Prevalence of refractive errors in school children

Introduction :

Uncorrected errors of refractions have become one of the major important public health problems worldwide nowadays. They include myopia , hyperopia and astigmatism . Myopia (nearsightedness)is an ocular disorder in which the optical power of the eye is very strong for the corresponding axis. (1) It represents a major health problem among school children and it is reported that there are about 80 millions myopic child in the world.(2) It has two groups simple myopia or non pathogenic (< 6 diopters) that starts since the childhood or adolescence but slows and become stable at second decade , and high myopia or pathogenic myopia (> 6 diopters) that is progressive and presents at early childhood. (3) Hyperopia or (farsightedness) is categorized by the degree of refractive error into : Low hyperopia is +2. 00D or less, Moderate hyperopia ranges from +2. 25 to +5. 00D, and High hyperopia is +5. 25D or more but rarely reach +8 D. (4) Astigmatism is a condition that may affect both farsighted and nearsighted people . It is due to corneal or lenticular irregularities that cause blurring of vision. Mild and moderate astigmatism have the range of (1 to 2 D) , severe astigmatism (2-3 D) , while the extreme astigmatism reach > 3 D . About 5-15% of children are considered to have refractive errors (world health organization WHO , 2001) . In 2002 , 161 million people globally have been reported to be visually impaired due to different eye diseases as cataract , trachoma and onchocerciasis (but errors of refractions as a cause was not included in such statistics) (WHO 2002). But since then , the WHO and the International Agency for the Prevention of Blindness(IAPB), both separately and with them the global initiative , VISION 2020: The Right to Sight, have worked very hard

to include uncorrected errors of refractions in such statistics due to their great importance in visual impairment occurrence. So on October 12, 2006 , the WHO has revealed the magnitude of visually impaired people due to uncorrected errors of refraction to be 153 millions either blind or of low vision , with at least 13 million children (aged 5–15 years) (5, 6)

Blindness is defined in terms of visual acuity (VA) as 3/60 in the better seeing eye and low vision as VA between 6/18 to 3/60 in the better seeing eye , but all on the base of the presenting visual acuity rather than the best corrected visual acuity . And so, uncorrected errors of refractions become the second main cause of preventable blindness (18%) after the cataract (39%). (7, 8). Uncorrected refractive errors are major problem in school children. Lead to inability to read what is written on chalkboard which greatly affect a child’s learning process.[19].

It has serious social effect on the child in school. Continuous blaming of the child as being lazy and stupid is very frequent by non-responsible teachers. schoolmates tease the child. These factors may lead to decrease the child’s performance leading to recurrent school failure. A study formed in Brazil showed the great impact of refractive errors on the child’s education. About 10% of these children at higher probability of dropping out of school. [11] Non-compliant Children who don’t wear spectacles had an average academic score lesser than compliant beers . But, there could be confounders for this like IQ.[17]

the prevalence of visual impairment from uncorrected refractive errors in some regions appears to be higher in urban areas than in rural areas,

despite the presence of better health services. This may be due to a high incidence of myopia in these populations because of direct relation between increased access to education and myopia.[12] The lack of screening, and the availability and affordability of refractive corrections are the most important. [12, 13]

Many factors that contribute for refractive errors remaining uncorrected like lack of awareness and recognition of the problem at personal and family level and community level, equipment for diagnosis and treatment of errors of refraction are not available (WHO, 1993). In the age group 5–15 years, non-correction of refractive errors is due to several factors like absence of screening program. However, cultural barriers and believes can play a role, as shown in studies from where free and easy routine screening program and aids to correct errors of refraction are present. [12, 13] Poor access to refractive services in rural children, despite the fact that refractive errors are less common amongst rural children.[14, 15] cosmetic factors like that the spectacles make the face look more nerdy, which may be more acceptable to girls and boys are more prone for activities and sports in rural areas.[13] A Tanzanian study showed that spectacles provided free of cost under insurance coverage, were used less as compared to those the patient pay for them.[18] The age factor showing controversial effect on compliance of spectacles wear, increasing the age has minor negative effect in a study from Mexico, while it shows a positive effect in a study from rural china.[16, 17] less educated parents is a contributing factor for non-compliance of spectacle wear. Father’s education has more prominent effect than mother’s

educational level. This may be due to that educated women always have equal or more educated husbands.

Children from larger villages were more non-compliant than those from smaller villages. Cosmetics is not an important issue in small villages.[19] Non-availability of different types, shapes, colors, and sizes of spectacles is another cause. only one size spectacles that fit all ages is considered unfashionable. Small refractive errors (< 1. 0D) might not be corrected as the children don’t complaint of uncorrected visual acuity and do not use the spectacles.[20]

Many studies have been conducted in different parts of the world using the same protocol . The latest global estimate of prevalence of visually impaired children (5-15) due to refractive errors was 0. 97% with higher prevalence in china and urban areas of south east Asia (9)

Few studies were also conducted in Egypt , but one of largest studies conducted in Cairo , the capital of Egypt, using a large sample (6000) children from different governorates and socioeconomic classes has revealed the prevalence of refractive errors (VA = or < 6/12)among schoolchildren to be 22. 1% .

So the objective of our study is to measure the prevalence of refractive errors among schoolchildren from (5 to 18 years) at El-Demerdash hospital .

Subjects & Methods:

A cross-sectional descriptive study is to be conducted where participants are selected from patients attending the Ophthalmology Department, at El

Demerdash Hospital, with a total of 500 children; 250 boys and 250 girls. Age group ranges from 5-18 years and the study will take place in the period from February 2014 till July 2014. Each participating child will have his/her personal details recorded on a form, and will undergo a standard ophthalmological examination including: Visual Acuity (VA) with/without glasses, cycloplegic retinoscopy, cycloplegic autorefraction, external eye and fundus examination with all the results recorded. Refraction will be done using retinoscopy after 1% cyclopentolate eye drops instilled in the eyes at least half an hour prior to the examination. Only children who have a VA of less than 6/6 in at least one eye will undergo retinoscopy.

Inclusion criteria : Any child at the school age of 5-18 years, attending the Ophthalmology Department, at El Demerdash hospital as inpatients, whose parents will sign a written informed consent forum.

Exclusion criteria : Children who are unwilling to undergo the examination, although an informed consent is signed by their parents. Children with co-morbidities or other illness, or children taking any drugs that might have ocular side effects.

Sampling method used is the convenience (purposeful) method, sample size of 500 patients with a sampling frame from the patients' records are to be obtained at the start of the study. *Data analysis :* Data will be entered into a computerized database-using the CDC-WHO package EPI-INFO, and results of analysis are presented in the form of tables.

Ethical considerations :

The study protocol is approved by the ethical committee at Ain Shams University. Written informed consent are taken from parents or legal guardians as a pre requisite for inclusion

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