Occupational Optometry Service – An Overview

R. Krishnakumar, A. Rashima and P.P. Santanam

Elite School of Optometry, Unit of Medical Research Foundation, 8, GST Road, St Thomas Mount, Chennai - 600 016

Correspondence:
R. Krishnakumar, Principal, Elite School of Optometry, Unit of Medical Research Foundation, 8, GST Road, St Thomas Mount, Chennai - 600 016.
Email: kk@snmail.org

INTRODUCTION

Occupational optometry service is the new discipline of optometry in India. It was initiated as a subject in the undergraduate optometry programme for the first time in India in 1987 by Dr P.P. Santanam, an eminent occupational health professional at Elite School of Optometry. It got into exclusive clinical optometry practice in the year 2012 when the first occupational optometry services were initiated by Elite School of Optometry/Sankara Nethralaya, a unit of Medical research foundation.

WHAT IS OCCUPATIONAL OPTOMETRY?

Occupational optometry is the branch of optometric practice that is concerned with the efficient and safe visual functioning of an individual at work.

ROLE OF OCCUPATIONAL OPTOMETRIST

The role of optometrists in occupational optometry services includes primary eye care, eye safety consultation and vision consultation.

In our conventional service, anyone who is working in an industry will go for eye examination to either an optometry or ophthalmology clinic. The limitation in this system is that most of the time the understanding of the visual demand and work environment of the person at work is not taken into consideration in counselling or when optical prescriptions are given.

In Dr Santanam's *Text book of Occupational Optometry*, the role of the occupational optometrist is described as follows:

a) Diagnosis of visual deficiency and correct where necessary and possible.

b) Identify occupational causes of vision and eye problems. In indicated cases referral to the eye hospital.

c) To help establish the visual requirements or standards for jobs.

d) Be able to advice on eye protection.

e) Visual Impairment assessment.

Vision Screening for the employees – preferably using various occupational vision screeners available in the market. For example, Titmus vision screener, Keystone Vision Screener, Essilor Ergomax.

Seven-step approach

An occupational optometry service includes the following seven steps:

1. **Visual Task analysis of different jobs in work area**

   It aims at acquiring the information on visual demand each job creates on the individual; assess the need for the visual function required for the job. This process of visual task analysis needs visit of the occupational optometrist to the work or job site/station to understand the process, therefore enhance the understanding of visual demand at work site for the individual. For example, to arrive at the visual acuity demand for a job, it is essential to measure the working distance between the individual at work and the task, and the minimum size of the task itself. If the job involves more of near working distance, the need for the understanding the efficiency of the accommodation and convergence is critical for the job. If the job demands colour vision, for example in the dyeing industry, then knowledge of the colours or the hues that are used in the work environment, will decide on the colour vision demands of the individual at work.

2. **Determination of the visual capability and defects of an individual**

   Based on the visual task analysis, the battery of the visual functional tests that need to be done can be decided. These tests will help the optometrist in addition to routine eye examination to know the visual capability of the individuals at work and therefore know about whether they are visually competent; matching with the visual demand arrived from the visual task analysis. This step will help the optometrist to plan the intervention required to achieve the goal of matching the visual demand and the visual capability of the individual – a step in fulfilling the ILO/WHO aim of occupational health.

3. **Management and referral**

   Effort will be taken to decide on the appropriate intervention in the form optical and/or protective eyewear in this step based on the outcome of the first two steps. The instructions of usage and maintenance of the protective eyewear should be given in this step. If the individuals are found to have any ocular pathology, they should be referred to the respective specialized ophthalmologists.

4. **Indoctrination and education of employees**

   Awareness on how to safeguard one's eye

sight in the work environment, advising on appropriate eye protection wear, the maintenance of the protective eyewear, appropriate reasons for which the protective eyewear need to be replaced or repaired, on the common eye diseases and the need for regular eye check-up are the essential components in this step.

5. **Report to the employer**
   A report about the visual demand in various work- stations and the visual capability of the individuals in those work stations should be submitted to the employer. This report should also carry information about the relevant recommendations which might enhance the visual performance of the individuals and therefore consequent improved productivity. For example, the ideal protective eye wear, appropriate lighting in the work environment will be provided in the report.

6. **Follow-up**
   Usually the follow-up services need to be provided to see the impact of the service provided. This involves the visit to the work areas, interaction with the supervisors, employees and the employer.

7. **Pre-placement evaluation**
   In addition to the above steps, optometrists can contribute to the pre-placement and periodic medical examination of employees and give input in case of compensation evaluation.

CASE STUDIES

Tannery industry

Occupational optometry service was offered to a tannery industry. Since most of the products supplied to the clients were rejected, the employer was concerned about the mismatch of the original colour planned of the Tannery goods as against that was supplied. The occupational optometry team visited the manufacturing set-up to understand the process and the environment. All the employees were advised to undergo colour vision test (Farnsworth Munsell 100 Hue test). The occupational optometrist suggested the employer, the possibility of segregating the employees based on their ability to discriminate colours (Hues). Based on the colour vision testing, the employees were classified into superior, average and low colour discrimination ability. The occupational optometry team gave recommendation to match the people with superior colour vision ability and the work which demands more of colour matching and colour arrangement. In addition, the occupational optometrists also recommended the use of light source which do not distort the colour vision. The employer expressed satisfaction with the outcome which helped him to resolve the problem of rejection of the products.

Iron and steel industry

Occupational optometry service in a sector of this large size was always challenging. The team of occupational optometrists visited the manufacturing set-up and understood the process involved in such industry. Based on the observation and interactions with the occupational safety personnel and the supervisor in various departments of the industry, the departments were classified into visual demanding and the visually hazardous departments. Visual task analysis was done to all the visual demanding departments. The occupational optometry team also discussed about the need for appropriate *safety eyewear* among employees in the hazardous departments and for people who were exposed to chemicals about the need for monitoring the colour vision to rule out neurotoxicity. The employer was provided with the *vision standards* for different departments which they can use for recruitment purposes and for annual monitoring of the employees. In addition, occupational health centre was recommended to use *vision screening device* for the periodical evaluation. A survey on visual symptoms among the computer users of the industry, and awareness on visual hygiene were given. A detailed report on our observations, findings and recommendations was given to the employer.

Petrochemical refinery

The objective of the occupational optometry service in the refinery was to know the visual function status of the employees who were exposed to various organic solvents. FM 100 Hue test was done to the employees and relative dyschromatopsia was calculated. In a controlled environment, the colour vision defect was not noted. However, the recommendation was provided to monitor the colour vision using appropriate colour vision tests. Instead of routine ishihara pseudoisochromatic test, the recommendation to use tests like D- 15 or FM 100 Hue was advised during periodic review.

Conclusion

Proper prescription of glasses and other visual interventions enhances the visual ability, improve visual comfort and enhances morale for better productivity – achievable through proper occupational optometry services.

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