maintenance  | Rs. 21400 |
| Housekeeping | Rs. 13600 |
| Laundry | Rs. 26700 |
| Communications | Rs. 24000 |
| Equipment reserve fund | Rs. 10000 |
| **Total operating expenses** | **Rs. 995100** |
| **Total expenses** | **Rs. 3227500** |

### Table 9 List of essential dental equipments and supplies

|  |  |  |
| --- | --- | --- |
| **OperativeInstruments** | **Handpieces** |  **Other Instruments**  |
| Mouth Mirrors #5 | High-Speed Handpiece | Dental Mirrors #5 for Exam Kits  |
| Mirror Handles  | Low-Speed Handpiece | Mirror Handles for Exam Kits  |
| 23 Explorer/PSR  | Ball-Bearing Contra Angle Assembly (Latch)  | Explorer/PSR Periodontal Probes for Exam Kits  |
| Scissors, Iris 41/2" Straight, Economy  | Prophy Contra Angle Head Assembly  | Cement Spatulas #24  |
| Cotton Pliers(s), College #317  | Contra Angle Sheath | Aspirating Syringe CW Type  |
| Spoon Excavator #38-39 | Straight Attachment  | Composite Instruments, Set of 3  |
| Amalgam Carrier Double Ended I  | Spray and Clean Handpiece Lubricant  | Rubber Dam Punch  |
| Amalgam Plugger l/2 Black  |  | Rubber Dam Clamps, Starter Kit  |
| Cleoid-Discoid 89/92 |  |  |
| Cleoid-Discoid 3/6 |  |  |
| Hollenbach |  |  |
| Interproximal Carver (IPC)  |  |  |
| Articulatiilg Paper Forceps |  |  |
| Rubber Dam Frame  |  |  |
| Rubber Dam Clamp Forceps |  |  |
| Dycal Instrument |  |  |
| Tofflemire(s) 2 per kit, universal |  |  |
|  |  |  |
| **Operative Supplies** | **Disposables**  | **Infection Control Supplies** |
| Lidocaine 2% 1: 100000 epi/can | Tray Covers -Mauve lOOO/Box  | Latex Exam Gloves, pick size  |
| 3% Mepivicaine/can  | 2 x 2 gauze 8 ply 200/Pkg | Sterile Surgeons Gloves, pick size  |
| 5% Marcaine 1:200000 epi/can | 4 x 4 gauze 8 ply 200/Pkg | Utility Gloves, Large  |
| 27 gauge Long Needles/box | Dry-Gard Patient Bibs (rose) 500/Case  | Face Masks, 50 per box  |
| 30 gauge Short Needles/box | Napkin Holder  | Safety Glasses  |
| Topical Anesthetic  | Cotton Tip Applicators 6” non-sterile lOOO/Box  | Disposable Cover Gowns, pick size  |
| Sharps Container  | Cotton Pellets #2 2000/Box  | Antiseptic Hand Soap,  |
| Accu Film II/box | Cotton Pellets #4 3000/Box  | Cleaning Solution |
| Amalgam -Regular Set/can  | Cotton Rolls 2000/Box | Banicide Plus, 3.4% Glutraladehyde, 1 Gallon  |
| Glass Ionomer Kit  | Cotton Roll Dispenser  | Disinfectant  |
| IRM Caps 50/Pkg.  | Plastic Cups, 1OOO/Case | Self Seal Sterilization Pouches 31/2” × 9”,  |
| Clear Matrix Strips/box | Cup Holder  | Self Seal Sterilization Pouches 31/2” × 51/4”,  |
| Sof-Lex Pop-On Kit #1980  | Safe-Tips EZ 150/Pouch  | Self Seal Sterilization Pouches 51/4” × 10” |
| Finishing Strips Coarse/Medium 150/Box  | High Speed Evacuation Tips SO/Bag  | Self Seal Sterilization Pouches 71/2 × 13”,  |
| Lightening Strips Medium 12/tube  | Saliva Ejectors White Opaque 100/Bag  | Chair Covers 48” × 56"  |
| Polishing Paste/can | Dappen Dishes lOOO/Box  | Air/Water Syringe Covers |
| Toillemire Matrix Bands #1, .0015 12/Pkg.  | Oral Evacuation Cleaner  | Light Handle Covers  |
| Tofi1emire Matrix Bands #2 .0015 12/Pkg.  | Disposable Spatulas l00/Box  | ALLRAP 1200 Sheets/Roll  |
| Dycal Ivory Shade/tube | Benda Brush 144/Box  | Mouth wash, may want to order pump |
| Copalite 1/2oz/bottle | Disposable Mirrors 72/Box  | Periogard 16 oz |
| Vitrebond 3M/box | Disposable Traps Dental Unit 144/Box, pick size needed  | Cure Sleeve, Steri Shield 5OO/Box |
|  | Disposable Traps Central Suction 8/Box, pick size needed  | Tube Sleeve 2”  |
|  | Paper Towels  | X-ray sleeve 14” W × 13” D x 241/2” L  |
|  |  | Biological Monitoring System  |
|  |  | Biological Indicators (25/box)  |
|  |  |  |
| **Standard Oral Surgery Kit**  | **Oral Surgery Instruments** | **Oral Surgery Supplies** |
| Surgical Handles, #3  | 150 Forceps  | 3-0 Silk Sutures, 18” Cutting, Needle C-6 12/Box  |
| #9 Molt Periosteal Elevator  | 151 Forceps  | 3-0 Chromic Gut Sutures, 27”, C-6 12IBox  |
| Needle Holder, Crile-Wood 6 inch  | 17 Forceps  | Biopsy Bottles  |
| 301 Elevator  | 23 Forceps  | Dry Socket Paste, 1 oz.  |
| 34 Elevator  | 88R Forceps  | Iodoforn Gauze 1f4” × 5 yd.  |
| Minnesota Retractor  | 88L Forceps  | Gelfoam |
| Curette  | #1 Forceps  | #15 Blades 100/Box  |
| Kelly Hemostats, Curved 51/2”  | Cryer 30  |  |
| Mouth Mirror 1 Mouth Handle  | Cryer 31  |  |
| Scissors Kelly 61/4”, Curved  | Crane Pick  |  |
| Mouth Prop (adult) 2/Box  |  Periosteal Elevator #9 Molt  |  |
| Suction Tips  | Heidbrink #1 Root Tip Pick  |  |
|  | Heidbrink #2 Root Tip Pick  |  |
|  | Heidbrink #3 Root Tip Pick  |  |
|  | Tissue Forceps  |  |
|  | Rongeurs |  |
|  | Bone File, 12 Howard  |  |
|  | Straight Hemostat, Crile 51/2”  |  |
|  | Needle Holder, Crile-Wood  |  |
|  | Surgical Handle  |  |
|  | Dental Mirror for Post-Op Kit  |  |
|  | Mirror Handles for Post-Op Kit  |  |
|  | Iris Scissors for Post-Op Kit  |  |
|  | Cotton forceps for Post-Op Kit  |  |

### Table 10 Questionnaire to determine revenue of a dental clinic

|  |  |
| --- | --- |
| **Source** | **Income** |
| Patient care revenue – self pay |  |
| Patient care revenue – insurance |  |
| Patient care revenue – total |  |
| Donations and other sources  |
| Individual donations |  |
| Corporate donations |  |
| Events |  |

**Table 11 Result of dental clinic revenue survey**

|  |  |
| --- | --- |
| **Source** | **Income** |
| Patient care revenue |
| Patient care revenue – self pay | Rs. 866050 |
| Patient care revenue – insurance | Rs. 166450 |
| Patient care revenue – total | Rs. 1032500 |
| Donations and other sources  |
| Individual donations | Rs. 9000 |
| Corporate donations | Rs. 13000 |
| Events | Rs. 6000 |
| Donations – total | Rs. 28000 |
| **Total revenue (all sources)** | **Rs. 1060500** |

### Table 12 Questionnaire to determine patient visits at a dental clinic

|  |  |
| --- | --- |
| **Variable** | **Value** |
| Patient VisitsTotal number of patient visits:  |
| Well of patients1 |  |
| Low income patients2 |  |
| Patients with insurance |  |
| Per patient visit charge |  |

1By well-off patients we mean the patients who are way above the poverty line and do not have any money constraints on the cost of treatment; 2By low income patients we mean the patients who are either below poverty line or who belong to middle class that can not afford expensive treatment.

**Table 13 Summary of patient visit survey**

|  |  |  |
| --- | --- | --- |
| **Variable** | **Value** | **%** |
| **Patient visits1****Total number of patient visits: 3550** |
| Well of patients2 | 2610 | 74 % |
| Low income patients3 | 940 | 26 % |
| Patients with insurance | 284 | 8 % |
| Per visit patient charge | 350 | - |

**1**All the visits are to be expressed per year; 2By well-off patients we mean the patients who are way above the poverty line and do not have any money constraints on the cost of treatment; 3By low income patients we mean the patients who are either below poverty line or who belong to middle class that can not afford expensive treatment.

**Table 14 Discounts to different income groups**

|  |  |
| --- | --- |
| **Income group** | **Discount** |
| Lower-income | 75 % |
| Lower-middle income | 50 % |
| Middle-income | 12.5% |
| Higher-middle income | 0 % |
| Higher income | - 75 % |

**Figure 1 Percentage age wise distribution.** A: Percentage age wise distribution of people visiting dentist; B: Percentage age wise distribution of people needing dental treatment according to urgency of need.

**Figure 2 Percentage distribution.** A: Percentage distribution of children < 20 year of age having following diseases or dental ailments; B: Percentage distribution of people between 20-50 year of age having following diseases or dental ailments; C: Percentage distribution of people above 50 year of age having following diseases or dental ailments.



**Figure 3 Income distribution in India**