

**Summer Training at  
Sightsavers India, Kolkata  
(April 3 to June 2, 2017)**

**Study on Sight -Threatening Diabetic Retinopathy at Presentation to  
Screening Services in Kolkata City of Eastern India**

**By  
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**MBA Hospital & Health Management  
2016-2018**

  
*Institute of Health Management Research*  
**The IIHMR University, Jaipur  
2017**

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that **Ms. Sushweta Guha Dey**, student of MBA Hospital & Health Management from The IIHMR University, Jaipur has undergone summer training in **Sightsavers India, Kolkata** from 3<sup>rd</sup> April to 2<sup>nd</sup> June 2017.

The candidate herself has successfully completed the project assigned to her during summer training. Her approach to the project was sincere and proactive. This summer training is in partial fulfillment of the course requirement recommended for the award of MBA in Hospital and Health Management.

I wish her all success in all her future endeavors.



Col. (Dr.) Ashok Kaushik

Dean (Academic & Student Affair)

The IIHMR University, Jaipur



Dr. S.D. Gupta

Chairman

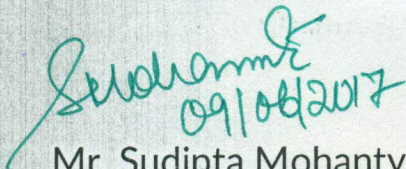
The IIHMR University, Jaipur



To whomsoever it may concern

This is to certify that Ms. Sushweta Guha Dey, a student of IIHMR University, has successfully completed her summer training with Sightsavers India. She has satisfactorily completed her assignment and her conduct during the summer training period was found satisfactory. We wish her success in her academics and career.

With best wishes,



Mr. Sudipta Mohanty,  
Area Director,  
East Area Office, Sightsavers,  
Kolkata





In the attainment of this assignment successfully many people have bestowed upon me their blessings and heart pledged support, so this time I am utilizing to acknowledge all the people who have been concerned with the project.

I am grateful to almighty for bequeathing me the fortitude to successfully conduct my proposition and for sustaining my efforts which many a times did oscillate.

With immense pleasure I express my heartfelt gratitude to the Director of IIHMR Jaipur, Dr. Vivek Bhandari, the Chairman of IIHMR Board Of Governors as well as my mentor Dr.S.D.Gupta, Dean, Dr. Col. Ashok Kaushik , Prof. Gautam Sadhu, Prof. Tanjul Saxena, Prof. Arindam Das and Prof. Monika Chowdhury for their able guidance and useful suggestions , for their belief, faith and trust they have shown upon on me and having given me this opportunity to undergo training in this particular chosen field of mine.

I am deeply indebted to Ms. Soumya Mohanty, Research Officer at Sightsavers Delhi, Ms. Sampa Paul, Programme Officer WB as well as my mentor in the organization, Mr. Sudipta Mohanty, Area director, Mr. Abraham George, Director, Mr. Pankaj Kohli, M&E Officer Delhi & all other staffs of Kolkata branch without whose constructive retaliation this project would not have been a triumph. The prized consultation & recommendations for amendment, modifications & improvement did enhance the perfection in the project.

I would like to include a special note of thanks to Mr. Sandip Banerjee, Project Head of Mission for Vision, the partner organization of Sightsavers, Mr. Atanu Das, DR Project -in-Charge, Mr. Pradyut Kar, DR worker, Mr. Sukanta Mishra & Mr. Sambhu Chakraborty, Optometrists for MFV, all the CHWs' for providing useful information & suggestions.Finally, and most notably, I would like to thank my respected parents for their blessings, my lifepartner for his constant support and my friends for their help and wishes for the outstanding finalization of this training.

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Abbreviations

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BP = Blood Pressure

DM = Diabetes Mellitus

DR = Diabetic Retinopathy

RE = Refractive Error

VC = Vision Centre

MIS = Monthly Information System

SNK = Sankara Nethralaya Kolkata

CBO = Community Based Organisation

CHW = Community Health Worker

RIO = Regional Institute Of Ophthalmology

RBS = Random Blood Sugar

KMC = Kolkata Municipal Corporation

WHO = World Health Organisation

IEC = Information, Education, Communication

BS = Blood Sugar

VN = Vision

OD = Oculus Dextus

OS = Oculus Sinister

OU = Oculus Uterque

NPDR = Non-Proliferative Diabetic Retinopathy

DME = Disc Macular Edema

IVTA = Intra Venous Triamcinolone Acetonide

EMR = Electronic Medical Record

ULB = Urban Local Body

M&E Officer = Monitoring & Evaluation Officer

# **Section : 1**

# Observational Learning



## Subsection : 1

### Introduction

Sightsavers is an international non-governmental organisation that works with partners in developing countries to treat and prevent avoidable blindness, and promote equality for people with visual impairments and other disabilities.

Sightsavers work in India since 1966, has enabled thousands of people to lead lives of independence and dignity. They have been working with local partners to strengthen organisations and communities, and have supported the treatment of millions of people with eye disorders. They have educated, counselled, trained and rehabilitated

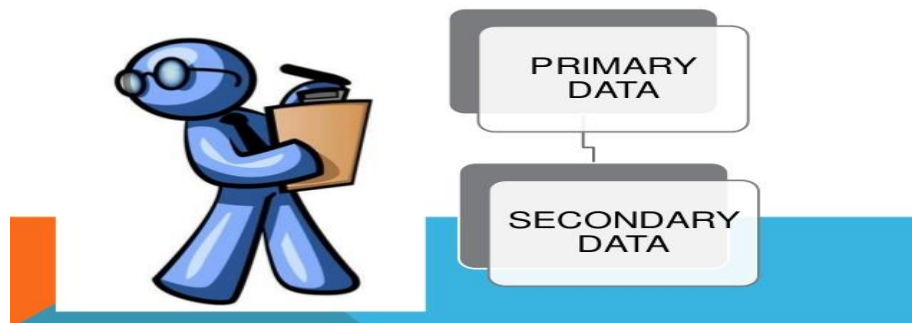


people who are visually impaired or blind, and helped extend the reach of eye services to the least served areas of India. The ‘**Seeing is Believing**’(SiB) initiative is a global intervention aimed at tackling avoidable blindness in areas of high need. As a part of this initiative, the **KOLKATA URBAN COMPREHENSIVE EYE CARE PROJECT(KUCECP)** was developed with the aim of reducing avoidable blindness among the indigent people, especially among vulnerable women & children living in slum areas of Kolkata. The overall purpose of the evaluation is firstly to understand the effectiveness of KUCECP & its approach in reducing avoidable blindness in Kolkata in the project catchment area, specifically as a result of cataract, glaucoma, DR, & uncorrected RE & secondly to understand how the project was able to incorporate elements peculiar to urban health & specifically addresses the health changes in urban setting. The KUCECP was implemented from 2010-2015 & was designed after the implementation of a pilot project in five slum areas of Kolkata from 2009-2010. Sightsavers partnered with three local NGOs for implementing this programme namely,

- Mission For Vision(MFV) along with Sankar Nethralaya
- Susrut Eye Foundation & Research Centre(Susrut)
- Southern Health Improvement Samity(SHIS)

## Subsection :2

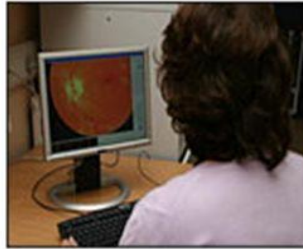
### DATA COLLECTION



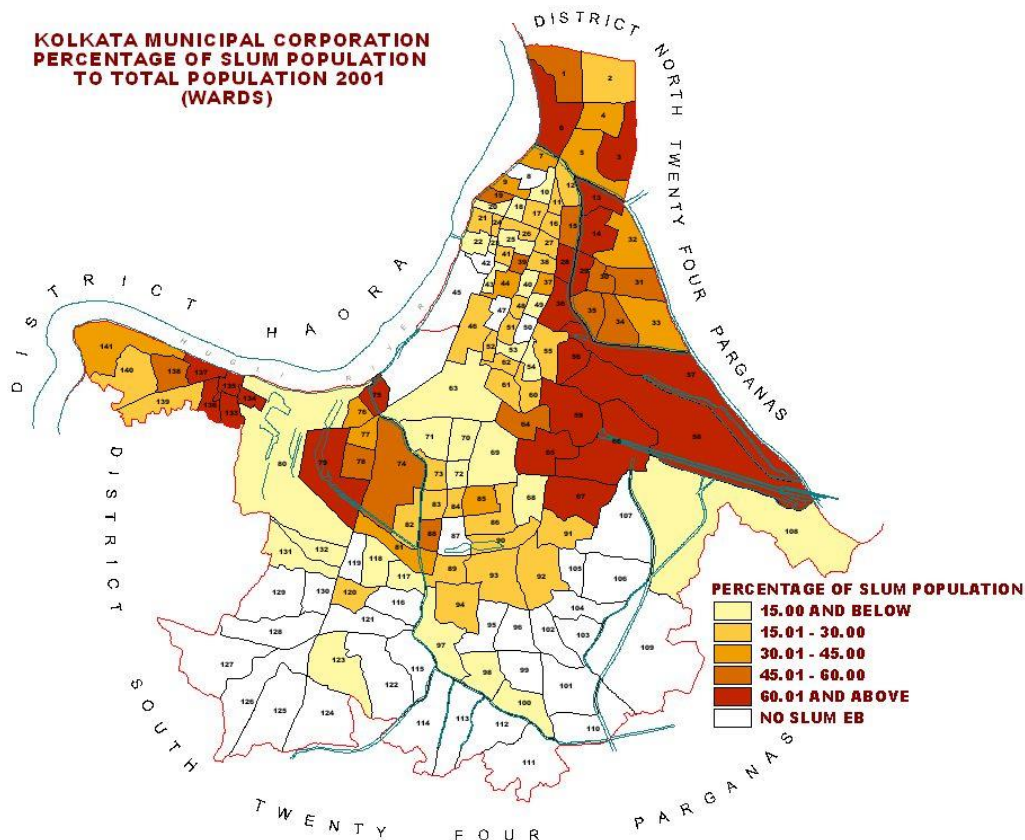
In this section data has been collected from secondary sources of MIS being maintained at VCs of MFV by DR worker during DR screening.

## Subsection : 3

# Diabetic retinopathy screening



Kolkata DR pilot project started from April 2016 under KUCECP . Mission for Vision (MFV) is an NGO working to combat avoidable blindness and promote a disability inclusive world. In partnership with 21 reputed centres in 14 states of India, MFV has played the role of a catalyst in restoring sight and renewing independence and dignity in over a million adults and children. MFV, SNK & Sightsavers has a tripartite agreement wherein primary eye care services were undertaken by MFV & patients requiring advanced care & surgeries were referred to SNK. Advocacy with technical experts including awareness, screening , early treatment, tertiary referral are done by MFV. The partner hospital provided training, human resource & administrative support to operate the VC while the CBOs & govt. agencies who had a pre-existent community presence a better understanding of the community in terms of demographics & disease profile , provided basic infrastructure & implementation support. This design & approach led to increase in the accessibility of eye care services for the urban slum population of Kolkata & developed human resource to provide sustainable eye care services in the project area.



- ▶ **Total no. of DR patients from May'16-Dec'16(MFV)– 1263**
- ▶ **Referred to SNK, base hospital--- 319{RIO next in process}**
- ▶ **Implementation part of project to roll out soon**

MFV manages six VCs. These VCs deployed CHWs, Optometrists & other staffs to conduct primary eye screening test for the community at the VCs.

**Table : Showing VCs established under MFV**

| S.No | CBO Name                         | Location Of VC | Operational Days | Timining        | %of Slum Population In The VC Location Ward |
|------|----------------------------------|----------------|------------------|-----------------|---------------------------------------------|
| 1.   | Entally Bani Institute (Ward 56) | Entally        | Mon-Sat          | 2.00pm - 5.00pm | >60%                                        |
| 2.   | Beliaghata Agrani Club (Ward 33) | Beliaghata     | Mon- Sat         | 2.00pm - 5.00pm | 30%- 40%                                    |

|    |                                    |           |                  |                                                                      |          |
|----|------------------------------------|-----------|------------------|----------------------------------------------------------------------|----------|
| 3. | Sinhi Korus (Ward 2)               | Sinhi     | Mon- Sat         | 9.00am – 12noon                                                      | 30%- 45% |
| 4. | KMC Health Unit (Ward 14)          | Ultadanga | Tues,Thurs & Sat | 9.00am – 12noon                                                      | >60%     |
| 5. | Tarun Sammilani Club (Ward 19)     | Ahiritola | Mon- Sat         | 9.00am – 12noon(Mon, Wed,Fri)<br><br>9.00am- 5.00pm(Tues, Thurs,Sat) | 45%-60%  |
| 6. | Barisha Sabujsathi Club (Ward 123) | Behala    | Mon,Wed,Fri      | 9.00am- 5.00pm                                                       | <15%     |

All the VCs on & average covered a population of 1,00,000. Each & every day the footfall in each VC is approximately 25-30, where the primary eye workup is done by the optometrist. Depending on the signs of Dilated eye examination a patient were asked to visit on DR screening dates. Every VC used to get 1-2 DR screening dates every month. During DR screening, first RBS is done then Fundus Photo are being taken . The patient on the next visit turn up with the fundus photo for consultation. Depending on the stage & severity of DR , the patients are either being given primary treatment or are being referred to the base hospital SNK. In some VCs the first step of eye checkup i.e. Visual Acuity Measurement are being taken by expertised CHWs. If a patient only has RE then spectacles are also being dispensed at the VC counter only by the CHWs at reasonable rates affordable by the community. The MFV also does advocacy by conducting outreach camps at various localities under the specified area of KMC. Even DR screening are also done in outreach camps wherein the patients visit the nearby VC for consultation with optometrist. These patients also do avail the tertiary treatment from base hospital depending on the severity of the cases.



# Patient Pathway In A Vision Centre



**Patient Exit**

**Patient Referred To Base Hospital  
For Tertiary Treatment**



**Fundus Photo delivered & Counselling Done By  
Optomterist**



**Next Patient Visit for  
a) Cataract Screening  
b) Diabetic Retinopathy  
Screening**

**f) Dilated Examination (if  
needed)**



**e) IOP measurement**



**d) Slit Lamp Examination**



**c) Refraction**



**b) Visual Acuity Measurement**



**a) History Taking**



**Patient Entry & Registration**





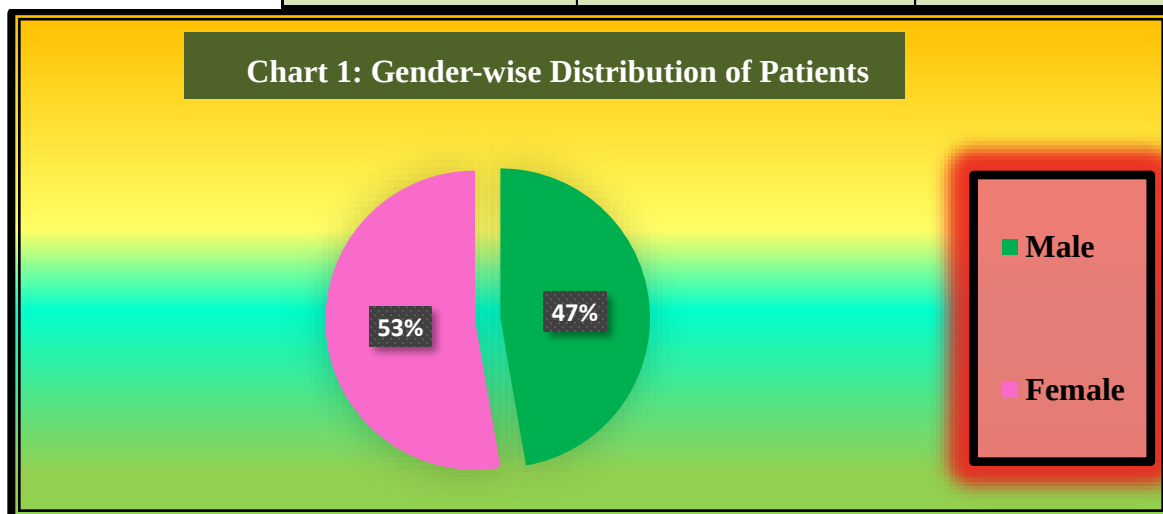
**1<sup>st</sup> Jan 2017 to 30<sup>th</sup> April 2017**

Following charts are being prepared based on the secondary data available from the MIS data of six VCS under MFV . These data were collected by the DR worker during the DR Screening to evaluate the effect of DR on the patients' eyes.

## Tables & Chart Analysis Of MIS Data Of Vision Centres & Outreach Camps Of Kolkata From Jan'17 -April'17

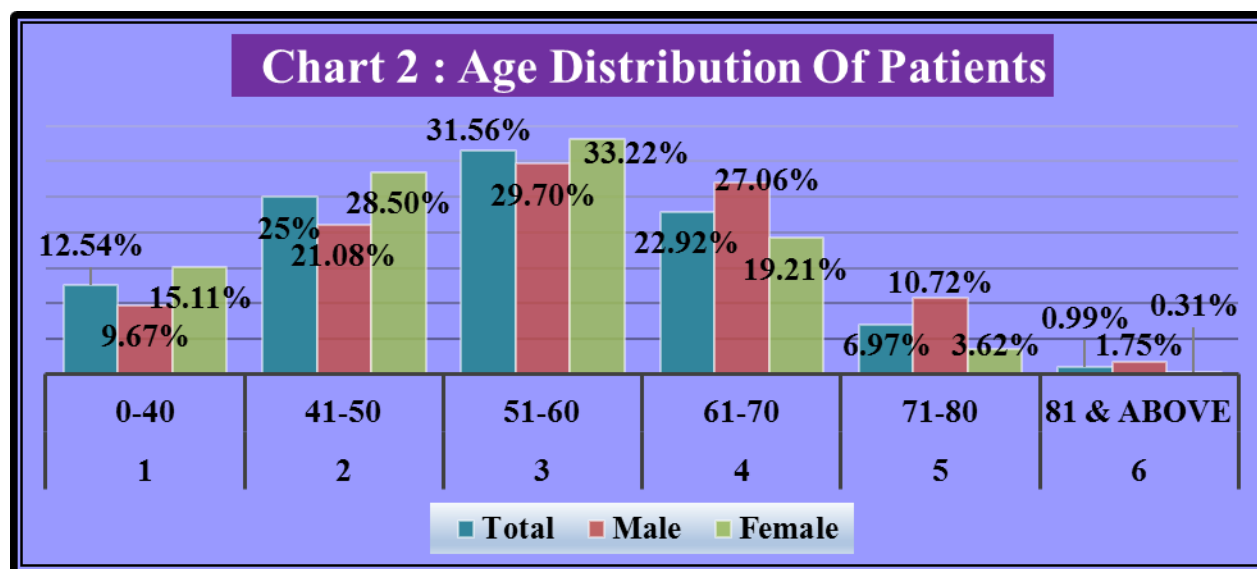
**Chart 1: Gender-wise Distribution of Patients**

| Total | Male | Female |
|-------|------|--------|
| 1204  | 569  | 635    |



From the total no of patients screened its seen that female patients comprises 53%, which shows the initiative of KUCECP was being able to encompass a good no of female patients who generally remain devoid of basic health care services.

**Chart 2 : Age Distribution Of Patients**

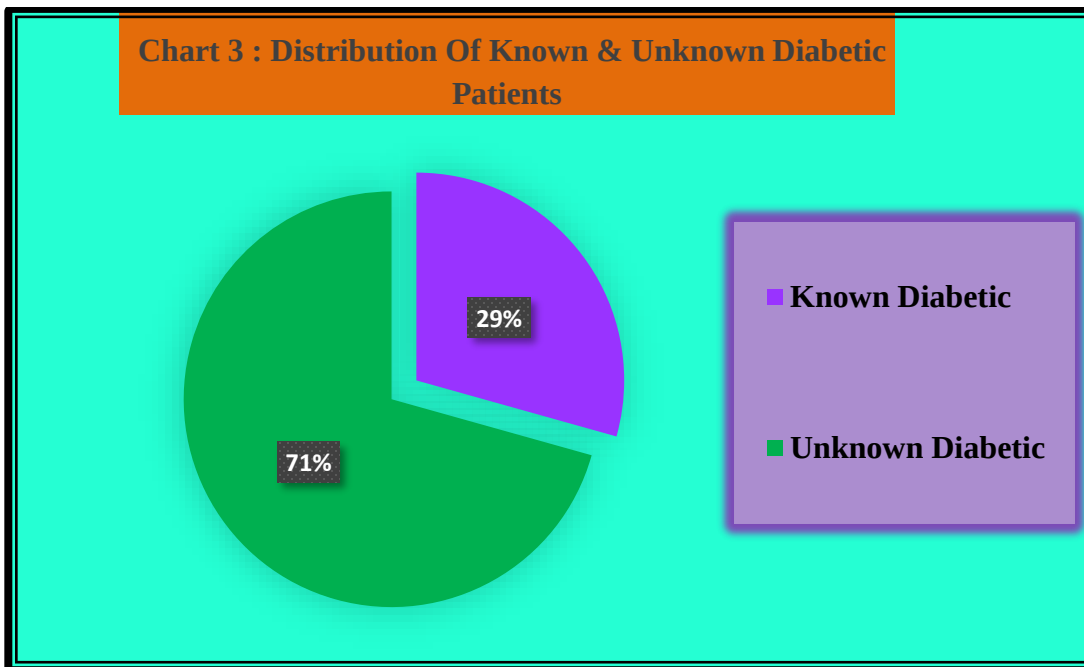


The chart shows more convexity of the total patients in the frequency range of 41-60, which comprises the working class having better conscious level of health. Similarly, the geriatric age group is still lacking behind in taking care of primary eye health which may can be because of physical debility at that stage or it can be accounted for the lack of caring family structure. Another aspect is that when patients are detected at the geriatric age group then the chances of restoration of the lost vN becomes difficult comparing to the middle-aged ones. So, if early detection can be done at the age gr of 40-60 then the prognosis will be far better.



**Chart 3 : Distribution Of Known & Unknown Diabetic Patients**

| Total | Known Diabetic | Unknown Diabetic |
|-------|----------------|------------------|
| 1179  | 346            | 833              |

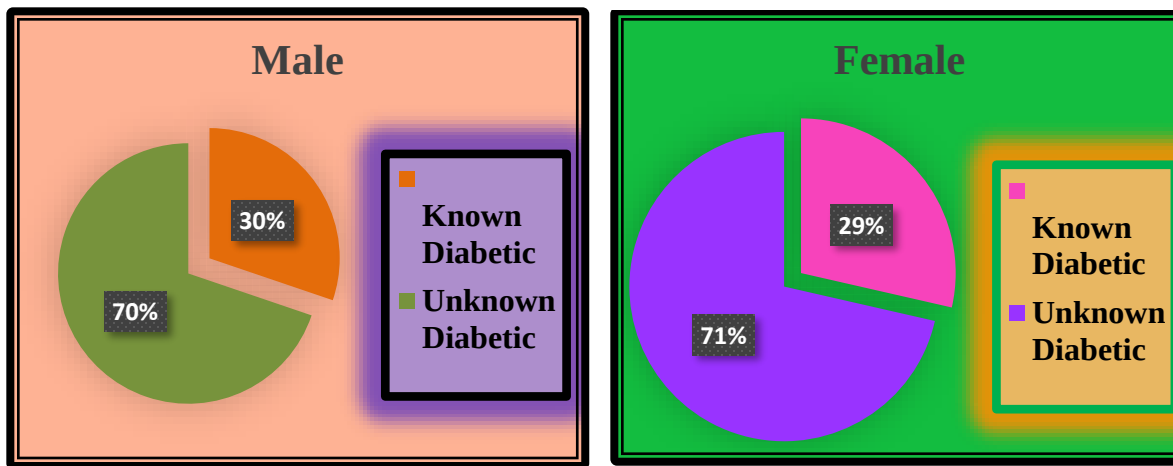


The above chart clearly specifying the level of awareness of patients who are being screened for DR in these four months irrespective of the location of VC or outreach camps. The picture surely depicting a pathetic condition. The alarming 71% unknown diabetic cases would have been left untreated if not they are being screened for DR and their RBS would not have been tested. Surely this needs urgent attention during the implementation stage of the project.

**Chart 4 : Distribution Of Known & Unknown Diabetic Patients Among The Represented Gender**

|        | Known Diabetic | Unknown Diabetic |
|--------|----------------|------------------|
| Male   | 168            | 388              |
| Female | 178            | 445              |

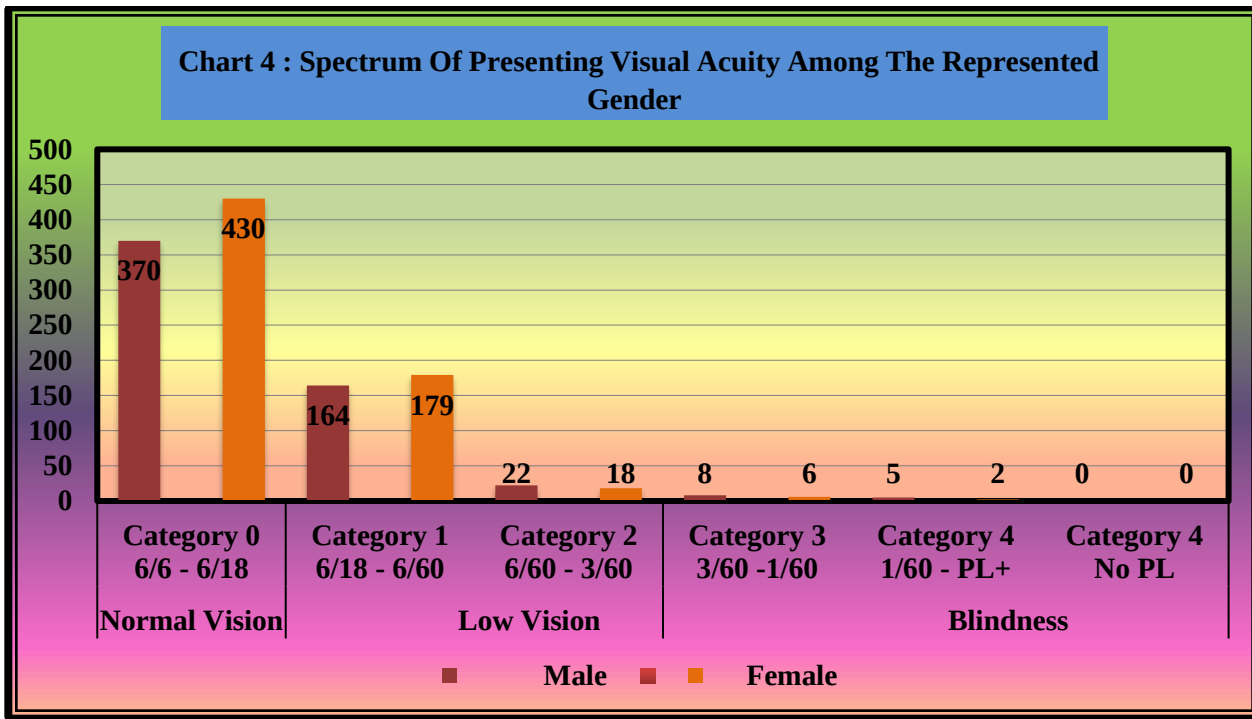




In relation with chart 3 , chart 4 analyses the male & female distribution among known & unknown cases. Herein also it can be seen that female are much more ignorant than their male counterpart in case of awareness of diabetes which shows the basic routine physical examination is not a regular habit among the community.

Chart 4 : Spectrum Of Presenting Visual Acuity Among The Represented Gender

| WHO Category Of Visual Impairment |                          |                           |                           |                           |                          |                     |
|-----------------------------------|--------------------------|---------------------------|---------------------------|---------------------------|--------------------------|---------------------|
|                                   | Normal Vision            | Low Vision                |                           | Blindness                 |                          |                     |
|                                   | Category 0<br>6/6 - 6/18 | Category 1<br>6/18 - 6/60 | Category 2<br>6/60 - 3/60 | Category 3<br>3/60 - 1/60 | Category 4<br>1/60 - PL+ | Category 4<br>No PL |
| Male                              | 370                      | 164                       | 22                        | 8                         | 5                        | 0                   |
|                                   |                          |                           |                           |                           |                          |                     |
| Female                            | 430                      | 179                       | 18                        | 6                         | 2                        | 0                   |



The above chart clearly pointing to an important aspect of visual impairment. A major chunk of patients' vision is falling under the category of Low Vision which falls under the category of avoidable blindness if detected at an early stage. These patients if can be given early intervention can restore their vision either through primary eye treatment along with good control of diabetes & periodical check up of retina or if their vision can't be corrected by intervention, then they can attain far better life by using low vision aids rather than remaining ignorant of their visual status and progressing towards unavoidable blindness by remaining unknown about their diabetic status.

## Section :2



## **INTRODUCTION**

The Sightsavers & MFV entered into a two months Collaborative Research Program on April, 2017 entitled the Sight-Threatening Diabetic Retinopathy Presentation to Screening Services in Kolkata of Eastern India. The Initiative is designed to identify knowledge gaps in diabetes eye health and develop innovative strategies to generate awareness on diabetic retinopathy disease. The Initiative's long-term goal is accelerating discovery of sight-saving treatments and preventing diabetes retinal diseases using novel scientific, engineering and technological approaches. Participants have undergone a comprehensive assessment, which included a range of clinical, biochemical and anthropomorphic measurements and a series of behavioral and psychosocial questionnaires. A questionnaire was administered to obtain information on Socio-demographic data (age, gender, ethnicity, educational attainment and socio-economic status), and type and duration of diabetes. Random blood sugar were obtained to assess glycaemic levels. Good glycaemic control is defined as fasting blood glucose level  $\geq 110$  mg/dl.

## **BACKGROUND & JUSTIFICATION**

According to **International Diabetes Federation (IDF)** it is estimated that in 2015, **415 million** people are living with diabetes worldwide wherein the figure is expected to rise to **642 million people** living by 2040. In 2015, **1 in 11** adults are suffering from diabetes which will be **1 in 10** adults in 2040, out of which every 6 seconds 1 person dies from diabetes which estimated **5 million deaths** in 2015. **46% of people** with diabetes are undiagnosed which roughly shows 1 in 2 adults remain undiagnosed. Near about \$ 673 billion, **12% of Global Health Expenditure** is already being spent on diabetes. The IDF notes that the diabetes epidemic is rapidly increasing in many countries, with the documented increase most dramatic in low and middle-income countries comprising 80% of people i.e three **quarters of the world's adult population**. The IDF currently states that the top 5 countries with the highest amount of people with diabetes are as follows:

- **China:** 109 million
- **India:** 69 million
- **USA:** 29 million
- **Brazil:** 14 million
- **Russian Federation:** 12 million

India had **69.2 million** people living with diabetes (8.7%) as per the 2015 data produced by WHO . Of these, it remained undiagnosed in more than 36 million people. According to Wild et al. the prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India, while China (42.3 million) and the United States (30.3 million) will also see significant increases in those affected by the disease. Rough estimates show that the prevalence of diabetes in rural populations is one-quarter that of urban population for India and other Indian sub-continent countries such as Bangladesh, Nepal, Bhutan, and Sri Lanka. Preliminary results from a large community study conducted by the Indian Council of Medical research (ICMR) revealed that a lower proportion of the population is affected in states of Northern India (Chandigarh 0.12 million, Jharkhand 0.96 million) as compared to Maharashtra (9.2 million) and Tamil Nadu (4.8 million). The National Urban Survey conducted across the metropolitan cities of India reported similar trend: 11.7 per cent in Kolkata (Eastern India), 6.1 per cent in Kashmir Valley (Northern India), 11.6 per cent in New Delhi (Northern India), and 9.3 per cent in Mumbai (West India) compared with (13.5 per cent in Chennai (South India), 16.6 per cent in Hyderabad (South India), and 12.4 per cent Bangalore (South India). A suggested explanation for this difference is that the north Indians are migrant Asian populations and south Indians are the host populations, however this possible cause-and-effect has not been corroborated through further research. Aged care facilities in rural areas report disparity in the diabetes management compared with their urban counterparts, with these populations more likely to suffer from diabetic complications compared to their urban counterparts.

**Type 1 diabetes** can appear at any time in someone's life after the destruction of pancreas cells, which produce insulin.

**Type 2 diabetes** usually appears in adults however is frequently being diagnosed in younger overweight people and certain ethnic groups.

The life expectancy on average now is reduced by:

- More than 20 years for people with Type 1 diabetes
- Up to 10 years for people with Type 2 diabetes

A large proportion of diabetes cases are preventable. Simple lifestyle measures have been shown to be effective in preventing or delaying the onset of type 2 diabetes. Efforts to prevent and treat diabetes will be important to achieve the global **Sustainable Development Goal target 3** of reducing premature mortality from non communicable diseases (NCDs) by one-third by 2030.



## **RATIONALE**

- **Level of understanding about diabetes mellitus among health seekers for diabetic related eye care----- by Padma B Prabhu & et al.(1)**

This study depicted that the majority of patients and bystanders had poor knowledge on the related health aspects of DM.

- **“Assessment of Awareness of Diabetic Retinopathy among The Diabetics.” By Dr Kiran & et al.(2)**

The results of the study suggests that there is lack of general awareness of diabetic retinopathy amongst majority of diabetic patients and there is a need to increase the awareness and knowledge among the population.

- **A hospital based study on awareness of diabetic retinopathy in diabetic individuals based on knowledge, attitude and practices in a tier-2 city in South India By Mridula Prabhu(3)**

The study highlighted the need for more awareness camps regarding DR, its risk factors, treatment options and follow up. Role of physicians was seen alarmingly low during the study which needs to be stressed.

- **Role of Early Screening for Diabetic Retinopathy in Patients with Diabetes Mellitus: An Overview By Praveen Vashist & et al.(4)**

The study stated that every opportunity of contact with high risk cases for diabetes and/or diabetic retinopathy should be utilized for screening, diagnosis and referral. All the stakeholders including the private sector will need to play a role. Along with this, awareness generation and behavior change amongst the diabetics and care support systems should also be part of the overall model. A major role can be played by community participation and improving the health seeking behavior among diabetics in order to reach a larger population and increasing the compliance for continued care.

- **Diabetic retinopathy screening in patients with diabetes mellitus in primary care: Incentives and barriers to screening attendance By K.N.D. van Eijk & et al.(5)**

The study delineated that knowledge about detrimental effects of DR on visual acuity and recommendation by health-care providers are important, possibly modifiable, factors in the attendance to DR screening.

## **OBJECTIVES**

After reviewing the above literature , the **primary objectives** being formulated for this study are :

- To report the spectrum of Retinopathy at first presentation to screening.
- To determine the proportion & clinical characteristics of those presenting sight threatening diabetic retinopathy.
- To provide information useful for awareness of diabetic eye diseases.

## **METHOD**

- **STUDY DESIGN** : Observational cohort study .This study was based fully on observation regarding the knowledge, attitude, & behavior of the patients towards diabetic eye diseases.
- **STUDY POPULATION** : All the patients above the age of 40+ coming for first time eye check up in VCs , who are being screened for diabetic retinopathy . These patients can be known or unknown diabetic ones.
- **STUDY PERIOD** : From 20<sup>th</sup> april'17 to 20<sup>th</sup> may'17
- **SAMPLE SIZE** : Targeted 200- 250 patients
- **DATA COLLECTION** :
  - a) Done through interview & observation
  - b) Done by the investigator of the study
- **TOOLS USED** : Commcare Apps containing qualitative & quantitative questionnaires
- **DATA ANALYSIS PLAN** : Structured in terms to achieve the primary & secondary objectives

## **ETHICAL CONSIDERATIONS**

- Approval from participating diabetic patients
- Formal approval from the involved ophthalmic staff
- Approval by ethics review committee

## **GENDER ISSUES**

No gender discrimination was done, and gender equality was being given high priority

## **PROJECT MANAGEMENT**

- **PARTICIPATING INSTITUTES & PERSONS:** Optoms of MFV, DR Health Worker & CHW
- **DATA OWNERSHIP & PIC COUTESY:** Sightsavers

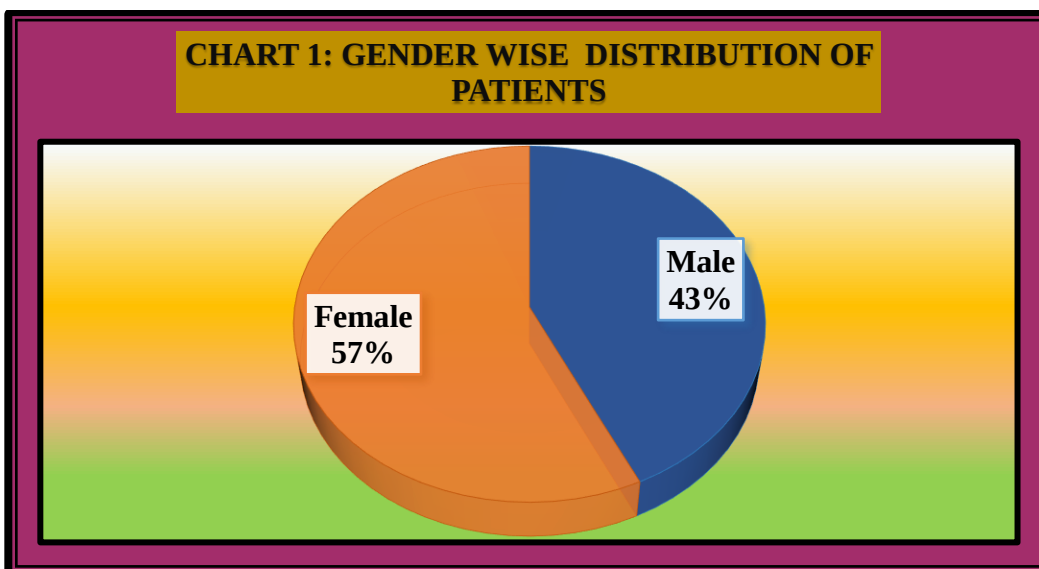
# Data Research & Analysis



**Tables & Chart Analysis Of MIS Data Of Vision Centres Of Kolkata For The Study Period Of April-June'17**

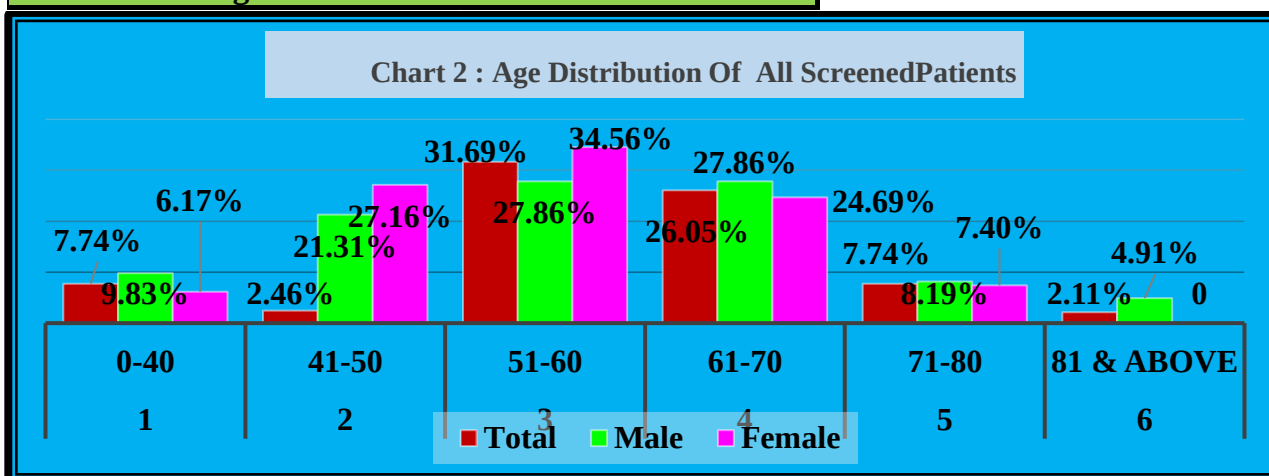
**Chart 1: Gender-wise Distribution of Patients**

| Total patients screened | Male | Female |
|-------------------------|------|--------|
| 142                     | 61   | 81     |



As the trend has been seen in the internal report of four months depicted above, similarly, herein also the trend shows the female are not lagging behind in seeking even specialised treatment like DR and they are turning in good no. compared to their male counterpart. The timing of VCs are preferably convenient for female rather than male working patients which may can contribute less male patients.

**Chart 2 : Age Distribution Of All Screened Patients**

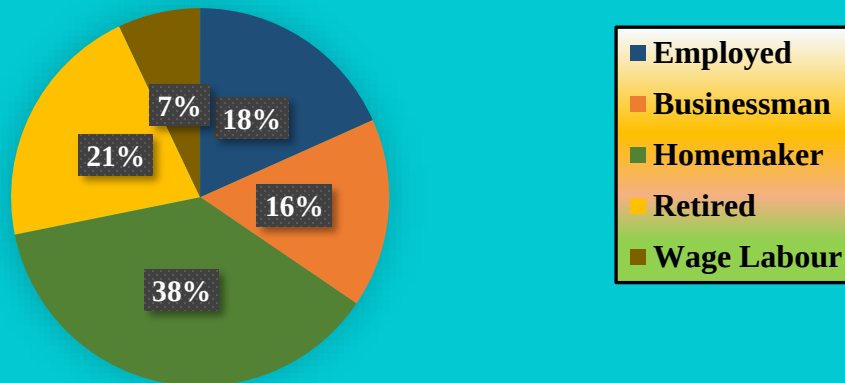


In relation to the previous chart, this chart is also depicting the same pic., the middle-aged working male class is significantly less in no. than the female in those age group. Similarly, the total patients is curved more towards the middle age frequency which again call attention for geriatric population who need more access to these type of services.

**Chart 3 : Occupation - wise Classification Of Screened Sample**

| Total patients screened | Employed | Businessman | Homemaker | Retired | Wage Labour |
|-------------------------|----------|-------------|-----------|---------|-------------|
| 142                     | 26       | 23          | 53        | 30      | 10          |

**Chart 3 : Occupation - wise Classification Of Screened Sample**

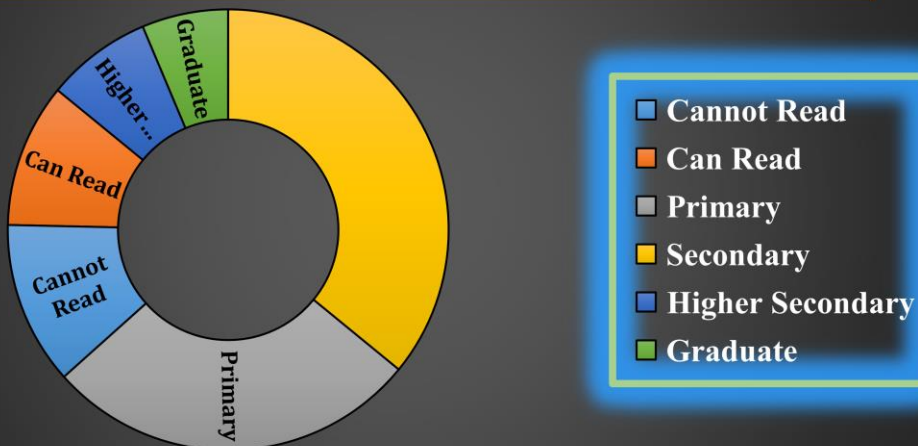


This chart is evident of the fact that the opd timing of VC is probably not convenient for the employed class , for which the no. of homemaker is quiet significant in comparison to the working category. This will create less accessibility of the male patients who can remain undetected and progress towards unavoidable blindness.

**Chart 4 : Education - wise Classification Of Screened Sample**

| Total patients screened | Cannot Read | Can Read | Primary | Secondary | Higher Secondary | Graduate |
|-------------------------|-------------|----------|---------|-----------|------------------|----------|
| 142                     | 17          | 15       | 39      | 51        | 11               | 9        |

**Chart 4 : Education - wise Classification Of Screened Sample**



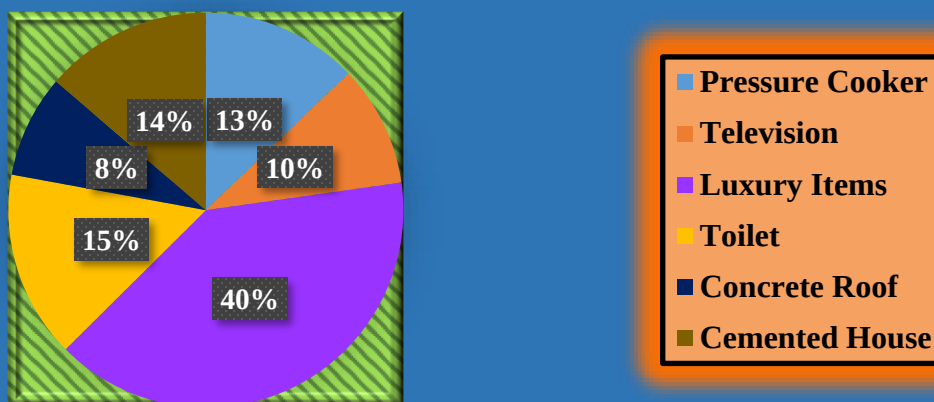
From the analysis of education level of the screened patients we can see that most have them have only attained secondary level of education and very few did got a graduate degree. This level of education is directly related to the economic status of the patients which we can see from the underlined chart and table.



**Chart 5 : Classification Of Screened Sample Based On Equity Tool**

| Total patients screened | Pressure Cooker | Television | Luxury Items | Toilet | Concrete Roof | Cemented House |
|-------------------------|-----------------|------------|--------------|--------|---------------|----------------|
| 142                     | 119             | 92         | 369          | 142    | 78            | 127            |

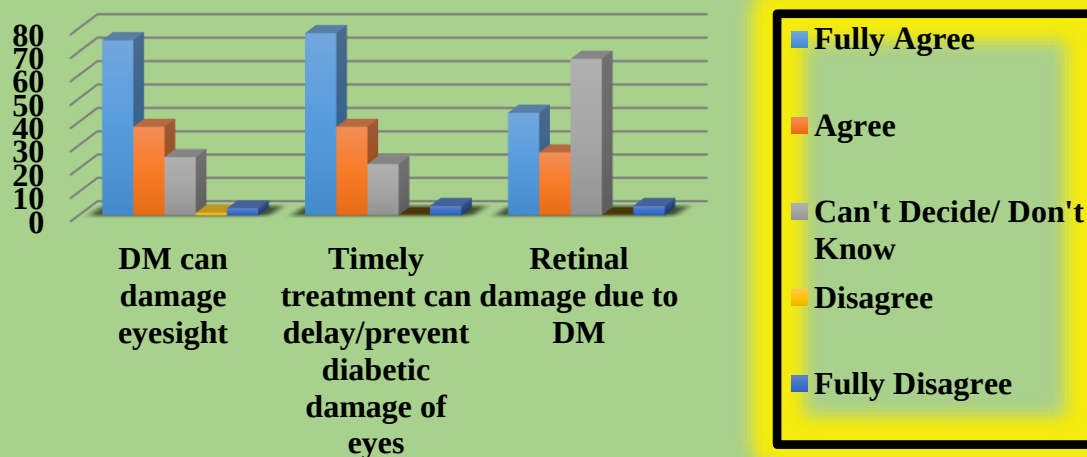
**Chart 5 : Classification Of Screened Sample Based On Equity Tool**



Not only the economic status but knowledge, attitude as well as awareness towards health & preventive care are also being governed by the level of education which is evident from the charts given below.

**Chart 6 : Knowledge of Patients Regarding Diabetes Mellitus**

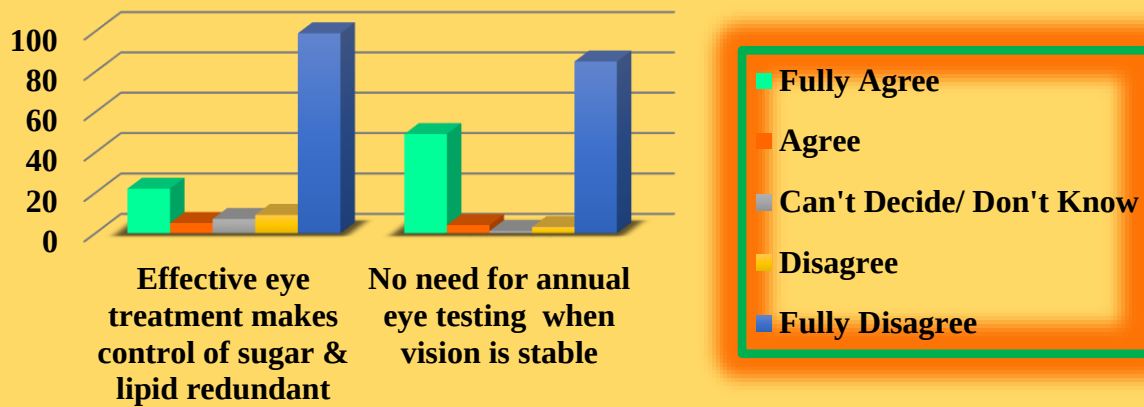
**Chart 6 : Knowledge of Patients Regarding Diabetes Mellitus**



In case of knowledge though regarding eyesight damage & timely treatment had a clear notion in their mind, but when asked a little specific question regarding retinal damage very few shown provident knowledge which can be related to their basic educational level.

**Chart 7 : Attitude of Patients Regarding Diabetes Mellitus**

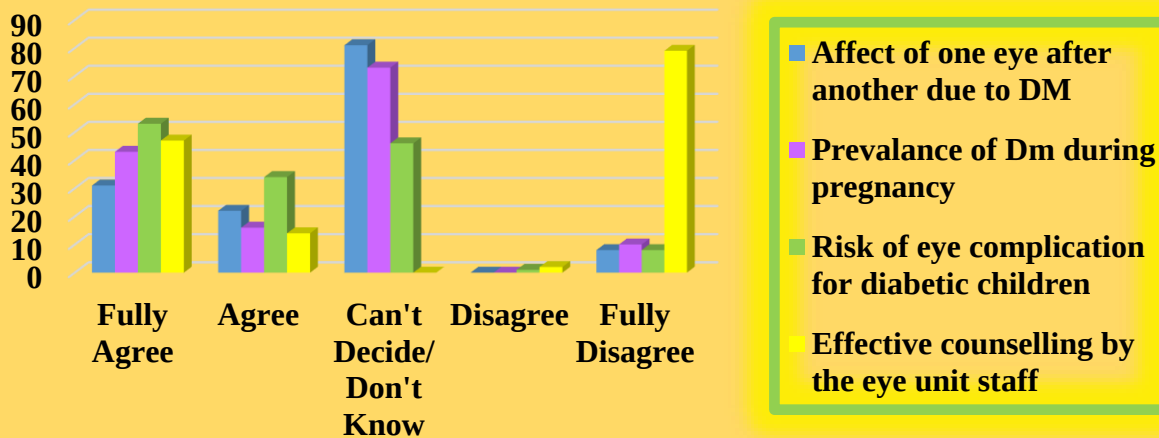
**Chart 7 : Attitude of Patients Regarding Diabetes Mellitus**



Similarly in case of attitude towards preventive care showed very poor response which urgently need advocacy & proper counselling at every stages to create basic health awareness.

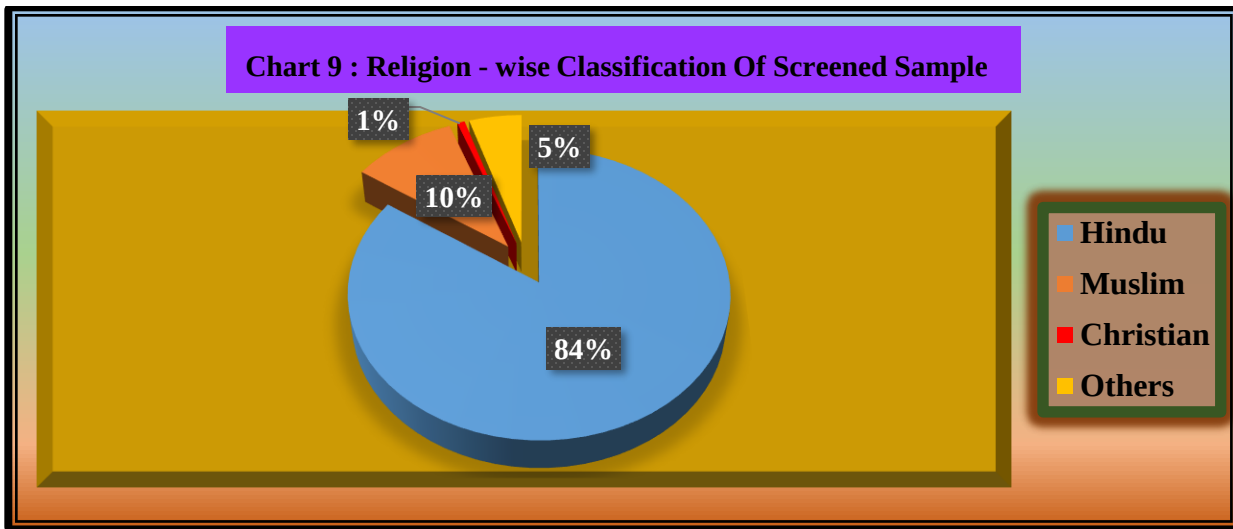
**Chart 8 : Awareness of Patients Regarding Diabetes Mellitus**

**Chart 8 : Awareness of Patients Regarding Diabetes Mellitus**



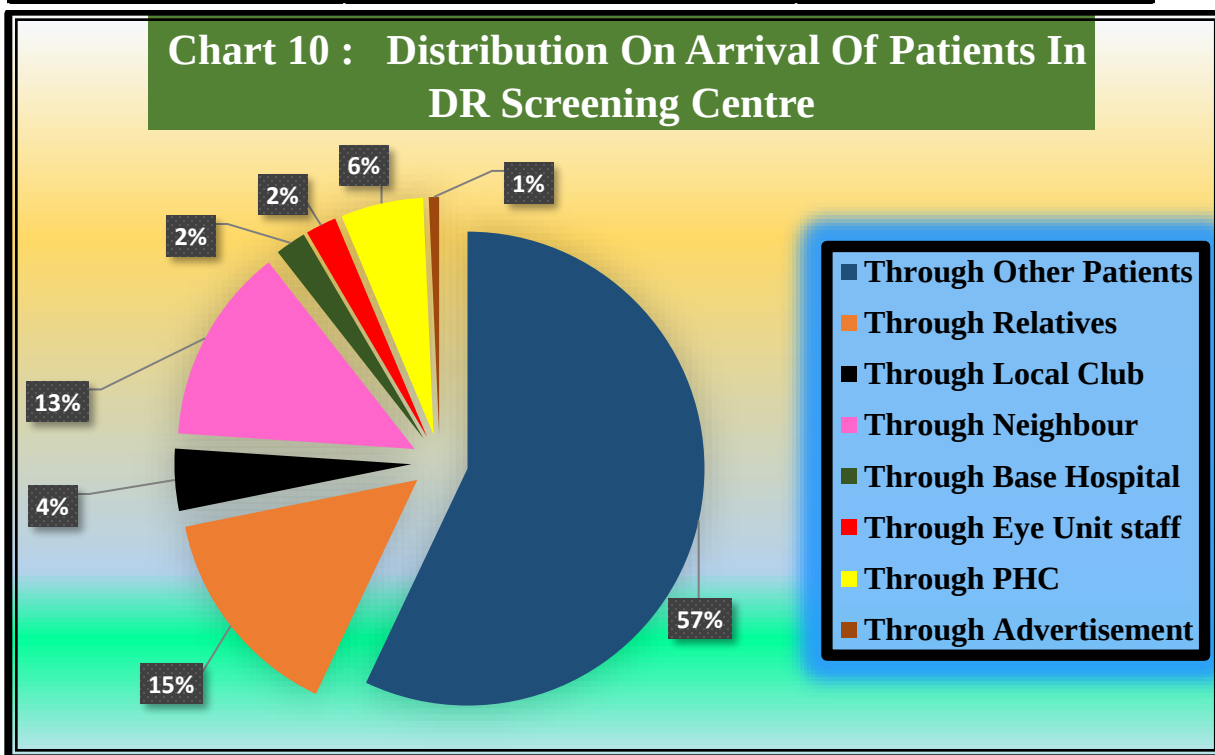
Coming to the awareness level, the pic is similarly painful . when talking about relation of DM with paediatric eye complication and pregnancy status , the level of awareness is strikingly less which calls immediate attention because many females do develop diabetes during pregnancy which then becomes a hereditary for a child even before birth. The counselling part was also remarkably unremarkable , which should be taken care of during the implementation part of the project.

**Chart 9 : Religion - wise Classification Of Screened Sample**



It can't be concluded from this small sample size that whether this diabetes is related to any ethnic group or not which needs further deeper analysis.

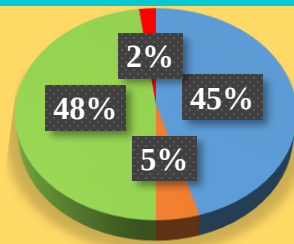
**Chart 10 : Distribution On Arrival Of Patients In DR Screening Centre**



The VCs are doing commendable work in this project which is evident from the fact that the greatest chunk of patients are coming by only word of mouth by other patients. But herein another thing has to be given attention is that IEC should be strengthened more to reach larger section of society which only can fulfill the mission & vision of the DR project.

**Chart 11 : Classification Of Patients On Awareness Of BP & Blood Sugar**

**Chart 11 : Classification Of Patients On Awareness Of BP & Blood Sugar**



- BP ever been checked
- BP never been checked
- Blood sugar ever been checked
- Blood sugar never been checked

The awareness of patients are very low regarding routine physical examination which includes BP & BS measurement which can be related with their educational status. But we can see in the next chart that how BP & BS are hereditary to a DR patient .

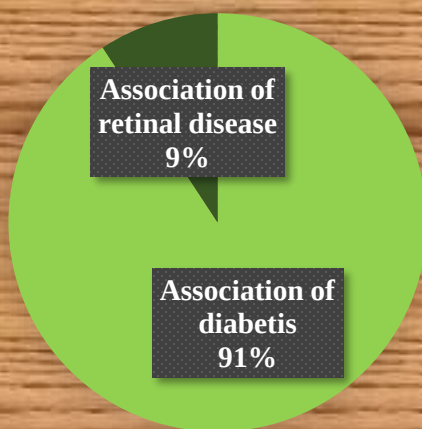
**Chart 12 : Genetic Association Of Diabetes, Hypertension, Retinal Disease & Glaucoma**

| Association of diabetes | Association of hypertension | Association of retinal disease | Association of glaucoma |
|-------------------------|-----------------------------|--------------------------------|-------------------------|
| 49                      | 24                          | 5                              | 3                       |

It is clearly evident that hypertension & diabetes has a very close relation to DR, but the simple awareness level of patients is very low in this regard which we can get from the previous chart.

**Chart 13 : Clinical Hereditary Association of Diabetes & Retinal Disease**

**Chart 12 : Clinical Hereditary Association of Diabetes & Retinal Disease**



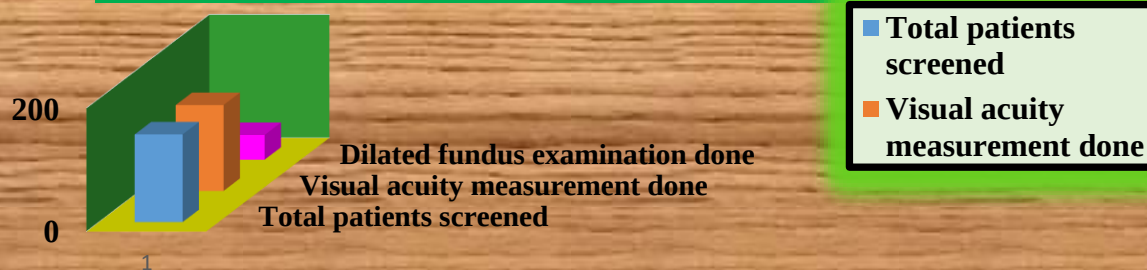
- Association of diabetes
- Association of retinal disease

This further analysis is proving the close association of diabetes with the retinal diseases. All the cases of hereditary retinal problem told that they have hereditary diabetes too which can be further studied in a broader sample size .

**Chart 14 : Details Of Comprehensive Ophthalmic Examination Of All Screened Patients**

| <b>Total patients screened</b> | <b>Visual acuity measurement done</b> | <b>Dilated fundus examination done</b> |
|--------------------------------|---------------------------------------|----------------------------------------|
| <b>142</b>                     | <b>139</b>                            | <b>40</b>                              |

**Chart 13 : Details Of Comprehensive Ophthalmic Examination Of All Screened Patients**



The above chart shows though visual acuity measurement was done in max cases, but detailed dilated examination was missing in most of the cases. To avoid this situation the no. of optoms & CHWs should be increased and little modification of the timing of the opd can be done to accommodate the comprehensive check up of all the Diabetic cases. Dilated eye examination is a crucial phenomena need to be accomplished to conduct a full fledged comprehensive eye checkup for a diabetic case which can't be compromised in any situation. As fundus photo is being taken by a DR health worker who is generally not from the ophthalmological background, so chances are high that if dilated eye examination is not done by optom then DR health worker might miss significant chances of early retinopathic changes or may can be misguided during the fundus photo session. So dilated eye examination should be done in all diabetic cases and proper documentation of the case history holds utmost importance.

**Chart 14 : Association Of Clinical Manifestation Of DR Patients With Diseases Apart From Diabetes**

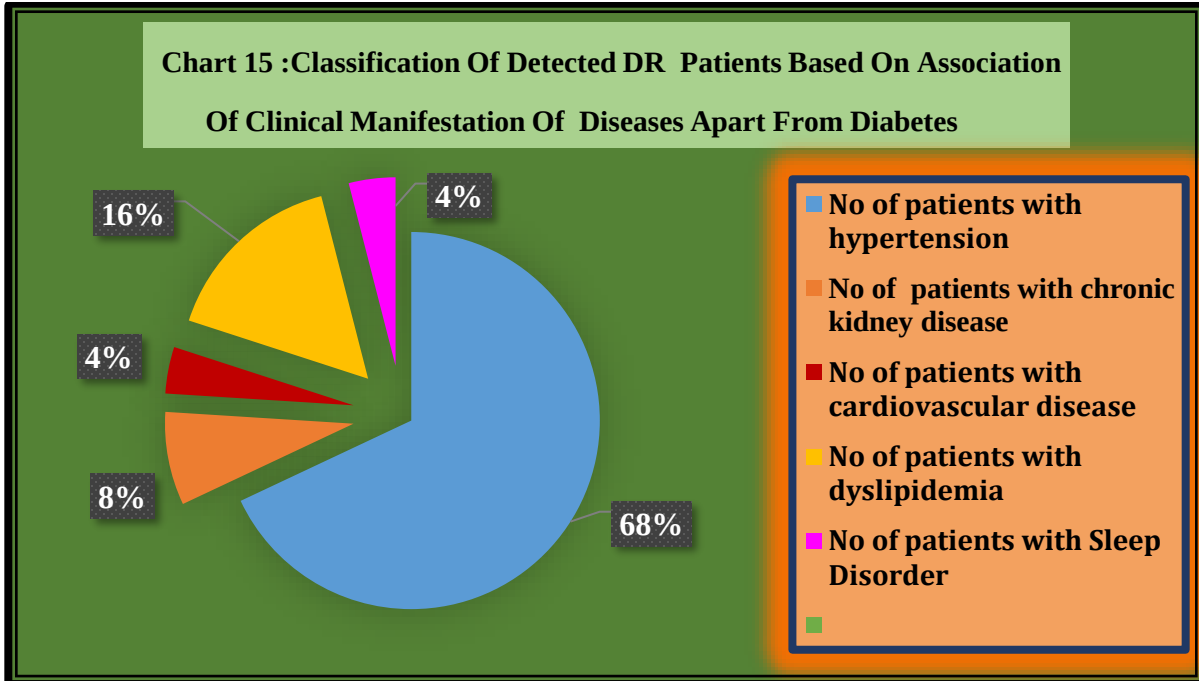
| <b>No of DR patients detected</b> | <b>Clinical manifestation of diseases apart from diabetes</b> |
|-----------------------------------|---------------------------------------------------------------|
| <b>31</b>                         | <b>22</b>                                                     |

Among the detected DR cases 70.96% of patients told about their association of various diseases apart from diabetes.

**Chart 15 :Classification Of Detected DR Patients Based On Association Of Clinical Manifestation Of Diseases Apart From Diabetes**



| Total no of DR patients detected | No of patients with hypertension | No of patients with chronic kidney disease | No of patients with cardiovascular disease | No of patients with dyslipidemia | No of patients with Sleep Disorder |
|----------------------------------|----------------------------------|--------------------------------------------|--------------------------------------------|----------------------------------|------------------------------------|
| 31                               | 17                               | 2                                          | 1                                          | 4                                | 1                                  |



Like the internal report similarly here also during the study period we have seen that that most of the DR cases have reported to have hypertension but when they were asked whether they have undergone simple BP measurement prior to the DR screening then max responses came negative, which shows the awareness level of the patient.

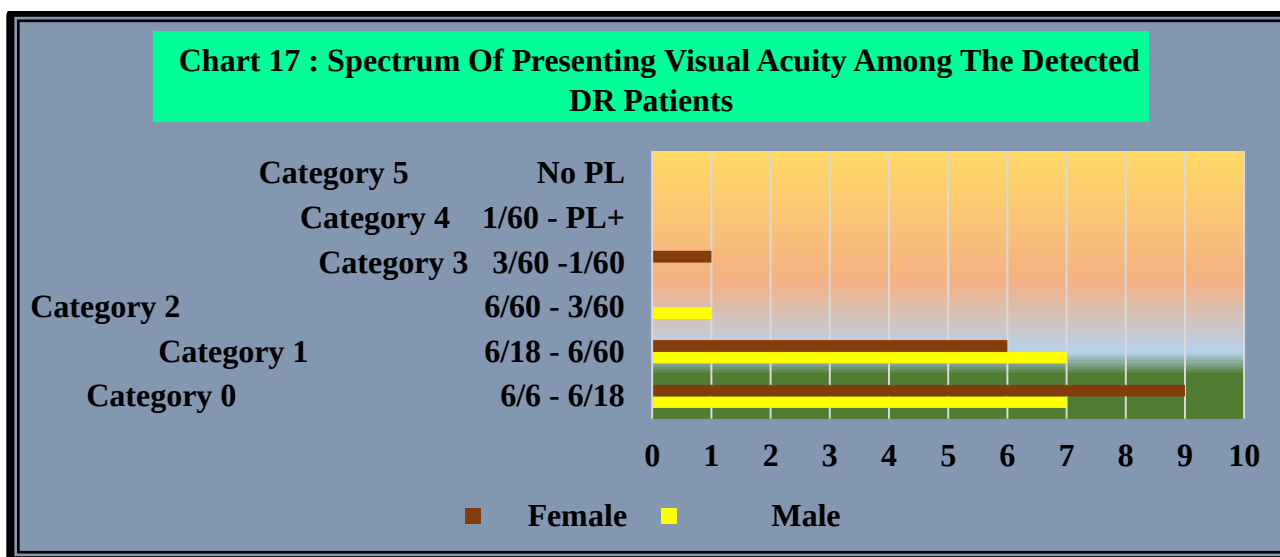
**Chart 16 : Association Of Cataract With DR**

| Total no of DR patients detected | Total no of cataract patients having DR |
|----------------------------------|-----------------------------------------|
| 31                               | 14                                      |

Though the total no. of cataract patients is less among the DR cases, but many of the screened patients are already pseudophakic. Basically the patients come for dimness of vision , which in many cases lead to the cataract screening followed by cataract surgery. But after surgery when significant vision is not being regained by the patient then detailed dilated eye examination many of the times reveal retinal issues. This can be prevented by early screening & dilated eye examination for all cases visiting VC for the first time.

**Chart 17 : Spectrum Of Presenting Visual Acuity Among The Detected DR Patients**

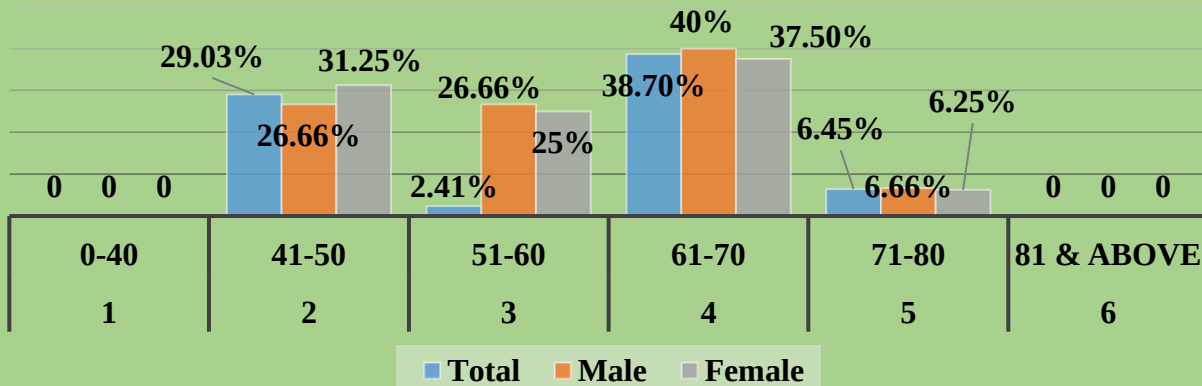
|        | WHO Category Of Visual Impairment |                           |                           |                           |                          |                     |
|--------|-----------------------------------|---------------------------|---------------------------|---------------------------|--------------------------|---------------------|
|        | Normal Vision                     | Low Vision                |                           | Blindness                 |                          |                     |
|        | Category 0<br>6/6 - 6/18          | Category 1<br>6/18 - 6/60 | Category 2<br>6/60 - 3/60 | Category 3 3/60 -<br>1/60 | Category 4 1/60 -<br>PL+ | Category 5<br>No PL |
| Male   | 7                                 | 7                         | 1                         | 0                         | 0                        | 0                   |
| Female | 9                                 | 6                         | 0                         | 1                         | 0                        | 0                   |



As seen in the internal report 14 patients including male & female out of total 31 DR cases belong to the Low Vision category which if can be detected at an early stage followed by intervention can lead to have avoidable blindness or else these patients can get immense benefit by Low Vision & Rehabilitation. Otherwise these patients can slowly progress to the blindness category due to severity of the diseases. Among them may were unknown diabetic, so advocacy & counselling will play a great role in shaping their visual impairment.

Chart 18 : Gender-Wise & Age-Wise Distribution Of Detected DR Patients

Chart 18 : Gender-Wise & Age-Wise Distribution Of Detected DR Patients



The pilot period of the project may have helped to gain better penetration in the community which is evident from the fact that in comparison to the internal report here we can see good no. of geriatric patients are turning for DR screening both in male & female cases.

Chart 19 : Details Of Ocular Health Of All Screened Patients Based On Fundus Photography

Chart 19 : Details Of Ocular Health Of All Screened Patients Based On Fundus Photography

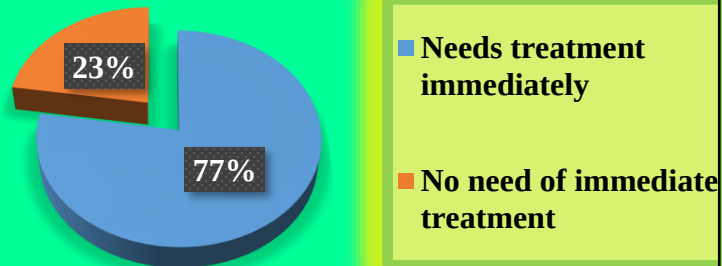


Quite a few cases are showing retinal changes apart from DR which also requires medical attention. Herein lies the importance of early screening camps which can provide greater accessibility of eye care services to the community who are not being able to attend govt. facility & can't even afford out-of-pocket expenditure.

**Chart 20 : Details Of DR Status Of All Detected DR Cases**

| Total no of DR patients detected | Needs treatment immediately | No need of immediate treatment |
|----------------------------------|-----------------------------|--------------------------------|
| 31                               | 24                          | 7                              |

**Chart 20 : Details Of DR Status Of All Detected DR Cases**



77.41% of all the detected DR cases need immediate treatment which manifolded the importance of DR screening to run effectively encompassing a greater concentration of the community.

**CASE STUDY**

**Journey to A New Arena of Life**



(p.c.: Sightsavers)

Mrs. Aloka Bag, 59yr old homemaker regained her lost vision due to diabetes with tertiary management of DR. She visited the VC with a Vn of 6/36(OD) & 6/60(OS) in Jan'17. After proper DR workup she was being referred to the base hospital SNK where she undergone Barrage Laser(OU) for which she has regained 6/9Vn in OU. The contentment & confidence is clearly visible in her face for which she is thankful to the Sightsavers.

**Regained Sight Regained Life**





(p.c.: Sightsavers)

Mr. Prokash Roy, 60yr old vegetable seller was at the verge of severe depression as due to his dimness of vision his everyday chores was becoming tougher day by day and it was impossible to meet his both ends. He visited the VC in the month of Feb '17 with a VN of 4/60 (OD) & 6/9(OS) and he was detected to have NPDR with DME in OD. After the DR screening he was referred to SNK where he has undergone IVTA inj in OD & Focal laser in OS which has increased his VN to 6/36in OD with sustained VN in OS. Now he can take care of his family and earn his livelihood. DR screening has given a new meaning of his life.





Based on anecdotal experience

the preliminary observations are listed below

:

- Weak review of patient system
- Patient turnover from base hospital lost in the pathway
- Lack of remuneration or awards of ASHAs, Anganwadi Workers & ULBs resulting into low dedication to the project
- Lack of effective counselling & diagnostic approaches by CHWs'
- Lack of full fledged workup of patient with proper documentation
- Less accessibility of male section of patients
- Lack of convergence with line department
- Lack of network with opportunistic model
- Lack of usage of IEC & BCC

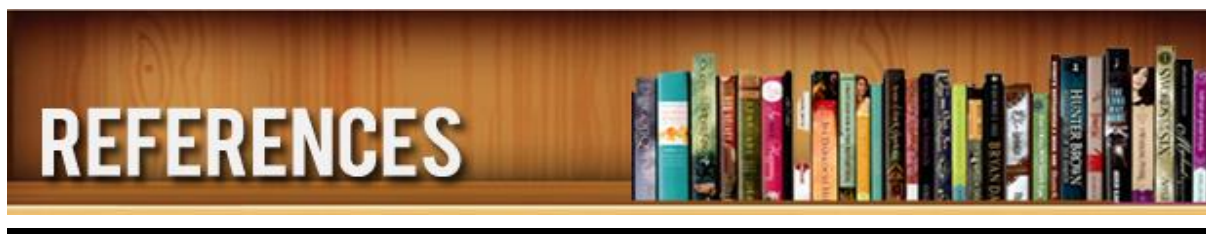


The suggestive strategies that can be formulated for bridging the gap are :

- Proper referral pathway from the base hospital to the VC need to be strengthened enough , otherwise lose of data is quiet huge in no. which will never allow for further research to review the end-term evaluation of the project.
- Not only MIS but EMR if can be maintained for each & every patient, will give a good database as well as tracking of old records will become the easiest
- Recognition & annual award system for better performane can boost up the involvement of the cadre
- BP measurement, RBS measurement & effective counselling by CHWs will not only reduce the workload of an optom & DR health worker but will also create trust , confidence & credibility of a patient.
- Dilated eye examination, proper documentation will reflect a good everlasting impression on patients & will depict a comprehensive eye checkup.
- Starting of evening clinic with increased no of optoms in rotational duty can attract male working class who can also avail the services which otherwise become tough for them
- Strengthening convergence with line dept. viz. DoHFW & RIO need urgent attention which is below the belt even after signing MoU for improved referral of DR patients

- Leveraging the support of diabetologist & pathlab technicians can show an upsurge in the growth rate
- Success of any project depends on its publicity, accessibility & affordability. Usage of IEC materials, advertising through CBOs, usage of

mass media such as TV & newspaper should be enhanced for deeper penetration in the community & to spread public awareness and BCC



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- 2) Dr Kiran : "Assessment of Awareness of Diabetic Retinopathy among The Diabetics." ---- IOSR Journal Of Humanities And Social Science (IOSR-JHSS) Volume 21, Issue 8, Ver.5 (Aug. 2016) PP 61-64
- 3) Mridula Prabhu : A hospital based study on awareness of diabetic retinopathy in diabetic individuals based on knowledge, attitude and practices in a tier-2 city in South India ----- Indian Journal Of Clinical & Experimental Ophthalmology 3<sup>rd</sup> issue 2015
- 4) Praveen Vashist : Role of Early Screening for Diabetic Retinopathy in Patients with Diabetes Mellitus: An Overview ----- Indian J Community Med. 2011 OctDec; 36(4): 247–252.,
- 5) K.N.D. van Eijk a : Diabetic retinopathy screening in patients with diabetes mellitus in primary care: Incentives and barriers to screening attendance---- Diabetes Research and Clinical Practice 9 6 ( 2 0 1 2 ) 1 0 – 1 6
- 6) Sightsavers Initiatives Addressing Diabetic Retinopathy.pdf
- 7) Sight savers eye health strategy 2013-2018.pdf
- 8) Sampa Paul : A study on addressing diabetic Retinopathy in the urban slums of Kolkata
- 9) Vision 2020 e-resource on Diabetic Retinopathy
- 10) NCBI report
- 11) End term evaluation report of KUCECP by sightsavers
- 12) Google Wikipedia

# Annexures

## Annexure-1 Questionnaire for study

### Section 1: Demographic Details:

1.1 Date:

1.2 Facility name

- a) Vision Centre
- b) Base Hospital
- c) Outreach Camp

A. If vision Centre selected, please specify: \_\_\_\_\_

B. If hospital selected, please specify: \_\_\_\_\_

C. If outreach camp selected, please enter name: \_\_\_\_\_

1.3 OPD No: \_\_\_\_\_

Patient Name:

Patient address:

1.4 Patient mobile number: *(Please ask to share the number on which patient can be contacted, if required)*

|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|

1.5 Gender:

- a) Male
- b) Female

1.6 What is your age? \_\_\_\_\_ in years

1.7 What is your religion?

- a) Hindu
- b) Christian
- c) Muslim
- d) Other (please specify)

1.8 What is the highest level of education you have completed?

- a) Cannot read and write
- b) Can read and write but did not go to school
- c) Primary
- d) Secondary

- e) Higher Secondary
- f) Graduate
- g) Post Graduate/ Professional
- h) Others, specify\_\_\_\_\_

1.9 What is your occupation? That is, what kind of work do you mainly do?

Please Specify: \_\_\_\_\_

- i. Do you usually work throughout the year, or do you work seasonally, or only occasionally?
  - a) Throughout the year
  - b) Seasonally/Part of the year
  - c) Occasionally
- ii. Are you paid in cash or kind for this work or are you not paid at all?
  - a) Cash Only
  - b) Cash and kind
  - c) In kind, only
  - d) Not paid

## **Section 2: The India Equity Tool**

### **Question**

### **Options**

2.1 Does your household have a pressure cooker?

Yes/ No

2.2 Does your household have a color television?

Yes/ No

2.3 Does your household have a table?

Yes/ No

2.4 Does your household have an electric fan?

Yes/ No

2.5 Does your household have a chair?

Yes/ No

2.6 Does your household have a refrigerator?

Yes/ No

2.7 Does your household have windows with glass?

Yes/ No

2.8 Does your household have a mattress?

Yes/ No

2.9 What type of toilet does your household use?

- a) Any type of latrine or toilet
- b) Bush/no facility



- 2.10 What is the main material that the roof of your household is made of?
- a) Concrete/Cement roof  
b) Any other material  
c) NA
- 2.11 What is the main material that the walls of your household are made of?
- a) Cement wall  
b) Any other material  
c) NA

### **Section 3: Knowledge, attitude and practice among patients with diabetes**

(Responses of different questions related to knowledge, attitude and practice among patients with diabetes)

- 3.1 How often you go for eye checkup?
- a. Monthly  
b. Half yearly  
c. Yearly (specify no of times)  
d. This is the first time
- 3.2 How do you come to know about Diabetic Retinopathy screening center?
- a. Through advertisement  
b. By other patients  
c. By relatives  
d. Others (please specify)
- 3.3 Does anyone in your family have
- diabetes a) yes b) no
  - high blood pressure a) yes b) no
- 3.4 Does anyone in your family have eye problems, such as
- Retinal problem a) yes b) no
  - Glaucoma a) yes b) no

| Sl. No | Questions                                                                           | Responses (Circle appropriate answer) |       |                          |          |                |
|--------|-------------------------------------------------------------------------------------|---------------------------------------|-------|--------------------------|----------|----------------|
|        |                                                                                     | Fully agree                           | Agree | Can't decide/ Don't know | Disagree | Fully disagree |
| 3.5    | Diabetes can damage eyesight                                                        | 5                                     | 4     | 3                        | 2        | 1              |
| 3.6    | Retina is the main part of eyes that gets damaged in diabetes                       | 5                                     | 4     | 3                        | 2        | 1              |
| 3.7    | Timely treatment can prevent/ delay damage due to diabetes in eyes                  | 5                                     | 4     | 3                        | 2        | 1              |
| 3.8    | If I am taking eye treatment, I need not worry about controlling my sugar and lipid | 5                                     | 4     | 3                        | 2        | 1              |

| Sl. No | Questions                                                                                                                                        | Responses (Circle appropriate answer) |       |                          |          |                |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------|--------------------------|----------|----------------|
|        |                                                                                                                                                  | Fully agree                           | Agree | Can't decide/ Don't know | Disagree | Fully disagree |
| 3.9    | I control my blood sugar and lipid even if eye complication is being treated as controlling Blood sugar and lipids makes eye treatment effective | 5                                     | 4     | 3                        | 2        | 1              |
| 3.10   | If my vision is good, my eyes are not affected. So, I do not need annual eye testing.                                                            | 5                                     | 4     | 3                        | 2        | 1              |
| 3.11   | In diabetes, one eye may be affected first followed by the other eye                                                                             | 5                                     | 4     | 3                        | 2        | 1              |
| 3.12   | Diabetes can also occur during pregnancy                                                                                                         | 5                                     | 4     | 3                        | 2        | 1              |
| 3.13   | Children with diabetes also have risk of eye complications                                                                                       | 5                                     | 4     | 3                        | 2        | 1              |
| 3.14   | Patients with diabetes often waste their time and money in eye checkups as most of the time eyes of diabetics are normal                         | 5                                     | 4     | 3                        | 2        | 1              |
| 3.15   | The information on eye problems due to diabetes should be given by eye doctor only                                                               | 5                                     | 4     | 3                        | 2        | 1              |
| 3.16   | I go to eye doctor regularly as advised by my family doctor                                                                                      | 5                                     | 4     | 3                        | 2        | 1              |
| 3.17   | Staff in eye unit counselled me about prevention and treatment for eye complications                                                             | 5                                     | 4     | 3                        | 2        | 1              |

#### **Section 4: Status of Diabetes and other co-morbidities and Diabetic Retinopathy Details**

##### **I. Blood Pressure**

4.1 Has your blood pressure ever been checked?

- a) Yes
- b) No

4.2 Were you told on two or more different occasions by a doctor or other health professional that you had hypertension or high blood pressure?

- a) Yes
- b) No

4.3 Duration of hypertension/high blood pressure: \_\_\_\_\_ in months

*(Write '00' if never had the problem)*

4.4 May I take your blood pressure now?

- a) Yes
- b) No

4.5 Record the Blood Pressure: \_\_\_\_\_

4.6 Respondent's Blood Pressure Category

- a) Normal (Optimal)
- b) Normal (Mildly High)
- c) Normal (Moderately High)
- d) Abnormal (Mildly Elevated)
- e) Abnormal (Moderately Elevated)
- f) Abnormal (Severely Elevated)

## **II. Blood Glucose level**

4.7 Has your blood glucose level ever been checked?

- a) Yes
- b) No

4.8 Where you told on two or more different occasions by a doctor or other health professional that you had diabetes or high blood glucose level?

- a) Yes
- b) No

4.9 Duration of diabetes: \_\_\_\_\_ in months *(Write '00' if never had the problem)*

- a) 0 to 5 years
- b) 5 to 10 years
- c) 10 to 15 year
- d) 15 years and more

4.10 Record Blood Glucose in Mg/Dl: \_\_\_\_\_

4.11 Respondent's Blood Glucose Level Category

- a) Prediabetes condition
- b) Type I diabetes
- c) Type II diabetes

## **III Other Diseases**

4.12 Are you suffering from **any other disease/s** currently?

- a) Yes
- b) No

- |                                 |        |       |
|---------------------------------|--------|-------|
| • <b>Hypertension</b>           | a) yes | b) no |
| • <b>Chronic Kidney Disease</b> | a) yes | b) no |
| • <b>Cardiovascular Disease</b> | a) yes | b) no |
| • <b>Depression</b>             | a) yes | b) no |
| • <b>Dyslipidemia</b>           | a) yes | b) no |
| • <b>Sleep Disorders</b>        | a) yes | b) no |
| • <b>Cancer</b>                 | a) yes | b) no |

**4.13 Do you have/had cataract?**

- a) No
- b) In at least one eye
- c) In both eyes
- d) Don't know/can't say

**IV Eye Examination Details****4.14 Does patient has undergone comprehensive eye exam? (Code all applicable)**

- a) Visual Acuity
- b) Dilated eye exam
- c) Fundus Photography

**4.15 Testing of VA (code separately for each eye)**

| <b>i. Presenting Vision</b>      | <b>Right Eye</b> | <b>Left Eye</b> |
|----------------------------------|------------------|-----------------|
| Can see 6/12                     | 1                | 1               |
| Cannot see 6/12 but can see 6/18 | 2                | 2               |
| Cannot see 6/18 but can see 6/60 | 3                | 3               |
| Cannot see 6/60 but can see 3/60 | 4                | 4               |
| Cannot see 3/60 but can see 1/60 | 5                | 5               |
| Light perception (PL+)           | 6                | 6               |
| No light Perception (PL-)        | 7                | 7               |

**4.16 Dilated Eye Exam**

- a) Showing signs of diabetic retinopathy
- b) No sign of diabetic retinopathy
- c) Stages of diabetic retinopathy
- d) Signs of other retinal abnormality (if present, specify)
- e) State of cataract (if present, specify)

**4.17 Fundus Photography**

- a) Showing signs of retinopathy
- b) No signs of retinopathy

c) Signs of other retinal abnormality (Specify if any)

**V Details on Diabetic Retinopathy**

5.1 What is the status of Diabetic retinopathy?

- a) No evidence of Diabetic Retinopathy (Normal)
- b) Diagnosed with Diabetic Retinopathy (Treatment required)
- c) Diagnosed with Diabetic Retinopathy (No treatment is required)

Thank you  
Sushweta Guha Dey  
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Summer Trainee At Sightsavers India

