

**Rapid Assessment of Avoidable Blindness & Diabetic Retinopathy in
Selected Counties of Inner Mongolia Province, China**

Final Report



**The Fred Hollows Foundation, China Program
&**

Chaoju Red Cross Eye Hospital

Technical Support provided by

PRASHASA Health Consultants Pvt. Ltd,

Hyderabad, India

Rapid Assessment of Avoidable Blindness & Diabetic Retinopathy in Selected Counties of Inner Mongolia Province, China

Summary:

- The all-age prevalence of blindness for selected counties of Inner Mongolia Province of China is estimated to be 0.12 %.
- The all-age magnitude of blindness for selected counties of Inner Mongolia Province of China is estimated to be 28,764 people out of a population of 2.5 million.
- Avoidable causes of blindness (operated and un-operated cataract, refractive error and corneal scar) accounted for 69.8% of blindness, 72.7% of severe visual impairment, 89.6% of moderate visual impairment and 93.8% of early visual impairment.
- Cataract and sequel related to cataract extraction accounted for 34.9% of all causes of bilateral blindness.
- Posterior segment disease (including glaucoma, diabetic retinopathy and age-related macular degeneration) is responsible for 23.3% of bilateral blindness.
- 80.7% of people with bilateral cataract VA<3/60 had had surgery and 48.3% at VA<6/18.
- 8.8% in the surveyed sample had Diabetes Mellitus and 9.1% of them had some form of retinopathy or maculopathy during examination.
- 63% of the known diabetics had never had an eye examination for DR at all.

Subjects

- A total of 3,985 of the sampled 4,500 individuals aged 50 years and over were examined in the survey.
- The overall response rate for the survey was 88.6% (Women 93.1%, Men 83.2%)
- Of these 3,985 subjects, 43 were bilaterally blind (<3/60 in the better eye based on presenting visual acuity, with available correction).

Crude Prevalence 50 years and older

- This corresponds to a crude prevalence of blindness of 1.1% in people aged 50 years and above (95% CI: 0.6 – 1.5%)
- The distribution of visual acuity status of the examined subjects is shown in table 1

Magnitude of Blindness in selected counties of Inner Mongolia Province

- In people aged over 50 years in selected counties of Inner Mongolia Province the magnitude of blindness is estimated to be 8,772 people
- The all-age prevalence of blindness for selected counties of Inner Mongolia Province is estimated to be 0.12% A prevalence of 0.35/1000 children was assumed for calculating childhood blindness in the Inner Mongolia population. 20% of the population are between 0-15 years as per census. Similarly a prevalence 0.15% was assumed based on WHO estimates for prevalence of blindness in 16-49 years of age. A population of 50% was between these ages as per census.
- The all-age magnitude of blindness for selected counties of Inner Mongolia Province is estimated to be 28,764 out of a population of 2.5 million¹

Blindness and Visual Acuity by Age

- The prevalence of blindness was associated with increasing age ranging from 0.4% in those aged 50-59 years to 3.6% in those aged 80 years and above. (Figure 1)
- Increasing age was associated with higher levels of impaired vision. In those aged 50-59, 96.7% had normal vision, compared with 73.1% with normal vision in those aged 80 years and above (Figure 1).

Causes of Blindness in adults aged 50 years and older

- Avoidable causes of blindness (operated and un-operated cataract, refractive error and corneal scar) accounted for 69.8% of blindness, 72.7% of severe visual impairment, 89.6% of moderate visual impairment and 93.8% of early visual impairment.
- Cataract and sequelae related to cataract extraction (aphakia and cataract surgical complications) accounted for 34.9% of all causes of bilateral blindness. (Table 2)
- Posterior segment disease (23.3%) (including glaucoma, diabetic retinopathy and age-related macular degeneration) is the second cause of bilateral blindness.(Table 2)

Cataract Surgical Coverage

- Cataract surgical coverage was relatively high; 80.7% of people with bilateral cataract VA<3/60 had had surgery and 48.3% at VA<6/18
- 29 (15.3%) of the 189 eyes that had undergone cataract surgery had a poor outcome with available correction (i.e VA<6/60)

Diabetic Retinopathy

- 8.8% in the surveyed sample had Diabetes Mellitus and 9.1% of them had some form of retinopathy or maculopathy during examination.
- 63% of the known diabetics had never had an eye examination for DR at all.

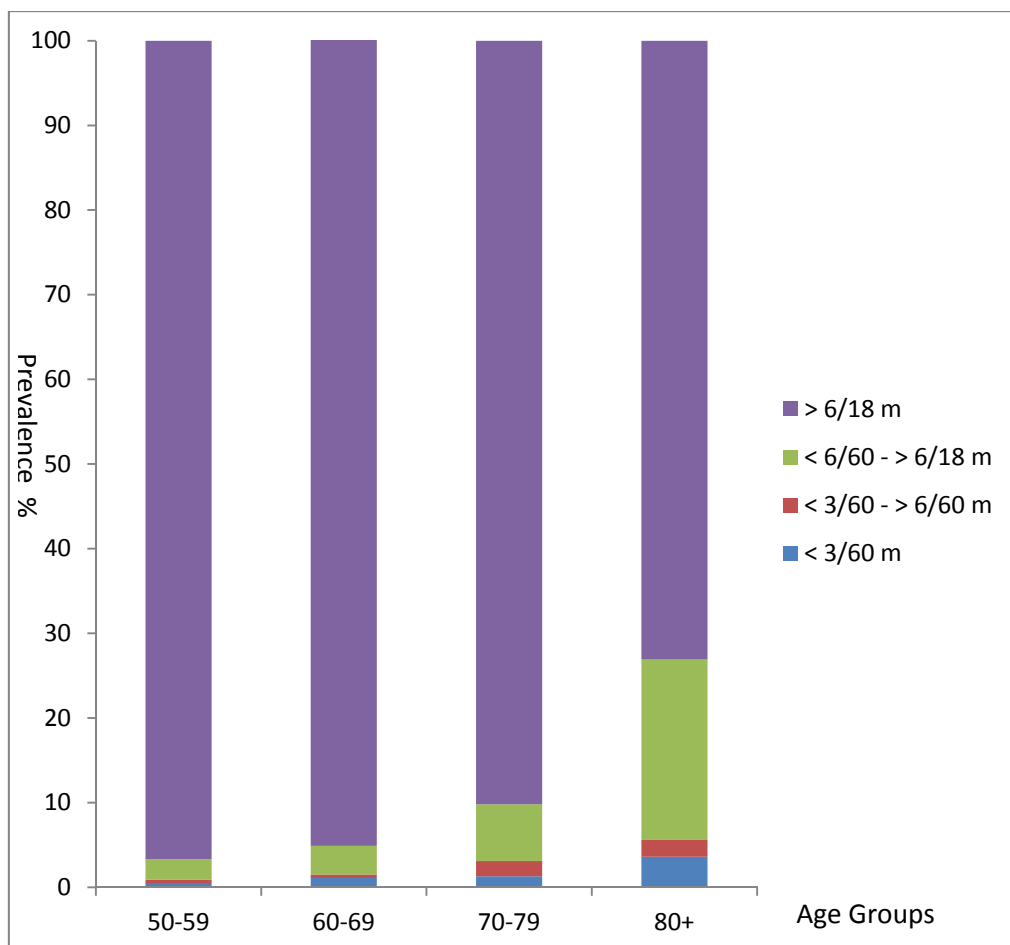
Table 1. Distribution by visual acuity with available correction in the better eye in adults aged 50 years and older

VA with available correction	Males	Females	Total
	N (%)	N (%)	N (%)
<i>VA < 3/60</i>			
Bilateral blindness	3,353 (0.7%)	5419 (1.4%)	8,772 (1.0%)
Blind eyes	22,749 (2.5%)	27,405 (3.5%)	50,154 (3.0%)
<i>VA < 6/60 and VA ≥3/60 – SVI</i>			
Bilateral severe visual impairment	5,399 (1.2 %)	9,493 (2.4 %)	14, 892 (1.8 %)
Severe visually impaired eyes	29,522 (3.3 %)	40,468 (5.1%)	69,990 (4.1%)
<i>VA < 6/18 and VA ≥6/60- MVI</i>			
Bilateral visual impairment	21,582 (4.8 %)	31,427 (7.9 %)	53,009 (6.2 %)
Moderate visual impairment eyes	70,584 (7.8 %)	99,548 (12.6 %)	170,132 (10.0 %)
<i>VA < 6/12 and VA ≥6/18- EVI</i>			
Bilateral visual impairment	45, 888 (10.1%)	58,948 (14.9%)	104,836 (12.3%)
Early visual impairment eyes	127,829 (14.1%)	168,110 (21.2%)	295,939 (17.4%)
Bilateral aphakia	4,252 (0.9 %)	6,719 (1.7 %)	10,791 (1.3 %)
Unilateral aphakia	7,364 (1.6 %)	6,946 (1.8 %)	14,310 (1.7 %)
Aphakic eyes	15,868 (1.8 %)	20,385 (2.6 %)	36,253 (2.1 %)

Table 2. Cause of blindness, severe (SVI), moderate (MVI) and early (EVI) visual impairment in people with available correction.

	Bilateral Blindness (VA < 3/60)	Bilateral SVI (VA < 6/60 - ≥3/60)	Bilateral MVI (VA < 6/18 - ≥6/60)	Bilateral EVI (VA < 6/12 - ≥6/18)
	(N %)	(N %)	(N %)	(N %)
Refractive error	6 (14.0%)	12 (36.4%)	90 (46.6%)	146 (53.5%)
Cataract, untreated	15 (34.9%)	11 (33.3%)	76 (39.4%)	103 (37.7%)
Aphakia, uncorrected	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Surgical complications	0 (0%)	0 (0%)	2 (1.0%)	1 (0.4%)
Phthisis	2 (4.7%)	0 (0%)	0 (0%)	0 (0%)
Other corneal scar	1 (2.3%)	0 (0%)	0 (0%)	2 (0.7%)
Glaucoma	1 (2.3%)	1 (3.0%)	0 (0%)	1 (0.4%)
Diabetic Retinopathy	5 (11.6%)	0 (0%)	5 (2.6%)	3 (1.1%)
Other Posterior segment	4 (9.3%)	3 (9.1%)	10 (5.2%)	5 (1.8%)
Globe abnormalities	9 (20.9%)	6 (18.2%)	10 (5.2%)	12 (4.4%)
Avoidable causes	30 (69.8%)	24 (72.7%)	173 (89.6%)	256 (93.8%)

Figure 1 [Prevalence of Vision Impairment By Age]



Prevalence %/Age	50-59	60-69	70-79	80+
< 3/60 m	0.4	1.1	1.3	3.6
< 3/60 - ≥ 6/60 m	0.5	0.4	1.8	2.0
< 6/60 - ≥ 6/18 m	2.4	3.4	6.7	21.3
≥ 6/18 m	96.7	95.2	90.2	73.1