PREVALENCE AND CAUSES OF BLINDNESS IN PAKISTAN

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Estimated prevalence of blindness in Pakistan varies from 2.0% to 4.3%. This study reports the results of a WHO financed national survey of blindness, done between 1987-1990.

SAMPLE

The survey comprised of 17 samples in four provinces of Pakistan. The details of the samples are given in Table I and Figure.

TABLE I. Details of survey of blindness.

Sample No.	Province	City/Village	Rural/urban	Number of individuals examined	Sampling method
1	Sindh	Karachi	Urban slum	2,730	Stratified random sampling
2		Karachi	Urban	2,198	Simple random sampling
3		Khipro-Tharparker	Rural desert	4,398	Probability proportion sampling (village - a cluster of houses - proportion to size)
4		Bir - Larkana	Rural agriculture paddy growing area	3,958	Probability proportion sampling
5	Balochistan	Hub (Lasbela)	Rural coastal area	2,972	Probability proportion sampling
6		Panjgoor (Makran)	Rural mountainous	3,172	Probability proportion sampling
7		Kharan (Qalat)	Rural mountainous	6,038	Probability proportion sampling
8	N.W.F.P.	Chitral (Malakund)	Rural mountainous	851	Simple random sampling
9		Mansehra	Rural	1,006	Simple random sampling
10		Peshawar	Rural Urban	1,942 945	Simple random sampling
11		Dera Ismail Khan	Rural	988	Simple random sampling
12	Punjab	Islamabad	Urban	1,850	Simple random sampling
		Hummak village, Sehala, Rawalpindi	Rural mountainous	2,000	Simple random sampling
14		Mianwali	Rural	1,950	Simple random sampling
15		Sadri village, District Gujrat	Rural	1,850	Simple random sampling
16		Phulwar, Distt. Sargodha	Rural	1,025	Simple random sampling
17		Zamani Chak Bahawalpur	Rural	1,049	Simple random sampling

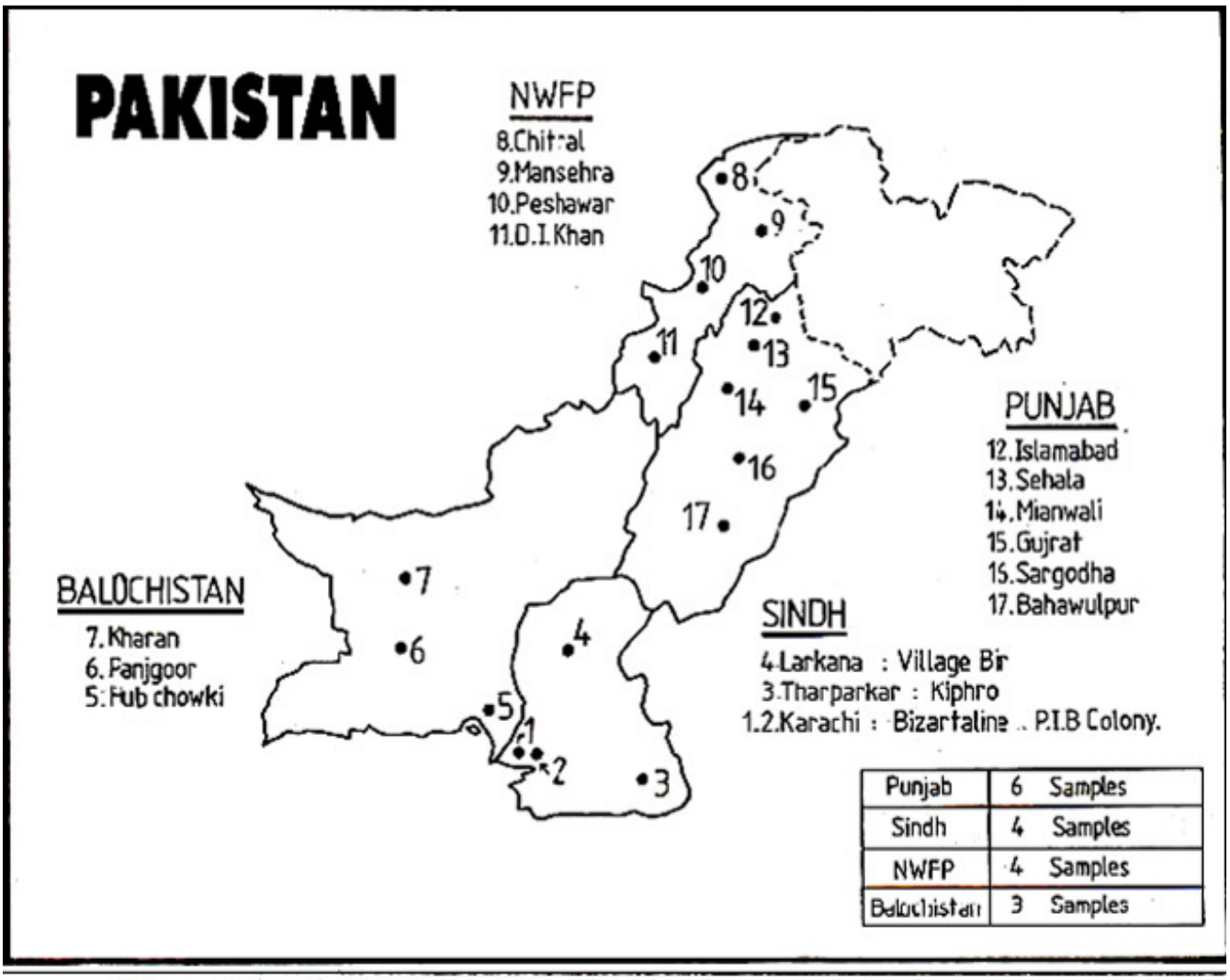

Figure. Map of Pakistan showing details of 17 sample in four provinces.

The sample size varied from 851 (Chitral, NWFP) to 3,019 (Kharan, Baluchistan) and was influenced by local conditions. The small sample size in Chitral was because of the sparse population and the difficult mountainous terrain where the team had to climb 1-2 kilometers to examine one house with 3 individuals. House to house examination of all individuals in the sample was carried out by junior members of the team. Anyone with visual acuity less than 6/18 or any ocular abnormality was brought to a central examination point and examined by a senior member of the team.

TEAM

The team consisted of (1) ophthalmologist, (2) registrar, (3) two medical officers - one male and one female with one year experience in ophthalmology and (4) Two nursing attendants - one male and one female. In the first 4 samples the team also included two social workers who visited the area and listed individuals to be examined. Medical team followed next thy. One of the senior members who conducted survey in samples 1-7 was also present in sample 8 and 12. The samples 9, 10, 11 in NWFP and 13-17 in Punjab were examined by local teams.

Recording method

Standard eye examination form according to WHO/PBL/82.6 publication, was used in samples 1-6, 12-14. Standard WHO/PBL eye examination record (WHO/PBL/EERII)1988) form was used in samples 8-11. In samples 7, 15, 16 and 17 no standard form was used. Only abnormal findings were recorded.

Blindness standard

Blindness was defined according to International Classification of Diseases (ICD Ninth Revision).

1. Visual acuity in both eyes 6/18 or normal better normal
2. Best corrected visual acuity in better eye 3/60 or less blind
3. Visual acuity in better eye 6/18 or more but visual acuity in poor eye 3/60 or less after best correction unilateral blindness
4. Visual acuity in better eye after best partial blindness correction less than 6/18 but more than 3/60.

Visual acuity was tested with Snellen's chart in bright day light. Distance was variable but visual acuity was converted to metric system (6/6). Landolt 'C' or \'E\' was used in illiterate persons. In small children, unintelligent, uneducated, uncooperative individuals visual acuity was assessed by retinoscopy. Normal retinoscopy in asymptomatic individual was considered 6/18 or better. Anterior segment was examined according to standard charts. Intraocular pressure was not measured as a routine. In samples 1-7, however, Schiotz tonometry was done in individuals with family or personal history of glaucoma, shallow anterior chamber, sluggish pupil and doubtful cup/disc ratio (4/10). Tonometry was not done in samples 8-11. Funduscopy, retinoscopy was done in cases with visual acuity of less than 6/18.

RESULTS

The findings of the survey are shown in Tables II and III.

TABLE II. Results of survey - Blind prevalence.

Province	No. of sample areas	Individual examined	Bilateral blindness		Unilateral blindness		Partial blindness		Total		Normal	
			No.	%	No.	%	No.	%	No.	%	No.	%
Punjab	6	9,724	211	2.17	323	3.32	736	7.57	1,270	13.06	8,454	86.94
Sindh	4	6,652	76	1.14	110	1.65	278	4.18	464	6.98	6,188	93.02
N.W.F.P.	4	6,690	67	1.00	168	2.51	167	2.50	402	6.01	6,288	93.99
Balochistan	3	6,091	164	2.69	111	1.82	223	3.66	498	8.16	5,593	91.82
Pakistan	17	29,157	518	1.78	712	2.44	1,404	4.82	2,634	9.03	26,523	90.97

TABLE III. Causes of blindness.

Province	Blindness	Cataract %	Corneal opacity %	Refractive error including aphakia %	Glaucoma %	Others %
Sindh	1.14	73.6	11.6	6.9	2.5	5.4
Balochistan	2.69	57.1	19.4	17.4 (4.8 amblypia)	4.8	1.3
N.W.F.P.	1.0	70.1	16.5 (9.0% due to trachoma)	7.5 (mainly aphakia)	-	6.0
Punjab	2.17	66.1	3.0	13.8	4.6	12.6
Pakistan	1.78	66.7	12.6	11.4	3.9	5.4

Other include mainly post chamber retinitis, pigmentation optic atrophy, senile changes.

COMMENTS

Blindness, a major health problem, has received relatively little attention in under-developed countries

where the vast majority of the world's blind live. Infections, malnutrition and lack of eye care give rise to high proportion of blindness. Of an estimated 30 million blind in the world (blindness defined as inability to count fingers at a distance of three metres (3/60), 6 million live in Africa, 20 million in Asia and about 2 million in Latin America, contributing in total 90% of world's blindness'.

This study shows

1. About 2 million people are blind in Pakistan -estimated Pakistan's population is 112.226 million22. Various conditions responsible for blindness are:

Cataract	66.7%	1.33 million
Corneal opacity	12.6%	0.25 million
Refractive errors	11.4%	0.23 million
Glaucoma	3.9%	0.08 million
Other causes	5.4%	0.11 million

2. Loss of vision from cataract is a major cause of blindness as in other developing countries - Afghanistan 31.1%, Egypt 31.69%, Jordan 21.6%, Saudi Arabia 52.5%2 and India 55%. Because cataract prevalence increases markedly with age, blindness from cataract in Pakistan will increase very rapidly due to a five-fold increase expected in the number of people over 55 years during the next fifty years. During the last decade, 1980-1990, the number of people over 55 years of age has increased from 5.932 million to 7.644 million.

3. Cornea! opacity caused by communicable eye diseases, malnutrition and trauma - agricultural, industrial, accident, sports and iatrogenic. This blindness is directly related to health education, general economic uplift and availability of primary eye care. This is indicated in marked difference of cornea! blindness in various provinces - Punjab 3%, Sindh 11.6%, NWFP 16.5% and Balochistan 19.4%.

4. Uncorrected refractive errors include aphakias. With increased number of non-institutional cataract surgery - eye camps, the number of uncorrected or improperly corrected aphakias is likely to increase. This is indicated in increased aphakic blinds in Punjab (13.8%) as compared to Sindh (6.9%). A high rate of blindness due to refractive error in Balochistan (17.4%) is due to lack of eye care facilities.

5. Prevalence of blindness does not show great variation in various provinces except in Punjab. With fairly developed infrastructure and nearly 200 ophthalmologists (for approximately 65 million people), Punjab was expected to have a blindness rate similar to Sindh (1.14%) or NWFP (1.0%). On the contrary its blindness prevalence (2.17%) resembles that of Balochistan (2.69%) which has very poor infrastructure and only 10 ophthalmologists for 7 million people. This discrepancy can be due to various variables in the survey. Sampling may not have been accurate. Standard eye examination form was not used in3 samples (15, 16, 17) out of seven. The same team was not involved in all the samples.

6. Nutritional blindness is not a major problem in Pakistan. In WHO record, Pakistan is included in high risk countries for vitamin A deficiency[3]. Our survey does not support this presumption that Pakistan has a problem of vitamin A deficiency of public health significance.

7. Endemic trachoma, still a major cause of blindness in rural communities of developing world - 6 to 9 million is a minor problem in Pakistan. It is found only in pockets in NWFP, Balochistan and desert area of Punjab and Sindh. Cataract, corneal opacity and refractive error are responsible for 90% of blindness. Exact problem of glaucoma needs further and more detailed study. Glaucoma and other posterior segment causes will need well developed secondary centres. This survey gives an indication that blindness is a nation scale problem inspite of pitfall like lack of randomization of sampling methodology, differences in the method of data recording, lack of census at primary sampling unit and a small size of the sample. This however is the first attempt to do a country wude survey of an important problem. There is room for improvement. Further studies are required to give more sound scientific and statistically reliable data. This study however can form basis of national programme for prevention and ontrol of blindness in Pakistan.

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