LOW VISION AIDS

Essay

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بسم الله الرحمن الرحيم

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LIST OF APPREVIATIONS

Subject

AAO: *American Academy of Ophthalmology.*

ABB: Age Blindness Burden.

AOA: *The American Optometric Association*.

ARMD: Age related macular degeneration.

BCVA: Best corrected visual acuity.

BSI: *British Standards Institution.*

BVD: Back vertex distance.

CCTV: closed-circuit television.

CSF: contrast sensitivity function.

EEPs: electrical evoked potential.

ERG: Electroretinography.

EVES: The electronic vision enhancement system.

EVP: Equivalent viewing power.

EVD: Equivalent viewing distance.

GPS: General positioning satellites.

Habitual EVD: Habitual reading distance.

HMD: Head-mounted electronic devices.

ICIDH: International Classification of Functioning, Disability and Health.

IMT: Implantable miniature telescope.

IOL: Intraocular lens.

IOL- VIP: Intraocular lens to visually impaired patient.

IPD: Inter pupillary distance.

LMI: Lipshitz macular implant.

Log MAR: Logarisme minimal angle of resolution.

LVAs: Low vision aids. .

M: Magnification. .

MAVSS: Microcomputer-based artificial vision support system.

MET: Melbourne edge test. .

MFERG: Multifocal electroretinogram. .

NIH: National Institutes of Health.

PMMA: polymethylmethacrylate.

NPD: Near pupillary distance.

RBB: Regional blindness Burden.

Required TPS: Required threshold print size.

RGC: Retinal ganglion cell.

TBI: Traumatic brain injury.

UNCD: Ultrananocrystalline diamond.

VCTS: Vision contrast testing system.

VEP: visually evoked potential.

VER: visual evoked response.

VF: Visual field.

VLBW: Very low birth weight.

WHO: *World Health Organization.*

WPM: Word per minute.

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Introduction and Aim of the work.

Low vision means visual abilities that are less than needed by the patients for the performance of his essential activities**.**

World Health Organization (WHO), in ***1992*** defined low vision as the one who has impairment of the visual functioning even after treatment and / or standard refractive correction, and who has a visual acuity of less than 6/18 to light perception, or the visual field of less than10 degree from point of fixation, but potentially able to use planning or execution of a task.

In **1997*, The American Optometric Association (AOA)*** published another definition which considered more items as criteria for low vision. They define visual impairment as function limitation of the eyes or visual system manifesting as reduced visual acuity, contrast sensitivity, visual field loss, photophobia, diplopia, visual perceptual difficulties, or any combination of the above.

Low vision may be caused by a number of diseases. According to data analyzed, the most common causes in childhood period are optic atrophy, congenital nystagmus, cataract, glaucoma and congenital brain and nervous illness. While the main causes among (18-65 years) patients are retinopathies, glaucoma, uveitis and retinal detachment ***(Evan, 1995).***

In this respect ***Nelson*** in***1987***, reported that a growing demand for low vision rehabilitation as the proportion of elderly population increases and people of macular degenerative diseases forms the majority of patients requiring low vision services.

Patients suffering from low vision should undergo visual acuity testing for far and near, visual field and macular function examination to assess the degree of visual handicap. Moreover, history, visual symptoms, patient's lifestyle and his requirements should be taken into consideration ***(Watson, 1995).***

Low vision aids (LVAs) are divided into two main categories: Optical and non optical. Optical LVAs are providing magnification in order to compensate for reduced visual acuity while contrast is maximized with lighting, The available optical LVAs include magnifying lenses, glasses, telescopes, contact lenses and projectors devices. The non optical LVAs include large print books, reading lamp, coated lenses to reduce glare and reading slit.

In addition the electronic LVAs is expanding, they founded in several types, some optical and others non optical (auditory and tactile models), the electronic LVAs is a new image for low vision opticians ***(Harvay, 2004).***

In recent years, there has been considerable interest in new approaches for low vision rehabilitation, one of this is the intra ocular LVAs as telescopic, prismatic intraocular lens and the retinal microchips.

As stated by the ***American Academy of Ophthalmology (ACO) in 2001***, the items which are included in the management of low vision are:

. The use of optical and non optical LVAs.

. Environmental modification.

. Orientation and Mobility training.

. Sensory substitution.

. Psychological rehabilitation.

-Aim of the work:

The aim of this work is to review low vision definition, causes, incidence and methods of assessments of patients, types of low vision aids, limitation of LVAs in practice and rehabilitation of low vision patients.

Chapter (1)

The low vision.

The term "low vision" was coined in the second half of the 20th century. Prior to that time people dealt with visual impairment in black and white terms, a patient was either sighted or blind .Blind patient were taught Braille and sent to school for blind. If any of them had a residual vision, they were discouraged in order to "save" the sight. The "sight saving" techniques were widely accepted practice from 1913 until 1950 **(Sardegna et al., 2002).**

Mehr and Freid in 1975 defined low vision or partial sighted as reduced central acuity or visual field loss even with the best optical correction provided by regular lenses.

For many years the terms impairment, disability and handicap have been used inappropriately. Then the International Classification of Impairment, Disability and Handicap (ICIDH), was introduced in **1980** by the ***World health organization (WHO)*:**

Disorder: Usually used to describe the impact of the disease or injury on the anatomical structure of visual function within the organ or, in the case of vision, a component of the visual pathway.

Impairment: The consequence, in terms of measurable loss or departure from functional capacity, to the bodily organ, affected by disorder or disease, of an anatomical or physiological function.

Disability: The consequence to the patient in terms of the effect of the impairment on the patient's abilities.

Handicap: The consequence of the disability in terms of how it affects the patient's ability to interact with society.

World Health Organization in 1980 provided a general classification of impairments, disabilities, and handicaps (ICIDH). This classification later on modified to the International Classification of Functioning, Disability and Health to be well adapted to the visual system ***(World Health Organization, 2004).***

World Health Organization (WHO) in 1992 previously defined the person with low vision as the one who has impairment of the visual functioning even after treatment and / or standard refractive correction, and/or who has a