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Prevalence of visual impairment among children newly registered in primary schools in Basrah city

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Abstract

Background: Visual impairment and blindness are major public health problems in developing countries where there is no enough health care service. Assessment of vision pre-school admission is crucial for School Health Services with other goals of immunization monitoring and hearing, height, weight screening. Normal vision is important for leading normal life and for good educational activities. Children with any form of visual problems which affect acuity or eye movements will be at risk of school dysfunction.

Objective: The purpose of the study is to estimate the prevalence of visual impairment among newly registered children in primary schools in Basra City.

Patients and Methods: This is a cross sectional study involving 400 newly registered primary school children. The study was carried out during their visit to primary health centers as preschool assessments.

All children were newly registered in the first class were included in the study (211 boys and 189 girls). Each child was examined for visual acuity.

Results: The results of the study showed a total of 400 children were examined. The study population composed (52.7%) males and (47.3%) females, the majority (94.3%) were 7 years old and only 0.05% were 9 years old.

Prevalence of children with normal visual acuity was (66%) of study population, (27.7%) were borderline and nearly equal prevalence of unilateral and bilateral defects (3.3%) (3%) respectively.

Conclusion: The prevalence of visual impairment in this study is low with relatively high percent of border line defects that/s why school vision screening is still important as it serves as an opportunity to identify other ocular morbidities among children.

Keywords: Prevalence, visual equity, school health program

Introduction

Visual system is one of our important sensory systems. It is the primary means of integration between individuals and the external environment. Vision results from the entrance of light into the eye and the interpretation of this stimulus by the brain ^[1].

Normal vision is important for leading normal life and for good educational activities. Children with any form of visual problems which affect acuity or eye movements will be at risk of school dysfunction. Preschool children may suffer from impairment of vision due to different causes; many of these are preventable so vision screening of school children is of paramount importance, since detection of visual disorders at that age can save the eye from amblyopic eye (lazy eye), defined as reduced visual acuity without visible damage to the structure of the eye or the visual system ^[2]. Low vision is defined as a visual acuity of less than 6/18 with best possible correction on the other hand; blindness refers to visual equity of less than 3/60 with the best possible correction ^[3]. It is estimated that 1.6 billion people in the world suffer from impaired visual equity and the incidence is increasing ^[4].

The major causes of low vision and blindness includes cataract, refractive errors and trachomatous corneal opacity. These causes are either preventable or treatable ^[5]. According to WHO, about 285 million people are visually impaired worldwide and one individual becomes blind in each minute and a child in each 5 minutes. The burden of visual impairment is not distributed uniformly throughout the world; about 90% of visually impaired people are living in developing countries ^[6].

Vision has an essential role in a child's development, and visual defect is a risk factor not only for altered vision sensory development, but also for overall socioeconomic status

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throughout life. Early detection provides the best opportunity for effective treatment of eye and vision problems in children. Therefore, timely screening is vital to avoid lifelong visual impairment [7]. Childhood visual impairment has a significant impact on the educational achievement, career choices and social life of the affected individual [8].

The major cause of blindness in children varies widely from region to region, being largely determined by socioeconomic development and the availability of primary health and eye care services [9].

Eye condition is remarkably common and those who live long enough will experience at least one eye condition during their life, young children with early onset severe vision impairment can experience lower level of educational achievement so Eye care needs is an integral part of universal health coverage, all individuals need to receive the health services when they need [6].

Method

This is a cross sectional study involving 400 newly registered primary school children. The study was carried out in primary health centre during their visit for preschool assessment.

A special questionnaire form was designed for the purpose of the study, it consists of some information include the following:

- **Age in years**
 - 6
 - 7
 - 8
 - 9
- **Gender**
 - Male
 - Female
- **The visual acuity examination:** This measurement was obtained by the use of Snellen chart with letter E. Each child was asked to take the standing position 6 meters away from the chart in a properly illuminated room; each eye was tested separately by keeping one eye covered at a time while examining the other. The child was asked to read different directions of letter E. The visual acuity was measured at the last line that could be read clearly by the child.

According to the International Classification of Diseases Version 10 (ICD-10) classification was as follow

- **Visual acuity:** The result of examination was classified into the following groups.
 - Normal -6/6 in both eyes.
 - Borderline -6/9 in one or both eyes
 - Unilateral defect -6/6 or 6/9 in the better one and 6/12 or worse in the other eye.
 - Bilateral defect – 6/12 or worse in both eyes.

Analysis of the data was carried out using SPSS (Statistical Package for Social Science) version 26 and the results were presented as simple self explanatory tables with frequency tables and percentage.

Results

1. Characteristics of the study population

The study population composed of 211 (52.7%) males and 189 (47.3%) females.

The majority (94.3%) were 7 years old. About (3%) were 6 years and only 0.05% was 9 years old.

Table 1: Characteristics of the study population

| Variable | No. | % |
|-------------|-----|-------|
| Age (years) | | |
| 6 | 12 | 3% |
| 7 | 377 | 94.3% |
| 8 | 9 | 2.2% |
| 9 | 2 | 0.05% |
| Sex | | |
| Male | 211 | 52.7% |
| Female | 189 | 47.3% |
| Total | 400 | 100% |

2. Distribution of children according to visual acuity

Majority about (66%) of study populations were normal visual acuity, (27.7%) were borderline and nearly equal percent of unilateral and bilateral defects (3.3%) (3%) respectively.

Table 2: Distribution of children according to visual acuity

| Visual Acuity | No. of children | percentage |
|-------------------|-----------------|------------|
| Normal | 264 | 66% |
| Borderline | 111 | 27.7% |
| Unilateral defect | 13 | 3.3% |
| Bilateral defect | 12 | 3% |
| Total | 400 | 100 |

3. Distribution of children according to visual acuity and their gender

In this study, the prevalence of visual acuity impairment unilateral and bilateral was slightly higher among female (4.8%) (3.7%) as compared to males (1.9%) (2.4%) respectively and the majority of male have normal visual acuity (81.5%) while female only (48.7%).

Table 3: Distribution of children according to visual acuity and their gender

| Visual Acuity | Gender | | | | Total | |
|-------------------|--------|------|--------|------|-------|------|
| | Male | | female | | No. | % |
| | No. | % | No. | % | | |
| Normal | 172 | 81.5 | 92 | 48.7 | 264 | 66 |
| Borderline | 30 | 14.2 | 81 | 42.9 | 111 | 27.7 |
| Unilateral defect | 4 | 1.9 | 9 | 4.8 | 13 | 3.3 |
| Bilateral defect | 5 | 2.4 | 7 | 3.7 | 12 | 3 |
| Total | 211 | 100 | 189 | 100 | 400 | 100 |

Discussion

This study shows that the prevalence of visual acuity impairment unilateral and bilateral was slightly higher among female (4.8%) (3.7%) as compared to males(1.9%) (2.4%) respectively and this is supported by the study done in India [10], while majority of children show normal visual acuity (66%) and this is disagree with a study conducted in Saudi Arabia showed higher prevalence of normal visual acuity among female than that of male children examined in primary school children sample [11].

Also the prevalence of border line visual acuity was higher among female (72.9%) than (27.1%) of the total children with border line visual acuity while a study conducted in Ethiopia show the reverse that the prevalence of borderline visual acuity impairment was slightly higher among male (70%) and (30%) female [12].

In the current study, female children have higher prevalence of unilateral and bilateral visual impairment (4.8%) (3.7%) while male prevalence of unilateral and bilateral visual impairment (1.9%) (2.4%) respectively and this was similar to result of study conducted in Cairo ^[13]. Similarly with Nigerian study ^[7].

Conclusions

The prevalence of visual impairment in this study is low that 66% of children have normal visual acuity with relatively high percent 27.7% of border line defects that/s why school vision screening is still important as it serves as an opportunity to identify other ocular morbidities among children. Visual impairment was shown in unilateral defects in 3.3% and bilateral defects in 3% which

Recommendation.

1. Improving health and learning of school children through school based health and nutrition programs.
2. Improving School Health Program and train teachers to be oriented to common health problems related the primary school children.
3. Periodic visual screening to detect any correctable defect
4. Provision of appropriate educational program to the parents to help them to motivate their children and this will encourage parents to improve their communication with school staff this will also help the parents to get specific, direct and understandable information about their child health and educational performance.

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