Estimating Awareness about Diabetic Retinopathy in the Adult Population in Chennai

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Background

India’s Transition
- Economically
- Demographically
- Food choices

Diabetes in India
- Until recently, India had more people with diabetes than anywhere else in the world
  - ~73 Million
- 346,000 people died from Diabetes in 2015
- In urban South India, prevalence of diabetes is estimated to be approaching 20%
- An estimated 6 Million diabetics in India have sight threatening retinopathy
Vision with Advanced Diabetic Retinopathy

Healthy Vision

Vision with Diabetic Retinopathy
Objectives

- Gather information on current status of diabetic retinopathy awareness in Chennai and estimate poverty status using 2009/10 poverty scorecard for India.

- Study aims to elucidate knowledge gaps, allowing more precise allocation of resources to most efficiently increase diabetes health literacy.
Methods

• Surveyed 162 adults attending outreach camps

• Assessed:
  • Demographic Information
  • Basic Knowledge of Diabetes, Diabetic Retinopathy
  • Prevalence of Diabetes, Hypertension
  • Estimated poverty status
Sample Population

162 ADULTS
- 109 Women, 53 Men
- ~60% Worked labor jobs, the rest had a regular salary

EDUCATION
- About 1/3 had completed 12th grade
- ~20% had further education
- 31% Had little to no education
  - Women were 2x more likely to have no education

POVERTY STATUS
- 83% Likely earned less than $2.50 a day
- 48% Likely lived in extreme poverty, of less than $1.90/day
Results

**Diabetes**
- 9% were diabetic
  - 11.3% Men vs 7.3% of Women
- 28.4% of the population had heard of diabetes
  - 17.4% recognized diabetes as a disease of “high sugar”

**Blood Glucose checks**
- 30% Had a check before
  - 37.74% of Men vs 26.6% of Women
  - Extreme poverty had lower rates of blood sugar checks
    - 24% vs 36%
- Those who completed high secondary showed higher rates of checks
  - 35% vs 23.5% of those with no education

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**Symptoms Identified**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Pain</td>
<td>7</td>
</tr>
<tr>
<td>Nose Problems</td>
<td>6</td>
</tr>
<tr>
<td>Fatigue</td>
<td>5</td>
</tr>
<tr>
<td>Eye Problems</td>
<td>7</td>
</tr>
<tr>
<td>Hydration</td>
<td>2</td>
</tr>
<tr>
<td>Nausea</td>
<td>3</td>
</tr>
<tr>
<td>Headaches</td>
<td>1</td>
</tr>
</tbody>
</table>
Results

Statistically Significant Predictors
• Having a blood sugar check before [P<0.0001]  
  • 52.1% vs 18.6%
  
• Out of those who had a blood sugar check previously, almost half hadn’t heard of diabetes

Diabetes Awareness
• Gender had little variation [p=0.4758]  
  • 32% males, 26.6% females aware

• Education had little influence [p=0.4983]  
  • College Education & Aware 32.3%  
  • No Education & Aware 24%

• Having a television [p=0.2232]  
  • Those with a TV 2x more likely to be aware of diabetes (29.7% vs 14.3%)

• Hypertension Status [p=0.1914]  
  • Those with high blood pressure over 2x more likely to be aware of diabetes (26% vs 58.3%)

• Extreme Poverty Status [p=0.4518]  
  • Likely living in extreme poverty & diabetes awareness  
    • 25.6% vs 31%

Not Significant Predictors
• Household Type
• Possession of cell phone
Results

Diabetic Retinopathy Awareness
• 9.3% of general population aware of some eye conditions resulting from diabetes
• 42.9% of diabetics were aware of eye conditions resulting from diabetes
• 28.6% of diabetics were aware of diabetic retinopathy specifically

Predictors of Awareness
• Diabetes status [p<0.0001]
  • Prevalence was a statistically significant predictor
• Hypertension Status [p=0.0381]
  • Those with hypertension over 3x more likely to be aware of diabetic retinopathy
• Blood Glucose Checks [p=0.0013]
  • Those with blood sugar checks previously over 4.5x more likely to be aware

No Difference
• Education Status
• Household Type
• Mobile Phone or TV possession
• Poverty Status

Not Significant Predictors
• Gender [p=0.1115]
  • Men were over 2x as likely to be aware
Discussion

- An estimated 6 Million diabetics in India have sight threatening retinopathy

Consequential Findings
- 28.6% of diabetics were aware of diabetic retinopathy
- 52% of those who had blood sugar check were aware of diabetes

Predictors of Diabetes Awareness
- TV
- High blood pressure
- Blood sugar checks

Predictors of Diabetic Retinopathy Awareness
- Diabetes Status
- Having high blood pressure
- Blood sugar checks
Discussion

Why is Diabetic Retinopathy awareness important?

“45% of patients attending eye outreaches with diabetic retinopathy had already lost vision before being diagnosed”
- An estimated 6 Million diabetics in India have sight threatening retinopathy

Diabetic Retinopathy is preventable!
- Awareness of the condition is the first step in preventing it
- Early detection and treatment has been estimated to reduce the risk of blindness from diabetic retinopathy by 90%

Impacts of Visual Impairment
- Productivity
- Employment
- Happiness
- Economic burden
- Effects on the family
Discussion
- Blindness and Poverty go hand in hand

What’s Already been working?
• Chennai has awareness rates higher than the rest of the county
  • (75% vs 43.2%)

• PACE Project (Prevention, Awareness, Council and Evaluation Diabetes Project)
  • Hundreds of large awareness/screening camps
    • Media campaigns, public education, blood sugar screening, practitioner training, education events
    • Multiple television, radio shows, text messages
  • Estimated to have reached over 2 million
Telemedicine

- Remote eye screenings
  - Effective for rural areas

- Practitioner diagnoses remotely, advises patient whether or not to seek treatment

- iPhone 6 photos
  - A) Cataract
  - B) Retinal Detachment
  - C) IOL
  - D) Diabetic Retinopathy
  - E) Ocular Surface
Ways Forward

Solutions

• Training providers
  • Medication adherence
  • Diet and Lifestyle Changes
  • Physician Shortage
    • Skilled Counselors
• Optometrists
• Telemedicine
• Awareness Campaigns, Screening Programs
  • PACE project
• Affordable medication
Acknowledgements

- Senthil Family
- Translators
- College of Agriculture, Biotechnology, and Natural Resources
- Unite For Sight