The prevalence and causes of low vision and blindness among South Sudan refugees in Khartoum state, Sudan

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Abstract

Aim: to determine the prevalence and causes of low vision and blindness among South Sudan refugees in Khartoum state, Sudan. **Material and methods**: this retrospective cross-sectional population based study, done at two refugees camps site (mandala camp, alhaj yousif camp) in Khartoum state in period of time from September to November 2019, the visual acuity (VA) was measured using Snellen tumbling C-chart at 6meter with best optical correction from retinoscopic result under day light illumination, opthalmoscope also used to examine the anterior and posterior segments of the eye to determine ocular diseases that responsible of low vision and blindness. **Results**: two hundred and twenty-six refugees were tested and examined 88 (39%) were females and 138 (61%) males their age ranged from 10-90 years with mean of 46±19.02, the prevalence of low vision VA<6/18-3/60 was 12.8% (95% confidence level {cl},±0.046), and prevalence of blindness VA<3/60 to no perception of light was 9.7% (95% cl, ±0.001), cataract was the major cause of low vision and blindness 96.7% ,86.4% respectively, glaucoma was the second cause of blindness 13.63%. conclusion: cataract is the major cause of low vision and blindness among south Sudan refugees which could removed and complete visual recovery result. **Recommendations**: Screening, training, rehabilitation and health education.

Keywords: prevalence, causes, low vision, blindness, refugee.

Introduction

The term low vision describes vision disorders that cannot be corrected with medical treatment, surgical interference, or conventional eye glasses or contact lenses to stander visual acuity 6/6.

The term blindness implies inability to perceive light. The world health organization has categorized visual impairment in to: low vision in which visual acuity with best possible correction from 6/18 to 3/60 and blindness from 3/60 to no perception of light {1}. as the world population increases and there is a growing predominance of the older age groups, the number of people at risk of visual impairment continues to increase. In addition, the prevalence of chronic, age-related eye diseases, particularly age-related macular degeneration, appears to be increasing at a greater than the ageing population would suggest {2}.

According to WHO 2010 estimates there are 285 million visually impaired people worldwide, and these 39 million are blind. Overall, about 90% of the blind lives in developing countries {3}.

The distribution of low vision varies with age, gender and geographical region but the majority of vision impaired people is aged 50 years and over {4}

The main causes of vision loss in developed countries are cataract, age-related macular degeneration, glaucoma and diabetic retinopathy.

In developed countries, the prevalence of blindness and low vision among children is low, but the length of time they live with low vision is considerably longer and therefor the cost to society is higher than for adults with low vision. The children aged 0-15 years constitute between about 13% and 7% of world's total low vision population {5}.

To treat patient with visual impairment, a general understand to pathology is necessary. The low vision practitioner must be familiar with systemic as well as ocular signs and symptoms, level of visual acuity, visual field defects, and syndromes that are associated with each condition. Patient should be aware of the visual prognosis of their condition, with and without medical treatment, so that they will be cognizant of the expected outcome {6}.

The following is the major causes of low vision and blindness:

1. Cataract: Cataract is the term used to describe any lens opacity from smallest dot to

complete opacification. The prevalence of cataract increases with aged 50-59 have opacities and all of those aged over 80. Only when the opacities significantly interfere with vision is an operation contemplated. Cataracts are the most important cause of blindness in the world today {7}.

In the normal lens, metabolic activity includes transport of amino acids and cations across the lens epithelium and synthesis of protein in the lens fibers. Any disruption of the metabolic process may lead to opacification of the lens and associated decreased vision {6}.

2. Lens dislocation: Subluxation of the lens is a partial dislocation that is caused by weakened, stretched, or broken zonules. Up word, down word, or lateral displacement can occur, lens dislocation can occur due to ocular trauma, intraocular inflammation, hypermature cataract and inherited. visual acuity ranged from normal to sever impairment depending on lens position {6}.

3. Glaucoma: The term glaucoma refers to group diseases that have in common characteristic optic neuropathy with visual field function loss. Although elevated intraocular pressure (IOP) is one of the primary risk factors {8}.

Glaucoma has been classified as open or closed angle as primary or secondary.

Differentiation of open angle glaucoma from closed angle glaucoma is essential in diagnosis of glaucoma. The concept of primary or secondary is also useful in treatment of glaucoma {8}.

Open angle glaucoma is classified when no anatomically identifiable underlying cause that lead outflow obstruction and IOP elevation can be found. Secondary when an abnormality is identifiable and putative role in the pathogenesis can be ascribed to this abnormality, primary open angle glaucoma is an asymptotic {8}.

Angle closure glaucoma is due to distortion of the anterior segment that obstructing aqueous outflow. This distortion can be secondary to ocular disease secondary closure angle glaucoma or no any disease in primary closure angle glaucoma, closure angle glaucoma is painful and associated with sever visual impairment {8}.

4. Diabetic retinopathy: is a highly specific vascular complication of both type diabetics mellitus, it is the leading cause of blindness in USA {6}.

Other causes of visual impairment may found like: age related macular degeneration, optic nurities, myopic degeneration and corneal dystrophies.

Refugee: Refugee generally speaking is a displaced person who has been forced to cross national bounders and who cannot return home safely.

Refugees in Khartoum Sudan are: South Sudan refugees, Darfur and south kordufan refugees. Which they displaced by civil war in their areas {9}.

A refugee camp is temporally place settlement built to receive refugees and people in refugee-like situation. Usually refugees seek asylum they have escaped war in their home countries. They are built and run by a government, the united nation, international organization (such as the international committee of the Red Cross), or NGOs. Camps with over a hundred thousand people are common, but as 2012, the average sized camp housed around 11,400 {9}.

There are also unofficial camps, like idomeni in Greece or South Sudan refugees in Khartoum, where refugees are largely left without support of government or international organization {10}.

A slower, although steady rate of new arrivals was observed in 2019. As of 30 June, a total of 13,875 South Sudanese refugees arrived in Sudan, the roll-out of biometric registration

across the response has allowed for increasingly precise population figure. The largest number of unregistered South Sudanese refugees are in Khartoum [11].

Material and methods

This was descriptive cross-sectional population base study of prevalence and causes of low vision and blindness among South Sudan refuges in Khartoum state, Sudan. done at two refugees sits one at alhaj yosif and the other in mayo (mandala camp) in Khartoum state. In period from September to November 2019.

The sample of the study includes 226 subjects who in live refugee camps from South Sudan, their age ranged from 10-90 years.

Distance visual acuity (VA) was measured with using Snellen tumbling C-chart then converted into decimal. The measurement was done in day light with optical correct from retinoscopy result for subjects and people are categorized according to visual acuity in better eye in to:

- Normal VA 6/12 or better in better eye
- Low vision VA 6/18 to 3/60 in better eye
- Blind VA 3/60 to no perception of light in better eye.

All subjects examined by ophthalmoscope with assistant of an ophthalmologist to rule out the causes of low vision and blindness in the anterior and posterior segments of the eye. The examiner and the patient usually remove their correction, the examiner holds the direct ophthalmoscope in the right hand (for the right eye), the examiner start at a distance about 1m from the patient with a +1.00 D lens in the ophthalmoscope as the patient looks into the distance. A red reflex seen filling the pupil as the light reflex from the fundus, any media opacity should be notice. Allowing examination of the anterior cornea at a viewing distance of approximately 10 cm. next, as the examiner moves closer to the patient, the plus power is reduced to allow examination of the anterior chamber, crystalline lens and anterior vitreous [12].

Collected data was analyzed by the use of spss (20.00). The data for each subject were analyzed descriptively using stander deviation and percentages, the relationship between age and visual acuity was determined using persons coefficient correlation.

Ethical consideration: the study and the procedures of the measurement were explained for all refuges and oral consent for person approval was taken.

Results

A total of 226 subjects who live in South Sudan refugee camps in Khartoum state in this study.

Males were predominating the sample; they represent 61% (138). Figure (1). The mean age was 46.18±19.02. Table (1). The mean of visual acuity (VA) in better eye was 0.801±0.34 (ranged from 6/6 to 0 (no light perception)). Table (2). The prevalence of low vision was 12.8% (95% confidence level CL, ±0.001) and the prevalence of blindness was 9.7% (95% cl, ±0.046) table. Figure (2). The cataract was the main cause of low vision were 96.7% table (3), also cataract was the dominant cause of blindness 86.4% table (4).

Subjects age shows significant different when compared to visual acuity P value 0.000, there is strong negative relationship between age and visual acuity (r= -0.629).

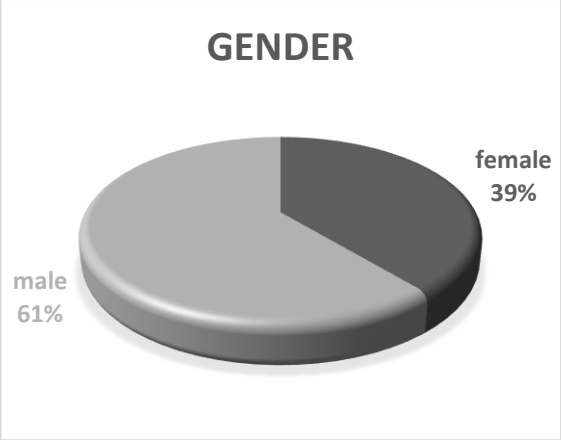

Figure 1: distribution of gender between the subjects.

Table 1: Distribution of age in the study

Age	Frequency	Percent
10-20	25	11%
20-30	19	8%
30-40	31	14%
40-50	47	21%
50-60	39	17%
60-70	38	17%
70-80	17	8%
80-90	10	4%
Total	226	100%

Over 40 years' subjects are the highest age group in the study 151 (67%).

Table 2: exhibits the frequencies and percentage of visual acuity in the better eye between the subjects in the study

VA	Frequency	Percent
1.00	173	76.64%
0.67	1	0.44%
0.5	1	0.44%
0.33	3	1.32%
0.25	8	3.52%
0.16	5	2.2%
0.1	10	4.4%
0.07	3	1.32%
0.05	9	4.0%
0.03	5	2.2%
0.02	6	2.64%
0.00	2	0.88%
Total	226	100%

0.00 present no light perception (total blindness).

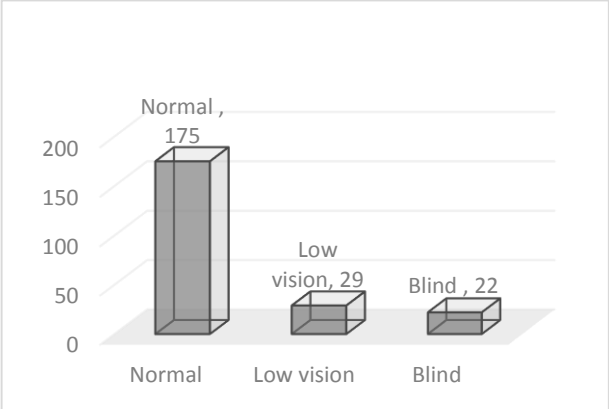

Figure 2: distribution of low vision and blindness in the study.

Table 3: Low vision causes

The cause	Frequency	Percent
Cataract	28	97%
Glaucoma	0	0%
Lens dislocation	1	3%
Total	29	100%

Table 4: Blindness causes

Cause	Frequency	Percent
Cataract	19	86.4%
Glaucoma	3	13.6%
Total	22	100%

Two of subjects who have glaucoma are totally blind VA (0.00) no light perception.

Discussion

Cataract was the leading cause of low vision, this result agrees with Liang Xu , 2006[13],who found that the frequent causes of low vision were cataract 36.7%, also agree with Jeremiah ngondi, 2005 [14], who also found cataract is the main cause of low vision 41.2% and disagree with feray Koc,2015 [15], who found retinal dystrophies 37% the main cause among Turkish adult population.

Cataracts were the leading cause of blindness followed by glaucoma which agrees with the, kamal H binnawi, 2013 {16}, who found that cataract was the major cause of blindness 57.4%, followed by glaucoma 17.3% in gazira state,Sudan, And mohammed M abdull, and etals,2009 {17}, who also found cataract was the commonest cause of blindness 43% in Nigeria. Also Erdem S, 2019 {18}, reveal that cataract was common cause of blindness among Syrian refugees living in turkey.

Subjects age shows significant different when compared to visual acuity P value 0.000, there is strong negative relationship between age and visual acuity (r= -0.629), in which with increasing age the visual acuity decreased.

Conclusion

Low vision and blindness remain the major public health problems in developing countries that need to be addressed. Cataract was the main cause of low vision and blindness in this study because refugee camps has no eye care centers or health centers and does not included in government insurance system for cataract surgeries removal which is the major concern. Regular medical and ophthalmic outreach programs and rehabilitation services should be implemented at refugee camps. Training of primary eye care workers who can provide eye health education is also recommended.

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