

Assessment of Visual Functions in Three Different Illuminations

Shaijan Mathew¹, Blessy Xavier¹, Aparna S¹, Anitha Arvind²

¹Department of Optometry, Sankara College of optometry, Bangalore, India

²Department of Optometry, Eye Care centre, Bangalore, India

*Corresponding author: Shaijan Mathew, Department of Optometry, Sankara College of optometry, Bangalore, India, Email- shaijanmathew27@gmail.com

Received date: October 04, 2021; Accepted date: October 18, 2021; Published date: October 24, 2021

Copyright: © 2021 Mathew S. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Editorial

Illumination level alters visual perception and performance. The visual system is constantly exposed to different levels of illumination ranging from photopic to scotopic levels. Age and ocular condition also contributes to visual performance hence it was important to assess the visual functions in different age groups under different levels of illumination.

30 participants were selected based on inclusion criteria of the study. Subjects were divided into three groups: Group 1: 18-28 years, Group 2: 29-38 years and Group 3: 39 years and above. The study was conducted in a room whose illumination was adjusted by a rheostat to provide three different levels of illuminations 10 lux (scotopic), 100 lux (mesopic) and 400 lux (photopic). Visual function tests such as visual acuity, contrast sensitivity, colour vision, stereopsis, and modified Thorrrington test, accommodative facility and vergence facility were evaluated under each levels of illumination for every age group.

Group 1 showed no difference in visual functions under the three illumination levels for visual acuity, contrast sensitivity and stereopsis. Significant changes ($p=0.00$) were noted between illumination levels for Group 2 and Group 3 for visual acuity, contrast sensitivity and stereopsis. Mean color vision error scores of all age groups were highly significant ($p=0.00$) between illuminations wherein the scores ranged from 60.6 ± 21.62 to 186.80 ± 50.17 . Scotopic illumination

showed significant ($p=0.038$) change in score between age groups for all visual functions.

The study concludes that illumination levels alter visual functions in people. Significant decrease in visual functions is noted with increasing age. Visual function examination under low illuminance can elicit impaired function in a person whose vision may be normal when measured under ideal conditions hence the need for visual function examination under varying levels of illuminance in adults especially with underlying ocular conditions.

References

1. Shlaer S (1937) The relation between visual acuity and illumination. *J Gen Physiol* 21: 165-188.
2. David A, Smet KA, Whitehead L (2019) Methods for assessing quantity and quality of illumination. *Annu Rev Vis Sci* 5: 479-502.
3. Romdhani S, Blanz V, Vetter T (2002) Face identification by fitting a 3d morphable model using linear shape and texture error functions. *ECCV* 3-19.
4. Montés-Micó R, España E, Bueno I (2004) Visual performance with multifocal intraocular lenses: mesopic contrast sensitivity under distance and near conditions. *Ophthalmol* 111: 85-96.
5. Vasilescu Mao, Terzopoulos D (2003) Multilinear subspace analysis of image ensembles. In 2003 IEEE Computer Society Conference on Computer Vision and Pattern Recognition 2: 20-93.