

Causes of Blindness among Patients Seen at the Jordanian Hospital in Gaza

*Samer Khurma MD**, *Khalid Ghzawi MD***, *Mohammad Aqeel MD^*,
Yasser Abu- Ghazzah MD^^, *Ra'ed Khatib MD***, *Omar Nawasrah MD^o*, *Nidal Al -Soud MD^{oo}*,
Mohammad Mashaqbah MD^{oo}

ABSTRACT

Objective: To determine the common causes of blindness in the Gaza strip area for patients who were seen at the Ophthalmology Clinic in the Jordanian Field Hospital.

Methods: A review of 2090 patients who were seen at the Ophthalmology Clinic in the Jordanian Field Hospital in Gaza during the period between 26th December, 2009 and 28th February, 2010 were described. Age, gender, level of vision and common causes of blindness were also studied among patients in the study group. Simple statistical methods (frequency, percentage) was used to describe the study variables.

Results: One hundred and sixty-four eyes in males and 98 eyes in females were found to be blind, 59.83% of the bilateral cases were found in males and 46.94% in females.

It was found that the leading causes of blindness in male patients were trauma and retinitis pigmentosa, while congenital anophthalmia, congenital glaucoma and senile cataract were found to be the predominant causes in females. The predominant age group in blind males was the group of between (16-30) years, and in females the group between (Day one – 15 years) for the congenital anophthalmia and (31-41years) among cataract patients. Finally, regarding level of vision, the predominant level was found to be less than counting fingers close in 62.4% of blind males and 69.4% in blind females.

Conclusion: Efforts should be spent to reduce trauma which is a major cause of blindness in this area, these measures may include rules for fastening car seat built, increasing efforts to educate the community towards reduction of school/ home violence incidents. In addition, health education programs towards Violence Injury Prevention and including it in the School and University Curriculum.

Key words: Blindness, Causes, Gaza.

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Introduction

The population pyramid in Gaza Strip has a wide base, with 50.8% of the population under 15 years of age. The apex is narrow and low due to the short life expectancy: only 3.4% of the population is over 64 years of age.⁽¹⁾

The population of Gaza according to Palestinian

Central Statistics Bureau in 2007 was 1, 416, 543.⁽²⁾

The health system in Gaza Strip has been under continuous stress, which placed difficult burdens on the structural and functional side of the health system, and had impacted on the well-being of the 1.5 million population of the Gaza Strip while leading to physical and mental exhaustion of the health staff.⁽³⁾

From the Departments of:

*Ophthalmology, Private clinic, Amman-Jordan

**Family Medicine, King Hussein Medical Center, (KHMC), Amman-Jordan

^Psychiatry, (KHMC)

^^Radiology, (KHMC)

^oENT, (KHMC)

^{oo}Anesthesiology, (KHMC)

Correspondence should be addressed to Dr. S. Khurma, E-mail: saamir67@yahoo.com

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Total blindness is the complete lack of form and visual light perception and is clinically recorded as no light perception (NLP).⁽⁴⁾

In many areas, people with average acuity who nonetheless have a visual field of less than 20 degrees (the norm being 180 degrees) are also classified as being legally blind.

In North America and most of Europe, legal blindness is defined as visual acuity (vision) of 20/200 (6/60) or less in the better eye with best correction possible.

Approximately 10% of those deemed legally blind, by any measure, have no vision. The rest have some vision, from light perception alone to relatively good visual acuity. Low vision is sometimes used to describe visual acuities from 20/70 to 20/200.⁽⁵⁾

According to World Health Organization (WHO).⁽⁶⁾ estimates in 2002, the most common causes of blindness around the world are:

- Cataracts (47.9%),
- Glaucoma (12.3%),
- Age-related macular degeneration (8.7%),
- Corneal opacity (5.1%), and
- Diabetic retinopathy (4.8%), among other causes

While vision impairment is most common in people over age 60 across all regions, children in poorer communities are more likely to be affected by blinding diseases than are their more affluent peers.⁽⁶⁾

Most adult visual impairment in North America and Western Europe is related to age-related macular degeneration and diabetic retinopathy. While both of these conditions are subject to treatment, neither can be cured.⁽⁶⁾ Of the estimated 40 million blind people located around the world, 70–80% can have some or all of their sight restored through treatment.⁽⁶⁾ In developed countries where parasitic diseases are less common and cataract surgery is more available, age-related macular degeneration, glaucoma, and diabetic retinopathy are usually the leading causes of blindness.⁽⁶⁾

Furthermore, a total of 153 million people (range of uncertainty: 123 million to 184 million) are estimated to be visually impaired from uncorrected refractive errors, of whom 8 million are blind. This cause of visual impairment has been overlooked in previous estimates that were based on best-corrected vision.⁽⁷⁾

Blindness remains ten times higher in Palestine than in the UK, and that 3% of people over 50 are affected. Number of blind people in Gaza is almost twice that of the West Bank.⁽⁹⁾

This study was conducted to determine the common

causes of blindness in the Gaza strip area for patients who were seen at the Ophthalmology Clinic of the Jordanian Field Hospital.

Methods

A review for 2090 patients, who were seen at the Ophthalmology Clinic in the Jordanian field hospital in Gaza during the period between 26th December, 2009 and 28th February, 2010 was described.

Age, gender, level of vision and common causes of blindness were noted in every patient in the study group.

During the two-month period study patients who visited the eye clinic (2090 patients) were examined and if any blindness was detected, the person was included in the study.

Age, gender, level of vision and cause of blindness was noted in every patient.

Examination included measurements of best corrected visual acuity, intraocular pressure, slit lamp examination, direct and indirect ophthalmoscopy.

Visual acuity was measured at a 3-m distance using the Lighthouse Distance.

For the purpose of analysis patients were divided into the following age groups 0-15, 16-30, 31-45, 46-60, 61-75 and 76-80 years.

Levels of vision were divided into three groups, the first group was those with visual acuity of less than counting fingers close, the second was counting fingers close to counting fingers at 3 meters, and the third was counting fingers >3 meters to 6/60. The best corrected visual acuity was taken for level of visual acuity documentation.

The best corrected visual acuity of less than 6/60 in any eye of any patient was considered blindness.

Simple statistical methods (frequency, percentage) were used to describe the study variables.

Results

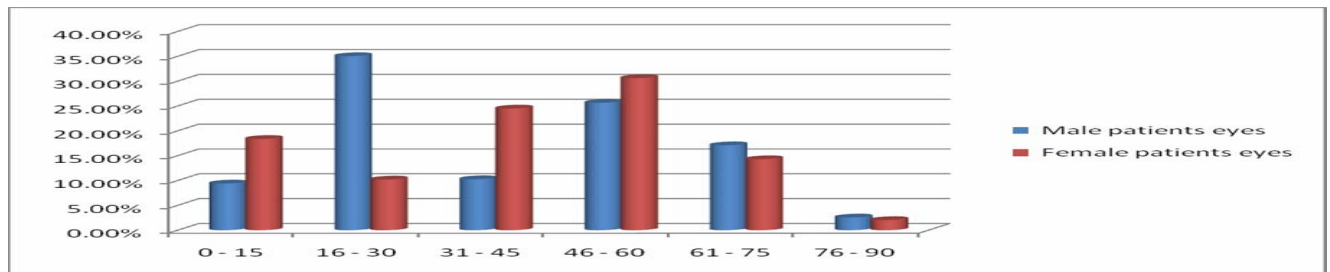
Table I shows the different causes of blindness according to their frequency at our hospital in both males and females and presents that out of the 4180 eyes examined at the clinic during the study period, 332 (7.9%) eyes have been found to be blind.

The commonest causes in male were found to be trauma and retinitis pigmentosa being 18.80% each, while in females senile cataract, congenital glaucoma and congenital anophthalmia were the commonest being 12.24% each.

The most common age group of male blindness was 16 - 30 years while in females it was found to be 46 - 60 years as shown in Fig. 1.

Table I. Distribution of causes of blindness according to gender

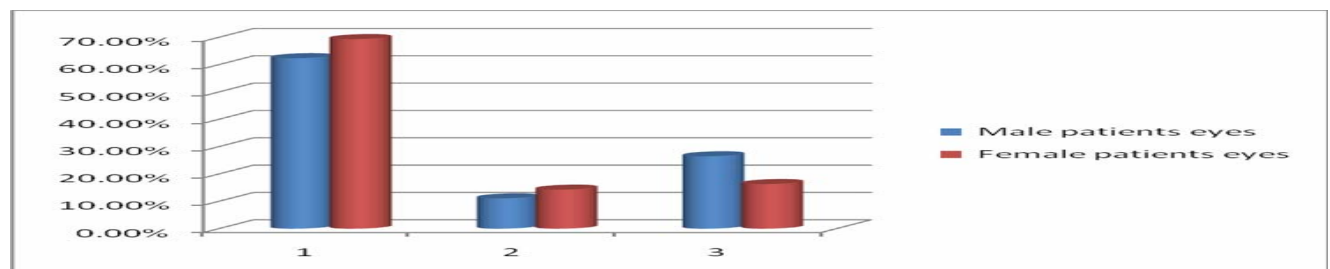
Cause	No. of eyes in males	No. of eyes in females	% of eyes in males	% of eyes in females
1 Retinitis Pigmentosa	44	4	18.80	4.08
2 Trauma	44	10	18.80	10.20
3 Cataract	18	12	7.69	12.24
4 Proliferative Diabetic Retinopathy	30	10	12.82	10.20
5 Congenital Glaucoma	4	12	1.71	12.24
6 Congenital Anophthalmia	10	12	4.27	12.24
7 Adult Glaucoma	20	2	8.55	2.04
8 Amblyopia	8	8	3.42	8.16
9 Congenital Infection	2	8	0.85	8.16
10 Retinal Detachment	18	2	7.69	2.04
11 Stargards	16	0	6.84	0.00
12 Acquired Corneal Disease	6	6	2.56	6.12
13 Corneal Dystrophy	2	4	0.85	4.08
14 Ischemic Optic Neuropathy	8	4	3.42	4.08
15 Retinoblastoma	0	2	0.00	2.04
16 Functional	2	2	0.85	2.04
17 Toxic Amblyopia	2	0	0.85	0.00
Total	234	98	100.00	100.00

**Fig. 1.** Percentage distribution of blind patients according to age groups in both gender**Table II.** Number and percentage of eyes affected in both gender

Eyes Affected	No. of eyes		% of eyes	
	Male patients	Female patients	Male patients	Female patients
Unilateral	94	52	40.17	53.06
Bilateral	140	46	59.83	46.94
Total	234	98	100.00	100.00

Table III. Visual Acuity among the study group

Visual Acuity	No. of male patients eyes	No. of female patients eyes	% of male patients eyes	% of female patients eyes
1 Less Than Counting Fingers Close	146	68	62.4	69.4
2 Counting Fingers Close - Counting Fingers at 3 meters	26	14	11.1	14.3
3 Counting Fingers >3 meters - Counting Fingers at 6 meters	62	16	26.5	16.3
Total	234	98	100	100

**Fig. 2.** Visual Acuity – Percentage among male and female patient's eyes

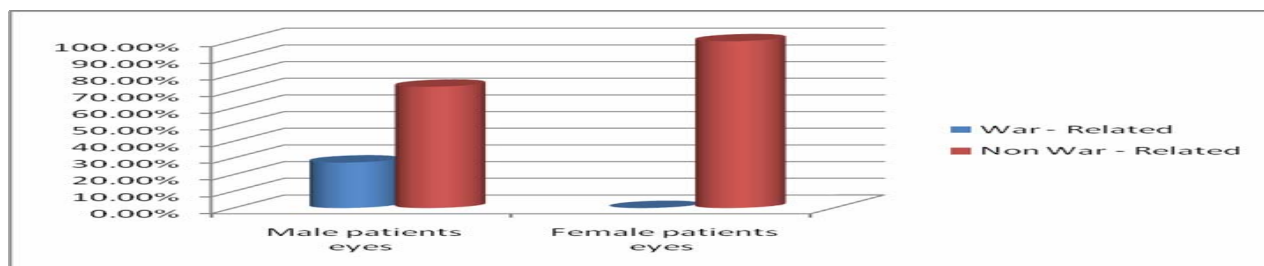


Fig. 3. Trauma Cause.War-related and non-war related among male and female patients eyes

Table IV. Different important causes of blindness in some countries

Country	1 st cause	2 nd cause	3 rd cause	4 th cause	5 th cause
Scotland	Senile macular degeneration	Glaucoma	Cataract	Diabetic retinopathy	Myopia
England and Wales	Senile macular degeneration	Cataract	Glaucoma	Myopia	Diabetic retinopathy
USA	Glaucoma	Senile macular degeneration	Cataract	Optic nerve Hypoplasia	Diabetic retinopathy
Canada	Senile macular degeneration	Diabetic retinopathy	Glaucoma	Optic nerve atrophy	Cataract
Sweden	Tapetoretinal degeneration of genetic origin	Diabetic retinopathy	Optic nerve atrophy	Uveitis	Myopia
India	Cataract	Glaucoma	Staphyloma	Optic nerve atrophy	Anophthalmos
Gaza	Trauma	Retinitis Pigmentosa	Proliferative Diabetic Retinopathy	Cataract	Adult Glaucoma

These blind eyes were in males in 234 eyes (70.5%) of the cases, out of which it was found to be of bilateral affection in 140 cases (59.8%), while females were having bilateral blindness in 46 cases (46.9%) as demonstrated in Table II.

Table III and Fig. 2 present that the most common levels of vision in both males and females with blindness were found to be that with less than counting fingers close (62.4%).

Patients with blindness due to trauma were found to be related to war injuries in 27.3% of the males and in none of the females, as illustrated in Fig. 3.

Discussion

The Jordanian Field Hospital in Gaza is a hospital that was deployed to help the residents of this underprivileged area; the hospital, at the time of the study, received around 800 patients daily, the eye clinic received around 50 patients daily on average and was equipped with all the basic ophthalmic requirements. In 2 months 2090, patients were seen compared with 15,808 in the year 2009 at St John's eye hospital in Gaza.⁽⁹⁾

The hospital is considered among the local population to be their best hope in managing the most complicated problems.

This area lacks having blind registry and is deficient

in data about the numbers, causes and prevention of blindness; furthermore, there are no recent studies about blindness in this area.

In our study, trauma and retinitis pigmentosa were found to be the major causes in males and that in females to be cataract and congenital anophthalmia.

Compared to this the study, conducted in 1984 by St John's eye hospitals in the West bank of the Jordan River region and Gaza showed that the three main principal causes of blindness in order of frequency were cataract, trachoma, and corneal leucoma which accounted for 66.7% of binocular blindness.⁽¹⁰⁾

The most recent study conducted in the neighboring Israel in 1999 showed the most common cause of blindness in all age groups to be age related macular degeneration 20.1% and glaucoma 14%.⁽¹¹⁾

A study conducted in this region in 1993 by Elder MJ, De Cock R.⁽¹²⁾ showed that the main causes of blindness and severe visual loss in children were retinal (52%), optic atrophy (12%), glaucoma (9%) and cataract (7%). Common retinal diseases included degenerative myopia, Leber's congenital amaurosis, cone dystrophy and retinitis pigmentosa.

Similar hospital based studies conducted at our region showed the following results; Yemen (2008) 7.7% monocular blindness and 11.2% binocular

blindness.⁽¹³⁾ North of Jordan (2002) showed 13.66% blindness.⁽¹⁴⁾ while at Saudia arabia (1993) found 10.9% blindness.⁽¹⁵⁾

Consanguinity is a very popular phenomenon in Gaza as close inter-family marriages are relatively common. In the Gaza Strip both the first cousin and 'hamola' levels of consanguinity were significant and presented almost equal IRRs of 1.3. (Incidence risk ratios).⁽¹⁶⁾

Consanguinity could be playing an important role in the frequency of the inherited diseases like congenital anophthalmia and retinal dystrophies (Retinitis pigmentosa, Stargards disease and cone dystrophy).

This has been shown in the previous study as 44-85% of these children were the product of a consanguineous marriage and a positive family history was present in 57%.⁽¹⁶⁾

For persons younger than 75 years, myopic degeneration and optic neuropathy were the most important causes of impaired vision. For persons aged 75 years or older, age-related macular degeneration was the major cause of the increased prevalence of blindness, whereas age-related cataract predominantly caused the increased prevalence of visual impairment.⁽⁸⁾

In our study, cataract was found in relatively younger age group being 31-45 years; this is something which may be worth studying to find the explanation for this early cataract.

Many of the retinal detachment patients we saw in our clinic lost their eye sight due to delay in performing the repair due to the long and complicated procedures for referral abroad of such patients in the appropriate timing and lack of facilities for treatment of such conditions locally.

In this psychologically traumatized area we made the diagnosis of conversion blindness in 4 cases in collaboration with our psychiatrist and this is a known cause of blindness.⁽¹⁷⁾

One of the limitations of our study could be absence of visual field testing for our patients and this is due to unavailability of the required instruments for this testing in our clinic, this could have deprived us from labeling more patients as blind because the only parameter for defining blindness in our study was best corrected visual acuity.

To make a comparison with other countries, Table IV summarizes the most common five causes in some other countries in comparison with Gaza.⁽¹⁸⁾

The problems of cataract and glaucoma were found still to be among the major causes of blindness at this hospital at Gaza, this may be managed by improving

the ophthalmology service at the local hospitals and by increasing the programs that address the public to increase their awareness about these preventable causes of blindness.

Attention should be paid in this area to educate families about the bad effects of consanguinity, as this problem appears to be a major contributor in causing blindness in the forms of retinitis pigmentosa and congenital anophthalmia.

Conclusion

Efforts should be spent to reduce trauma which is a major cause of blindness in this area, these measures may include rules for fastening car seat built, increasing efforts to educate the community towards reduction of school/ home violence incidents. In addition, health education programs towards Violence Injury Prevention and including it in the School and University Curriculum.

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