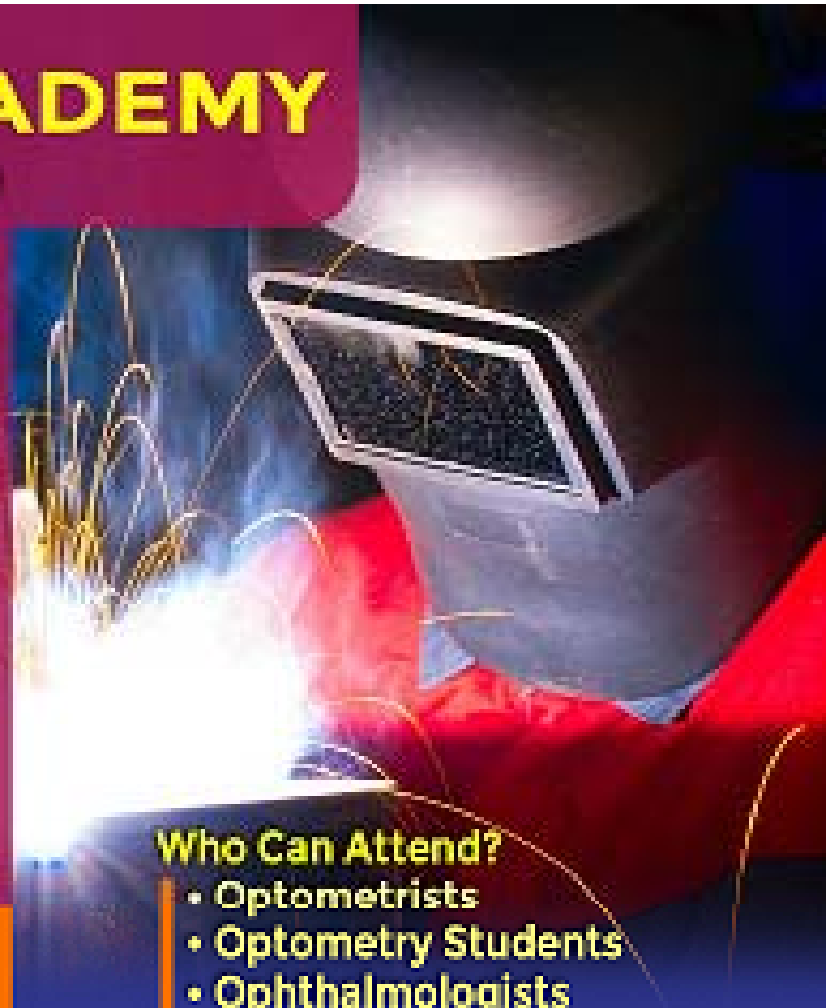
TWINTECH ACADEMY

TWINTECH ACADEMY

Welcomes you to a CME on

OCCUPATIONAL OPTOMETRY

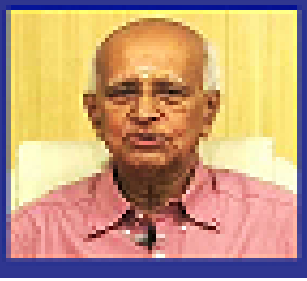
Key to enhance visual performance and comfort, safety and productivity



on 17th October 2020, Saturday at 5.00 PM (IST)

Who Can Attend?

- Optometrists
- Optometry Students
- Ophthalmologists
- Ophthalmology - PG/Fellows
- Occupational Health, Occupational Safety , Occupational Hygeine professionals



Chief Guest

Dr. P.P. Santanam

Father of Occupational Optometry
First Principal of Elite School of Optometry, Sankara Nethralaya
Former President - Indian Association of Occupational Health

TwinTech Healthcare Academy

{Unit of TwinTech Academy Business Management Solutions Pvt.Ltd.)

CME on Occupational Optometry

17th October 2020, Saturday

Time : 5.00PM to 6.30 PM (IST)

Agenda

Time	Speaker	Topics
5.00 PM	A Mahalingam TwinTech Academy	Welccome Address and on TwinTech Academy
5.03 PM	Dr R Krishnakumar CME - Organizer & Moderator	About the CME and Introduction to Chief Chief Guest and Faculty.
5.10 PM	Address by Chief Guest Dr PP Santanam Father of Occupational Optometry in India	
5.20 PM	Dr R Krishnakumar M Phil, Ph D	Enhancing workers productivity through occupational optometry services at industry.
5.45 PM	Dr Rashima Asokan, M Phil, Ph D	Incorporating Occupational Optometry to strengthen your clinical practice
6.05 PM	Q & A / Discussion / Concluding Remarks	Dr R Krishnakumar
6.30 PM	Vote of Thanks	A Mahalingam A

A Mahalingam

M B A (HM), PG DOM, Dip in T&D (ISTD),BSOA(BITS),EDHM (LIBA)

Managing Director
TwinTech Academy, Chennai
President
Association for healthcare
Management Professionals – India

3 decades of Healthcare Services and Academics.
An academician & healthcare administrator par excellence, he has impressive academic credentials in diverse areas such as Hospital Management, Operations Management, Training & Development from reputed educational institutions like LIBA, IGNOU, BITS, Pilani to name a few besides attending and as well as organizing high profile Total Quality Management programs, seminars and training sessions.
He is associated with TwinTech Academy and Association for Healthcare Management Professionals and offering various Healthcare, Management and Education Program and Projects too.
He is well oriented and experienced in Non-Profit Organizations, Corporate Healthcare settings and Healthcare Academics and he also well connected with professionals in healthcare and academics in both domestic and international spheres.

Dr PP Santanam,MBBS, DIH, FIAOH

Founder & Advisor, Occupational Optometry Services

Dr P.P.Santanam, aged 83 years, is a medical graduate(1960) of Madras University and obtained the Post Graduate Diploma in Industrial Health, with rank, from the All India Institute of Hygiene and Public Health, Calcutta in the year, 1966.

Planned, organised, established and successfully ran one of the earliest Occupational Health Department in South India at **Neyveli Lignite Corporation** which employed about **20,000 people**. Serving as Medical Officer at **Lucas-TVS** a large automobile ancillary component manufacturing company employing 4000 people at Chennai, apart from routine curative and preventive work, established Occupational Health Services, as envisaged by ILO recommendations 1959(No 112). This work enabled the company to be a model centre for visits by medical and nursing students of some medical colleges of the University of Madras. Between 1981 and 87 served in **Barbados, West Indies**, as a Commonwealth Fund for **Technical Cooperation Expert** to organise Occupational Health Services in that country, which would fulfill the requirements of ILO. Was **the first principal of Elite School of Optometry** (Sankara Nethralaya/ Medical Research Foundation), the first ever institution in India to offer a four years degree programme in Optometry. Founder and pioneer in India **to introduce the subject of Occupational Optometry** (a science dedicated to health and safety of vision as it relates to any occupation or work) in the curriculum in the year 1988 and Occupational Optometry Services at Sankara Nethralaya in the year 2012. Continues, till today, as the Professor of occupational optometry at the Elite School of Optometry. Edited and authored several chapters in the book: **'Dr Santanam's Text Book of Occupational Optometry'** in 2015, the first ever book published in the world on this subject. Authored and co-authored 18 papers presented in conferences on occupational health and occupational optometry and some published in peer reviewed journals. Was the **Hon. General Secretary (1977-79) and President (1991) of the Indian Association of Occupational Health**. The Indian Association of Occupational Health for his contribution to occupational health in India and internationally, gave him in **1995 the 'Best Resource Person Award'**, in the year **2007 honoured him as "Fellow of Indian Association of Occupational Health"** and in **2020, bestowed on him "Dr C.K. Ramchandar Memorial Lifetime Achievement Award**". He has instituted Awards, one, "Judge. P.V. Parameswara Iyer and Smt. Kamala Bai Endowment Award" for PhD, research and optometry related training, and the other "Dr. S.Ramakrishnan and Smt. Bhagavathy Endowment Award" for occupational eye/vision related research and community services.

Dr. R. Krishna Kumar Ph. D,

Freelance Optometrist & Educationalist.
Mentor, Occupational Optometry Services, Sankara Nethralaya

- Served as the Occupational Optometrist for almost 10 years at Sankara Nethralaya.
- He has years of experience as a clinician, teacher and researcher in the field of occupational optometry
- His services expanded to both organised and unorganised sectors. He offered his occupational optometry services to different industries namely, iron & steel, rubber, tyre, automobile, electronics, petrochemical industries, and also served thousands of workers associated with unorganised sector.
- He was also recognised by Indian association of occupational health (IAOH – TN chapter) to give Dr. Deivasigamani memorial oration in the year 2016.
- He also published scientific articles in various peer review journals and also joint editor and chapter contributor of the first of its kind book in India on occupational optometry as well as chapter contributor in another book on occupational health.
- He had presented many scientific papers in various national level occupational health conferences.

Assistant Professor, Elite School of Optometry
Head - Occupational Optometry Services
Senior Optometrist &
Researcher - Glaucoma Project

Medical and Vision Research Foundation
Sankara Nethralaya, Chennai -6

Dr. Rashima A, M Phil, PhD (Optometry)

Dr Rashima Asokan is currently an Assistant Professor at Elite School of Optometry and leads the occupational optometry services of Sankara Nethralaya.

She is actively involved in clinical research in Glaucoma. She, along with the study team has published their works in many national and international peer-reviewed journals and currently holds more than 30 peer-reviewed publications.

She has presented at various national and international conferences and received awards; To name a few: Young scientist award and Golden Jubilee award from the Indian Association of Occupational Health. She is also a proud recipient of Endeavor Executive Fellowship (Australia) and a competitive grant from the Glaucoma Foundation (The US).

Her area of research includes Environmental effects on the eye, Glaucoma, Occupational ocular disorders, Innovative education models in Optometry.

She also holds as a reviewer for international journals.

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ENHANCING WORKERS PRODUCTIVITY THROUGH OCCUPATIONAL OPTOMETRY SERVICES AT INDUSTRY

Dr. R Krishna Kumar Freelance Optometrist & Educationalist

email ID : kkramani93@gmail.com

Contents

- What is Productivity ?
- Vision Impairment and productivity
- Dry eye and productivity
- Lighting and productivity
- Impact of vision care on productivity
- What is Occupational optometry services ?
- Take home MESSAGE

What is Productivity ?

Productivity is the quantity of work produced by a team, business or individual. **Efficiency**, on the other hand, refers to the resources used to produce that work. So, the more effort, time or raw materials required to do the work, the less **efficient** the process.

VISION PROBLEMS AND PRODUCTIVITY

- Global potential productivity loss associated with the burden of Vision impairment was estimated at $ 244 billion (2015), € 1.51 million/year (2019)
- Global productivity loss from Uncorrected RE estimates to $ 202 billion/ annum (2012)
- Global productivity loss due to UnCx Myopia is $ 49 billion (2019)

VISION PROBLEMS AND PRODUCTIVITY

- Global Productivity loss due Myopic Macular degeneration is $ 6 billion (2019)
- Global productivity loss due to uncorrected Presbyopia is $ 11,023 billion to 25,367 billion (2018)

1. Ana Patricia Marques, Antonio Filipe Macedo, Pedro Lima Ramos, Laura Hernandez Moreno, Thomas Butt, Gary Rubin & Rui Santana on behalf of the Portuguese visual impairment study group (PORVIS-group) (2019) Productivity Losses and Their Explanatory Factors Amongst People with Impaired Vision, Ophthalmic Epidemiology, 26:6, 378-392, DOI: 10.1080/09286586.2019.1632904
2. T.R. Fricke, N. Tahhan, S. Resnikoff, *et al.* Global prevalence of presbyopia and vision impairment from uncorrected presbyopia: systematic review, meta-analysis, and modelling. Ophthalmology, 125 (2018), pp. 1492-1499, 10.1016/j.ophtha.2018.04.013
3. Naidoo K.S., Fricke T.R., Frick K.D., Jong M., Naduvilath T.J., Resnikoff S., Sankaridurg P..Potential Lost Productivity Resulting from the Global Burden of Myopia: Systematic Review, Meta-analysis, and Modeling (2019) *Ophthalmology*, 126 (3) , pp. 338-346.

- 90% of individuals experiencing near-vision loss encountered problems with their daily work

- 23% of employees reported- compromised their ability to generate income

- Uncorrected vision - 3 times more rejection by quality control supervisors

Eyeglasses for Global Development: Bridging the Visual Divide

Smith, E., Congdon, N., Frick, K., Kassalow, J., Naidoo, K., & Sloan, J. A. (2016). Eyeglasses for Global Development: Bridging the Visual Divide. World Economic Forum.

DOI: 10.1539/joh.48.407 • Corpus ID: 455010

Visual Problems among Electronic and Jewelry Workers in Thailand

O. Untimanon, Wanpen Pacharatrakul, +4 authors V. Chongsuvivatwong • Published 2006 • Medicine • Journal of Occupational Health

VISION PROBLEMS AND PERFORMANCE

- Untimamon et al., 2006 compared the electronic and the jewelry workers to know the visual problems among them
- 26.6% had eye strain, 14 % eye pain, 11.2% eye irritation
- Uncorrected visual acuity noted in both groups affecting visual performance

PRESENTEEISM & WORKER OUTPUT

- Vision problems → Absenteeism / Presenteeism
- Workers with visual impairments are more likely to be dissatisfied with their jobs
- Presenteeism
  - Results in 32 times → productivity losses

http://www.healthysightworkingforyou.org/?category=3&page=productivity

DRY EYE

LIFESTYLE DISEASES

Dry eye disease to affect 50% urban Indians by 2030

EXPRESS NEWS SERVICE
@ Hyderabad

NEARLY half of India's urban population is likely to be affected by dry eye disease by 2030, making it a bigger health concern than lifestyle diseases such as diabetes and heart attack, pointed out a recent study by researchers from L V Prasad Eye Institute (LVPEI).

The study pointed out that area of residence, socio-economic affluence and professional work, including computer-based vocations, could play a role in determining the percentage of risk. Men in their twenties and thirties and women in their forties and fifties are vulnerable to the disease, researchers said.

LVPEI Centre for Ocular Regeneration director Dr Sayan Basu who carried out the study along with Dr Anthony Vipin Das analysed data records of 1.45 million patients using LVPEI's indigenously developed eyeSmart Electronic Medical Records (EMR) system.

The study estimated that based on current incidence rates, 45 per cent of India's urban population is likely to be affected by dry eye disease by 2030, roughly translating to a staggering 275 million people. Even rural India is likely to see 17 million new dry eye disease patients every year according to the study.

"Dry eye disease not only affects the patient's vision, but also disturbs their quality of life, causing anxiety and depression, often affecting their professional productivity. However, if detected early and treated appropriately, patients can lead a normal," Dr Basu said.

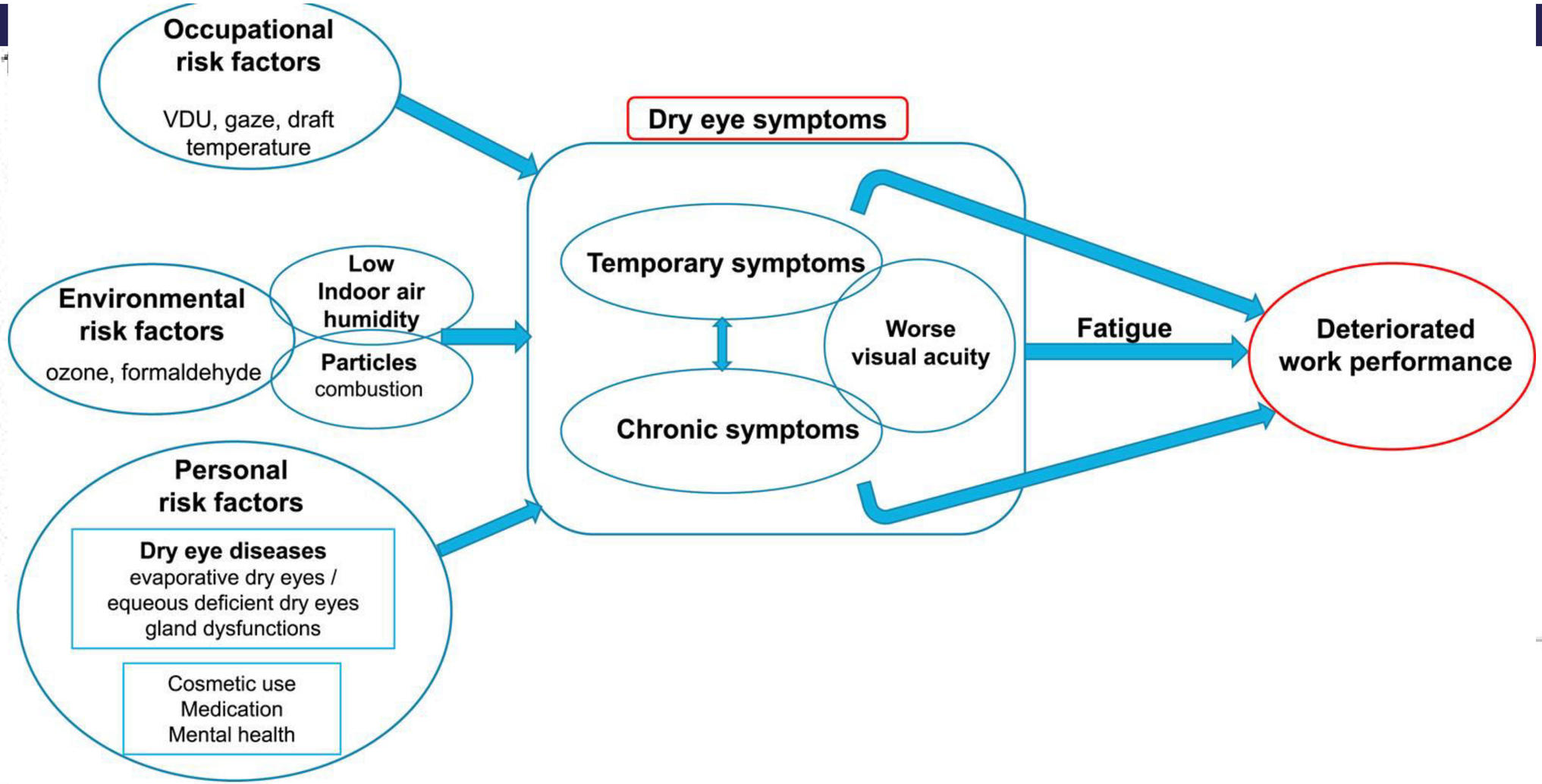
"At times, dry eyes can be associated with serious medical conditions such as arthritis, which if neglected can lead to irreversible visual impairment and blindness. Therefore, it is critical that people at risk get screened for the condition and seeks timely relief," he added.

The New Indian Express Pg-3 (01-03-2019)

Dry eye symptoms in offices and deteriorated work performance – A perspective

Peder Wolkoff

National Research Centre for the Working Environment, Lersø Parkallé 105, DK-2100, Copenhagen Ø, Denmark



Mean WPAI Domain Score

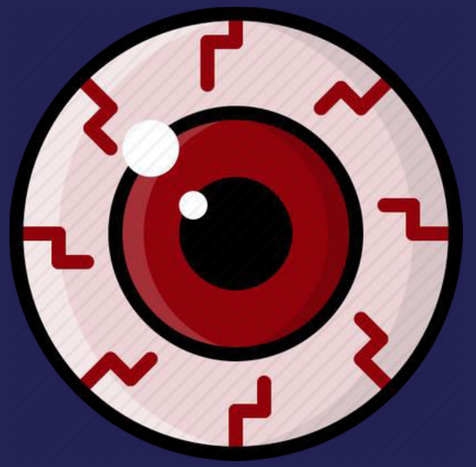
Multicenter Study > Ocul Surf. 2019 Jul;17(3):484-490. doi: 10.1016/j.jtos.2019.04.004.
Epub 2019 Apr 2.

The relationship between occupation and dry eye

Shehnaz Bazeer [1], Nomdo Jansonius [2], Harold Snieder [3], Christopher Hammond [4], Jelle Vehof [5]

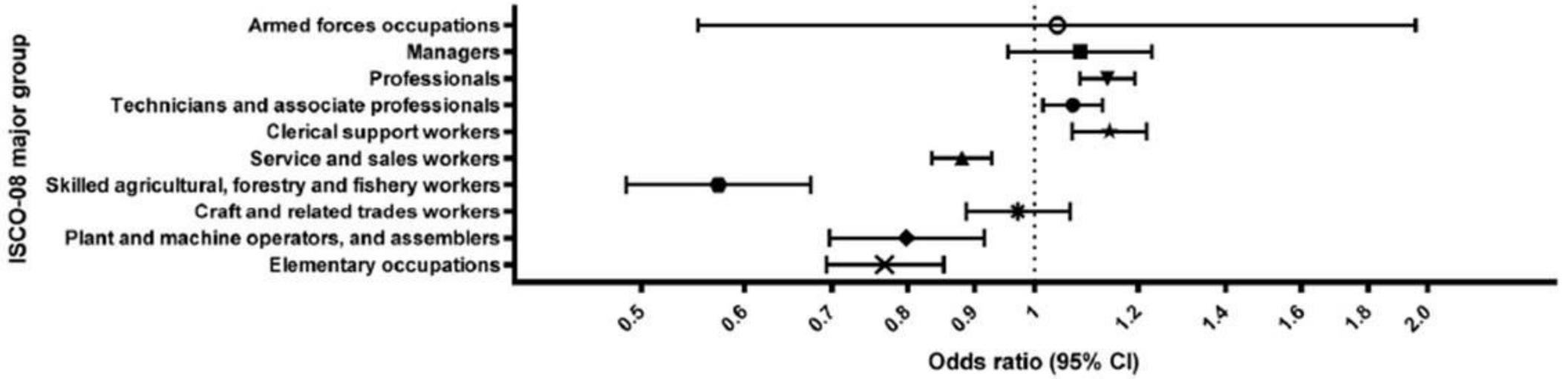
Affiliations + expand

PMID: 30951831 DOI: 10.1016/j.jtos.2019.04.004



The ISCO-08 (International Standard Classification of Occupations 2008) system was used to code occupations.

Major Groups	
1	Managers
2	Professionals
3	Technicians and Associate Professionals
4	Clerical Support Workers
5	Services and Sales Workers
6	Skilled Agricultural, Forestry and Fishery Workers
7	Craft and Related Trades Workers
8	Plant and Machine Operators and Assemblers
9	Elementary Occupations
0	Armed Forces Occupations



Association between major groups of occupation and symptomatic dry eye, corrected for age and sex only.

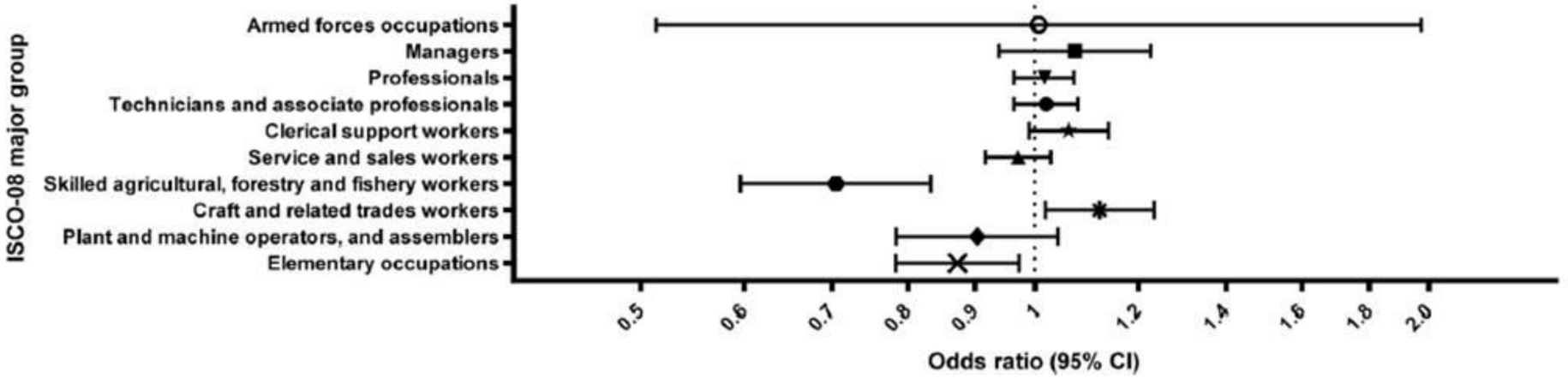
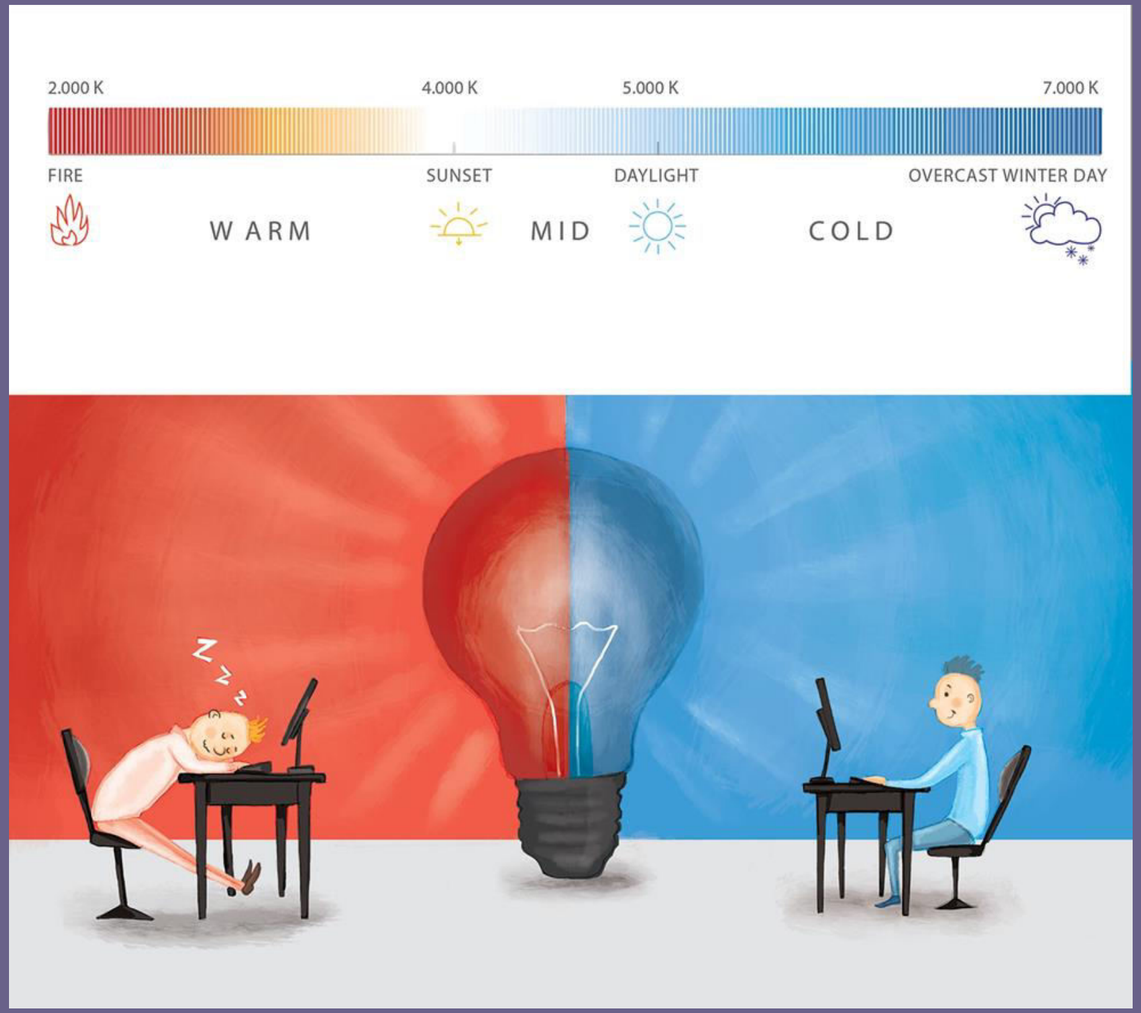


Fig. 3. Association between major groups of occupation and symptomatic dry eye, corrected for age, sex, BMI, contact lens use and 45 comorbidities that are associated with symptomatic dry eye.

EN LIGHTING STORY

- Impact of renovation on lighting systems at post office at Nevada, US
- More worker friendly
- Employee productivity
- Boost revenue by approximately $500,000 per year

LIGHTING/ILLUMINANCE AT WORK PLACE



LIGHTING AND PRODUCTIVITY

- 68 percent of employees are discontent with the lighting in their offices
- Md. Mohataz Hossain 2012, discussed on effect of Illumination and work efficiency in Garment industries
- Observed that increasing 1 unit of illumination level causes 0.91%~0.49% less defects
- He also suggested work place should have 700 lux of illumination for better work efficiency

EFFECTS OF POOR LIGHTING

- **Can be a safety hazard -** Misjudgment of the position, shape or speed of an object can lead to accidents and injury
- **Can affect the quality of work -** Situation where precision is required, Quality control and overall productivity
- **Can be a health hazard -** too much or too little light cause ocular discomfort, headaches and musculoskeletal problems

Thirty Year Projected Magnitude (to 2050) of Near and Distance Vision Impairment and the Economic Impact if Existing Solutions are Implemented Globally

Andrew Bastawrous & Antti-Ville Suni

Pages 115-120 | Received 31 Jan 2019, Accepted 28 Nov 2019, Published online: 06 Dec 2019

Download citation https://doi.org/10.1080/09286586.2019.1700532 Check for updates

- The number blindness could be reduced from the estimated 114.6 million by 2050 to 58.3 million.
- The number of people affected by MSVI could be reduced by 435.8 million people to 147.9 million by 2050.
- This reduction would translate to over 9 billion MSVI -life-years avoided and US$ 17 trillion in productivity gains by 2050.

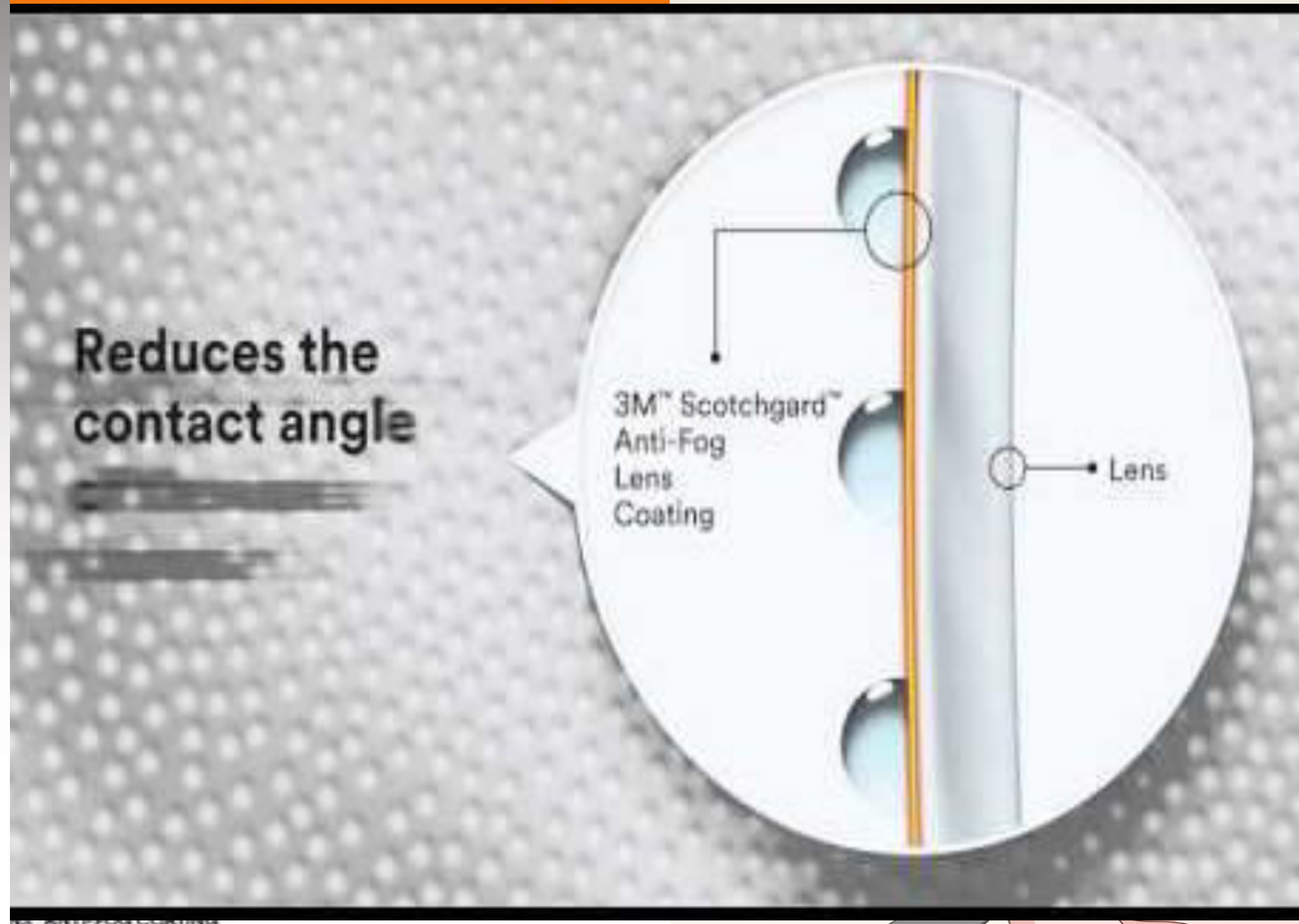
- While other causes of VI would not be possible to eliminate completely based on current known effective treatments,
  - Low-cost interventions to eliminate VI from uncorrected presbyopia would avert 1.2 billion presbyopia life-years and achieve US$ 1.05 trillion in productivity gains by 2050.
- In total, the global productivity gains for all three categories are estimated to be US$ 19 trillion by 2050.

Scotchgard™ coated

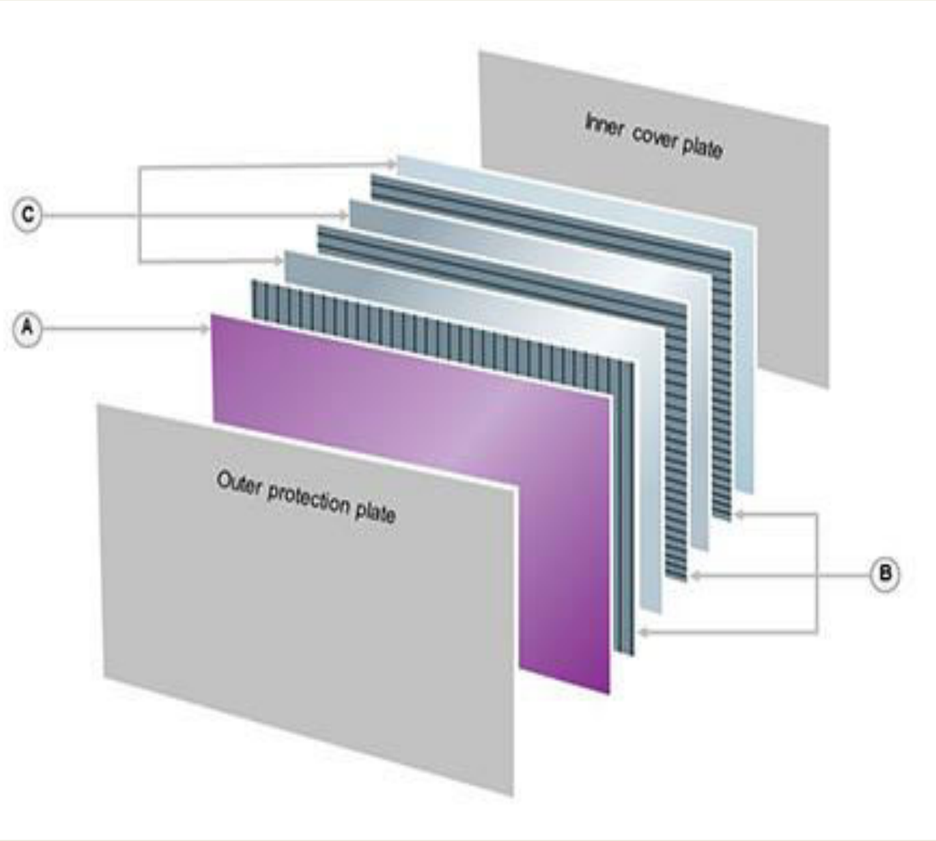
Scotchgard™ Anti-Fog Coating produces a reduced-contact angle, flattening the water beads into a thin, transparent film of water that allows light to pass through.

LENS ANTI-FOG COATING

™ Anti-Fog Technology.



Auto darkening filter (ADF) technologies



Good vision in normal light, and protection from the intensity of a welding arc darkening automatically of the arc being struck

Indian J Ophthalmol. 2017 Sep; 65(9): 859–864.
doi: 10.4103/ijo.IJO_334_17
PMCID: PMC5621270
PMID: 28905831

Primary prevention of ocular injury in agricultural workers with safety eyewear

Samrat Chatterjee and Deepshikha Agrawal

- Determine the effec ting eye injury with the use of safety eyewea rkers
- 1150 subjects/Farme n the study
- 575 (Group A) farme les with side covers

Agricultural workers enrolled:
1273

Excluded
Wearing prescription glasses: 32
Declined to participate: 43

Non-response: 22

553 (96.2%)

540 (93.9%)

Purchased goggles: 2

- The number of ocular injuries in Group A was 4 (0.7%) and 61 (11.3%) in Group B
- Relative risk was 0.06 (95% CI: 0.02–0.2), Group A had 94% less risk of ocular trauma compared to those in Group B

OUR EXPERIENCES

Tannery Industry

- Request from Tannery industry for Ishihara Color vision test
- Need for specific color vision test at enquired
- Reason told was rejection in leather goods, due to difference in color & they wanted test color vision for their employees

VISUAL TASK ANALYSIS

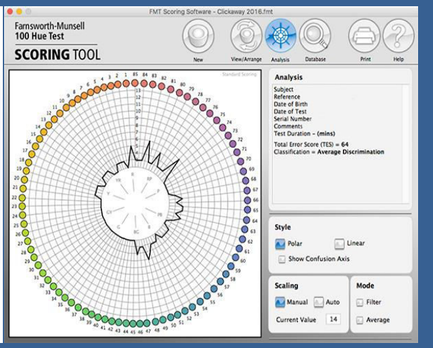
Variables	Coating	Matching	Sealing/ Ironing	Storage	Thinning / Cutting	Skiving	Quality inspection	Lamping/ Folding	Stitching	Trimming/ Creaing	Attaching/ Assembling	Embosing/ Logo fixing/ Kimlon attaching	Final Inspection
Expected Distance VA for comfortable work	6/9	6/6	6/9	6/6	6/6	6/6	6/6	6/6	6/6	6/6	6/6	6/6	6/6
Expected Near VA for comfortable work	N18 @ 60 cm	N12 @ 30cm	N18 @ 60cm	N18 @ 60 cm	N18 @ 40 cm	N18 @ 35 cm	N10 @ 50 cm	N10 @ 40 cm	N10 @ 35 cm	N10 @ 35 cm	N10 @ 40 cm	N12 @ 35 cm	N10 @ 40 cm
Stereopsis Arc sec	50	50	50	50	50	50	50	50	50	50	50	50	50
Color vision requirements	Red Green + Blue yellow defect												

OBSERVATION FROM VTA

- Appropriate lighting for color matching task is not used
- Colour vision testing only conventional test - Ishihara colour vision test was used

Task	Illuminance (lux)	Standard (lux)
Coating	1240	1000 -2000
Matching	1240	1000 -2000
Sealing/Ironing	1240	200 - 500
Storage	> 2000	200 -500
Thinning/Cutting	>3000	500 -1000
Quality inspection	643	500 -1000
Lamping	1585	500 -1000
Stitching	819	500 -1000
Final inspection	1343	1000 - 2000
Trimming/Creasing	780	500 -1000
Assembly	889	200 -500
Embossing/Logo fixing	890	200 -500
Final inspection	800- 833	1000 - 2000

RECOMMENDATION

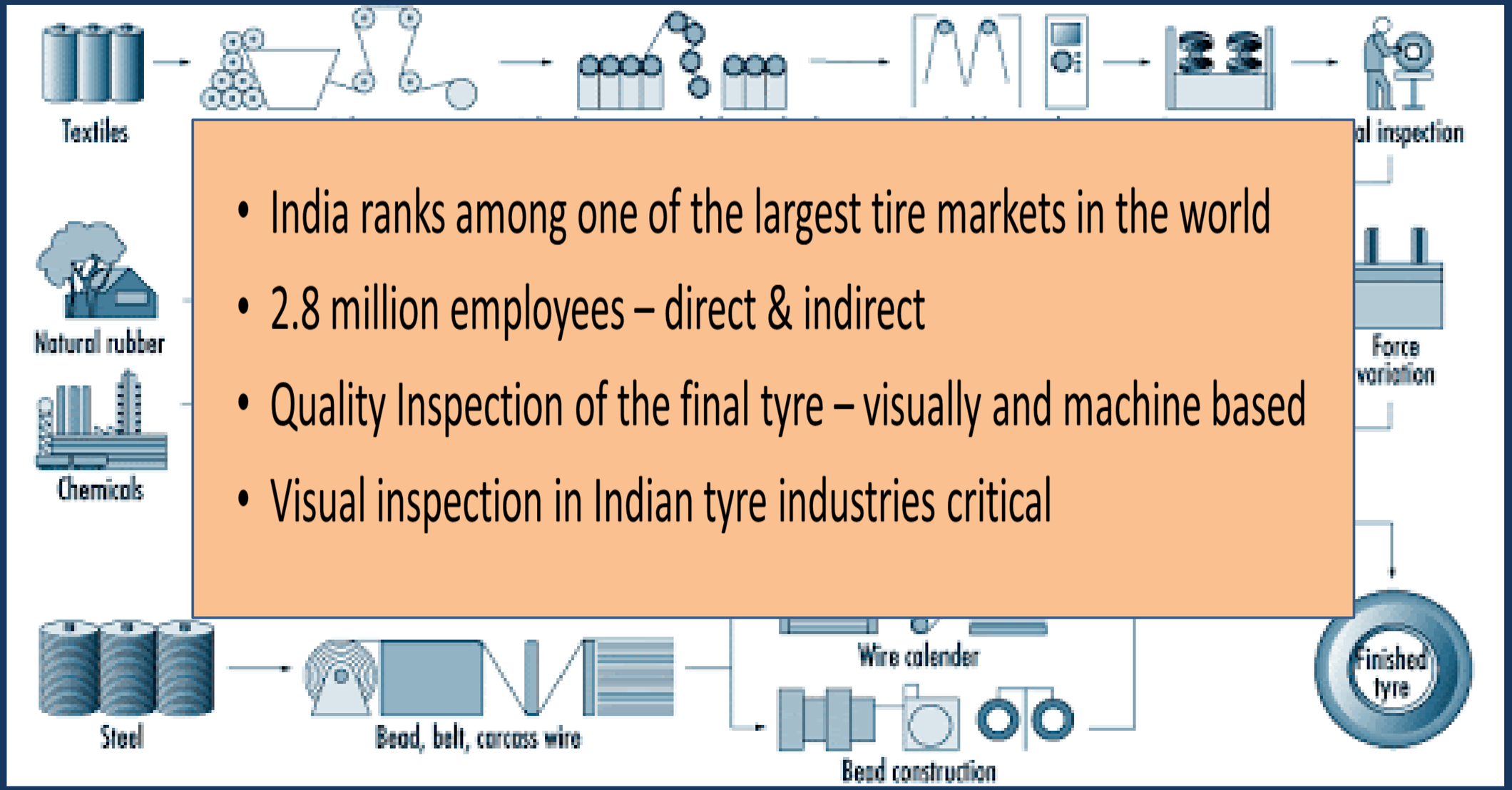


- FM 100 Hue test was done to all employees
  - Color discrimination test
- Appropriate for industry involving colors - dyeing, textile and etc.
- Employees are categorized into different groups, based on test results.
- Grouped into Superior / near superior, Moderate and Low color discrimination

RECOMMENDATION

- Employees with good color discrimination
  - Placed in leather Quality inspection
  - Color matching
- Use appropriate lighting in color matching area

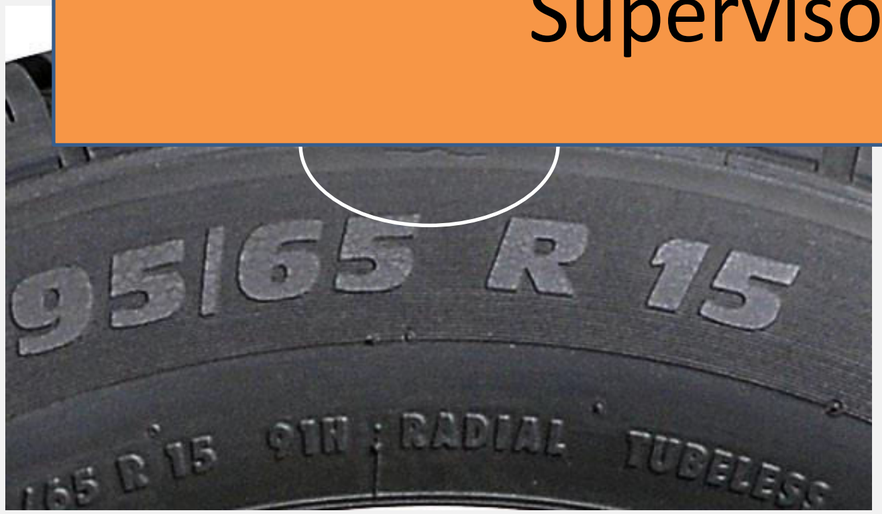
QUALITY INSPECTORS – TYRE MANUFACTURING INDUSTRY

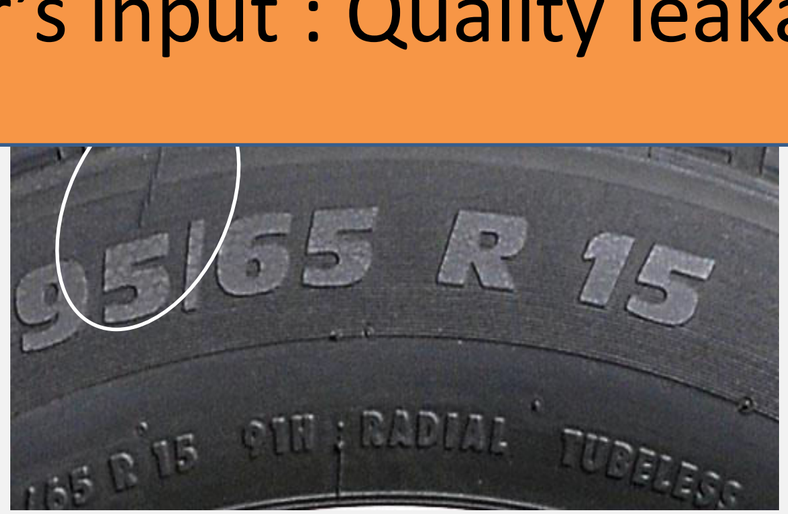


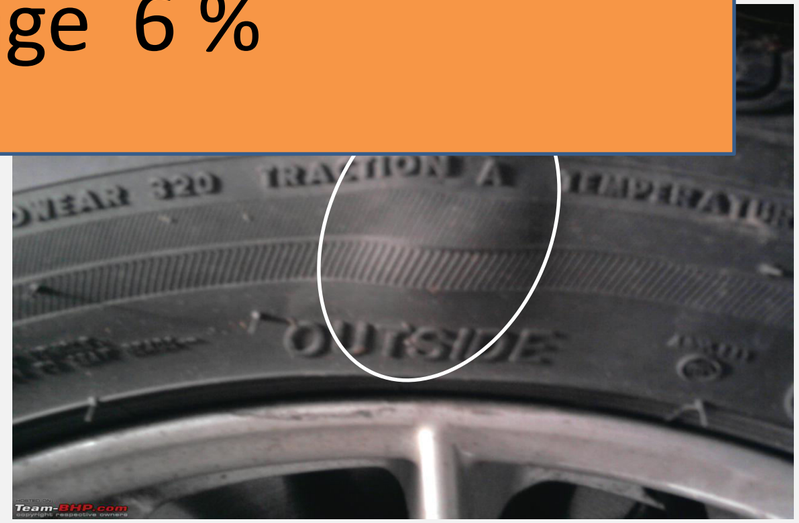
- India ranks among one of the largest tire markets in the world
- 2.8 million employees – direct & indirect
- Quality Inspection of the final tyre – visually and machine based
- Visual inspection in Indian tyre industries critical

VISUAL TASK ANALYSIS – QUALITY INSPECTION

Supervisor’s input : Quality leakage 6 %







OBSERVATION FROM VTA

- Nature of job - To pick the manufacturing defects from the tyre/tube by visual inspection
- Minute defects to be picked against same contrast background – 25-30 sec/ piece - Required speed and accuracy
- Task involves Monotony and Repetitive movements
- To look for nearly about 25 manufacturing defects
- Send the defective for the repair and reassess

VISION STANDARDS – TYRE AND TUBE INSPECTION

Variables	Tyre	Radical Tyre	Off High way Tyre	Tube	Physical Lab
Size of the details (mm)	1	1	1	0.5	4
Near VA at working distance	N6 @ 12 cm	N6 @ 32 cm	N8 @ 40 cm	N4 @ 40 cm	N10 @ 20cm
Stereopsis	800 arc sec	120 arc sec	80 arc sec	40 arc sec	ND
Accommodative Demand	16 D	6.5 D	4 D	5 D	10 D
Vergence Demand	41 PD	17 PD	14 PD	14 PD	26 PD
Color vision (Acquired defect – Solvent)	Required	Required	Required	Required	Required
Detection Acuity Test	Pass	Pass	Pass	Pass	Pass
Visual Field	Full	Full	Full	Full	Full

ILLUMINATION LEVELS

Illuminance	Task Department	Tyre	Radical Tyre	Off High way Tyre	Tube	Physical Lab
Current Levels	Lux	110 - 2800	480 – 990	330 - 800	630 - >2000	54 - 160
Recommended	Lux	3000	3000	3000	3000	1000-1500

* Illumination standards – HUMAN FACTORS IN ENGINEERING AND DESIGN _ Seventh Edition_1993

- The Performance of visual tasks of low contrast and very small size for prolonged periods of time requires Illuminance level between 2000 lux to 5000 lux.
- The lighting/ Illuminance standard was set to 3000 lux based on factors like Age, duration of work and back ground at which it is worked

FROM EYE EXAMINATION

- Total number of quality inspectors – 285
- 22 employees were using glasses already
- Prescribed glasses-112 (39.3%)
- Color vision defect-8 – Blue – Yellow Defect – 6 , Red – Green 2
- **Number of employees did not meet VD 41(14.39%)**
- Probably 6% leakage could be accounted on the same and poor lighting

RECOMMENDATIONS

- Meeting near vision demand – Appropriate spectacle correction
- Task observed to be monotonous - Short breaks from continuous inspection every 20 -30 minutes
- Inspection guidelines - 3 to 4 fixation/ scanning area in one side of tyre, followed by other side
- Uniformity of lighting in all the work station across the plants is recommended. The standard lighting for this task should be around 3000 lux.

Effect of providing near glasses on productivity among rural Indian tea workers with presbyopia (PROSPER): a randomised trial

- Assam Tea plantation workers – 40 years and older
- Total 2699 screened – Near visual acuity (NVA) lower than 6/12 in both eyes, correctable to 6/7·5 with near glasses
- 751 met intervention criteria
  – 376 Intervention – 375 Control group
- No participants owned glasses at baseline

Effect of providing near glasses on productivity among rural Indian tea workers with presbyopia (PROSPER): a randomised trial

	Baseline mean daily productivity over 4 weeks, kg per day (SD)	Post-intervention mean daily productivity over 11 weeks, kg per day (SD)	Change in productivity, kg per day (95% CI)	Between-group difference in change in productivity, kg per day (95% CI)
Control group (n=375)	26·0 (3·48)	30·6 (4·77)	4·59 (4·10–5·07)	..
Intervention group (n=376)	25·0 (4·25)	34·8 (5·11)	9·84 (9·27–10·4)	5·25 (4·50–5·99); p<0·0001

Table 2: Effect of randomisation group on change in productivity (daily weight of tea picked) from baseline

Spectacle compliance reached 84.5 % from many unannounced visits

VISION IMPACT INSTITUTE

IMPACT OF UNCORRECTED VISION ON PRODUCTIVITY – A STUDY IN AN INDUSTRIAL SETTING A PAIR OF SPECTACLES

- Longitudinal study, among Spinners, Madurai : 238 cotton spinners and winders
- 238 factory spinners/ winders underwent eye examination
- Of these 187 needing vision correction, 169 (75%) had presbyopia and needed glasses for near vision correction

VISION IMPACT INSTITUTE

IMPACT OF UNCORRECTED VISION ON PRODUCTIVITY – A STUDY IN AN INDUSTRIAL SETTING A PAIR OF SPECTACLES

- Spinners who were given vision correction showed an average improvement of 9.5%
- 44% improved their productivity by 10% more on previous output levels, while 23% exceeded previous output levels by 20%.
- 23% increasing their productivity by 10% of the factory standard

Salt pan workers - Marakkanam

Job description: Traditional method – Labor intensive, field/Outdoor work

- Manually prepare the salt field
- Evaporation of brine (sea water) filled in the salt pans
- Collection of salt crystals
- Spray iodine

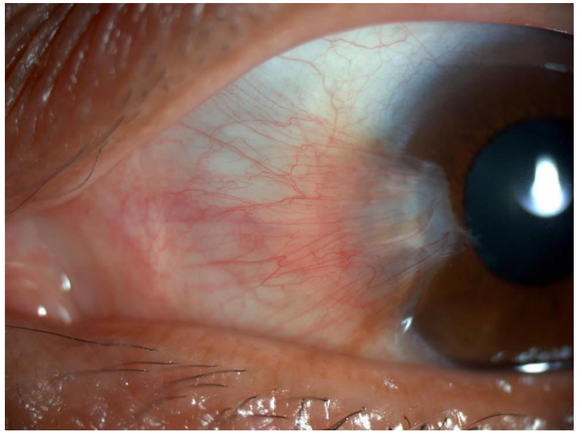


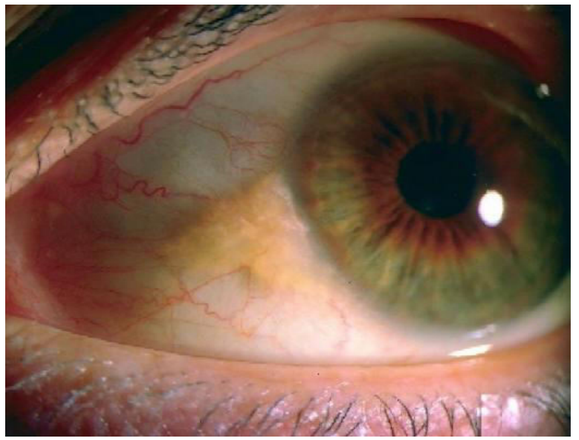

Salt pan workers - Marakkanam

- The tasks are less visually demanding
- Hazardous
  - Exposure to reflection from salt brine
  - Chronic exposure to UV rays, salt dust
  - Not using PPE
- Ocular morbidities - Cataract, pterygium, pinguecula
  - 42 % in Markkanam and 61% Gujarat

Eye examination

- 81 saltpan workers, 52±13 years ,
- Average years of working 20 Years
- Task related vision complaints
  - Glare 79 %
  - Poor vision 17.3 %
- 70 % Cataract, 21 % pinguecula, 16% pterygium





Spectacle intervention and Compliance

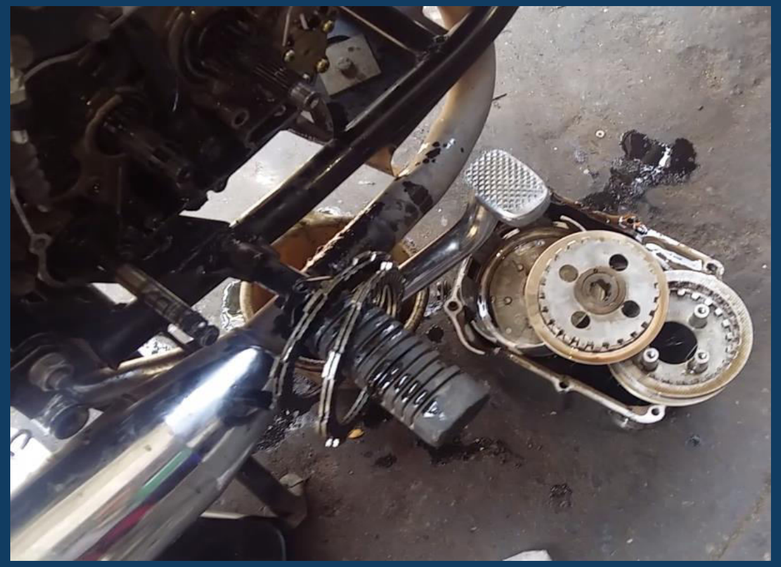
- Photo chromatic coating – Discomfort glare
- Spectacle compliance
- Follow up 1: 3months
  - 52 (82.5%) salt pan workers were available for Tele-compliance
  - Only 25 (48%) workers were compliant

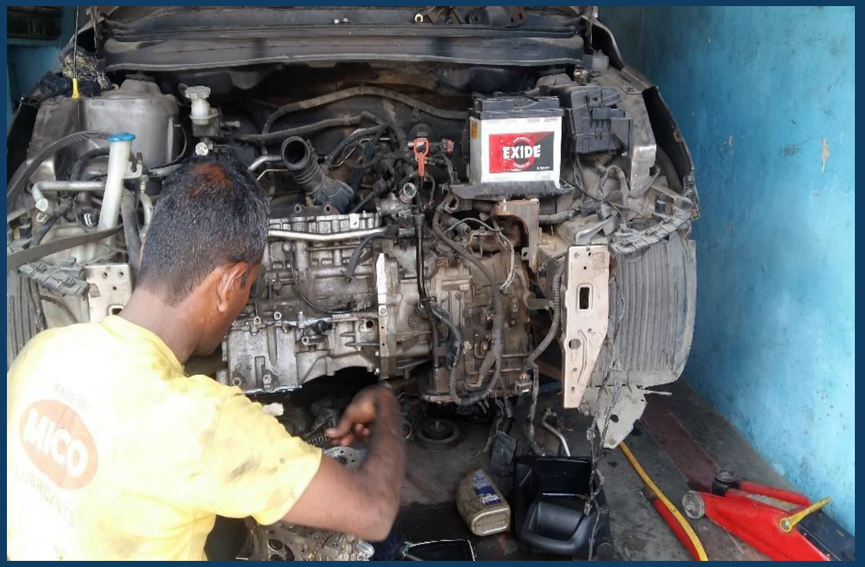
Spectacle intervention and Compliance

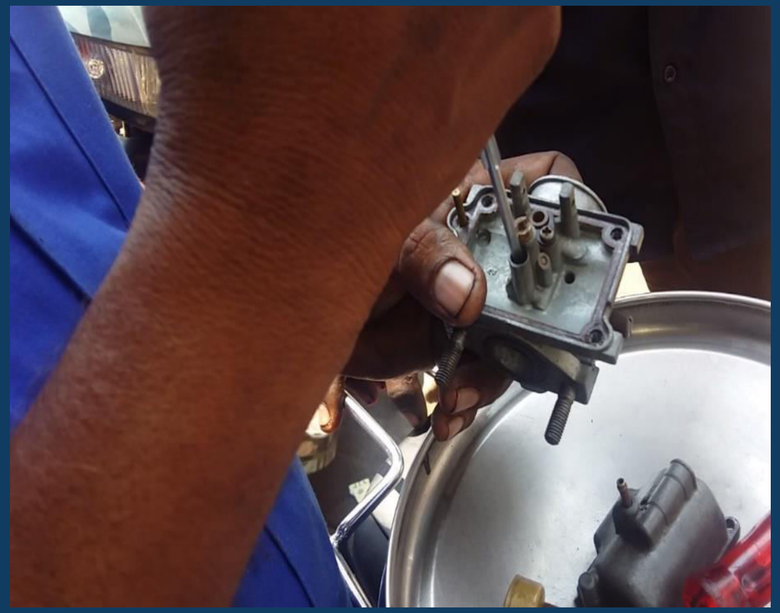
- Reasons: Felt need, discomfort, glasses might fall and get damaged
- Follow up 2: 6 months
- 55 (87.3%) workers were available for follow-up compliance assessment.
- 41(74.5%) workers were compliant to spectacle use at work and ADL

Improvement in spectacle compliance from 48 to 75 %

Auto mobile mechanics







Auto mobile mechanics

Job Description

Two – Wheeler

Mechanics

- Engine services
- Oil services
- Clutch faults
- Wheel alignment
- Brake check

Four – Wheeler Mechanics

- Engine services
- Oil services
- Clutch faults
- Brake & Suspension check
- Wheel alignment
- Tinkering/ Painting

Observations from Visual Task Analysis

- Task size - > 5 mm – Large
- Working distance – 40-60 cm – Intermediate
- Requires eye hand - coordination
- Exposure to petroleum products and organic solvents
- Awkward sitting/ work postures

Visual skills required for Mechanics

From VTA

- Adequate near vision , distance vision not demanding
- Binocular vision – accommodation and vergence
- Stereoacuity
- Fair central visual fields – Target static, precision and accuracy not required.

VISION STANDARDS

Two wheeler mechanics			
Variables	**Engine services**	**Oil services/ Clutch fault**	**Wheel Alignment/ Brake check**
Working distance cm	50- 60	50-60	50-60
Near Visual acuity	N6@50-60cm	N24@50-60cm	N18@40cm
Stereopsis	140 arc sec	140 arc sec	140 arc sec
Accommodation demand (D)	4.00 D	4.00 D	5.00 D
Vergence demand (PD)	10	10	10
Central Visual field	Fair	Fair	Fair
Color vision	ND	ND	ND

VISION STANDARDS

Four Wheeler Mechanics			
Variables	**General services / Engine Services/ Tinkering/ painting**	**Oil services / Clutch Fault / suspension works**	**Wheel alignment / Brake check**
Working distance cm	50- 60	50-60	50-60
Near Visual acuity	N6@50-60cm	N24@ 50-60cm	N18@ 40cm
Stereopsis	140 arc sec	140 arc sec	140 arc sec
Accommodation demand (D)	4.00 D	4.00 D	5.00 D
Vergence demand (PD)	10	10	10
Central Visual field	Fair	Fair	Fair
Color vision	ND	ND	ND

From eye examination

2 wheeler mechanics

- 25 male workers ,
- Mean age : 39.2 ± 8.8 years
- 44 % Near vision difficulty
- 12 % head ache, 4 % distance vision difficulty

4 wheeler mechanics

- 20 male workers
- Mean age : 35.6 ± 13.4 years
- 14% near vision difficulty
- 4 % distance and near vision difficulty

Quality of Life and Job competency

Two wheeler mechanics: With use of spectacles

- Quality of work, productivity, distance work, activities with near work and binocular vision related questions symptoms questionnaire ($p<0.01$)
- The mean productivity score showed an increase with spectacle use
  - Two wheeler mechanics: 5.3 (SD: 0.81) to 5.9 (SD: 0.70)

Quality of Life and Job competency

With use of spectacles : Four wheeler mechanics:

- Quality of work, productivity and distance work ($p<0.01$
- The mean productivity score showed an increase with spectacle use
  - Four wheeler mechanics: 8.5 (SD: 0.97) to 12.0 (SD: 2.2)

OCCUPATIONAL OPTOMETRY

- The branch of optometric practice that is concerned with the efficient and safe visual functioning of an individual at work
- *It includes*
  - Assessment of the vision of the person at work
  - Matching visual demand and the visual ability
  - **“Setting up of vision standards for the job”**

Occupational optometry Services

7 step Process

1. Industrial Visit and Visual task Analysis (VTA)
2. Identify the battery of tests
3. Comprehensive eye check up
4. Matching Visual Demand to Visual Ability
5. Training and education of employers , union and employees on vision care, eye safety at work, PPE
6. Report to the employer
7. Regular Follow-up / Periodic eye examination

TAKE HOME MESSAGE

- Occupational Vision demand varies with occupation and occupational task
- Match Visual demand and visual ability
  - –Productivity
  - –Less absenteeism/Presenteeism
- Periodic eye examination
- Lighting standard – National Lighting code 2010


THANK
YOU

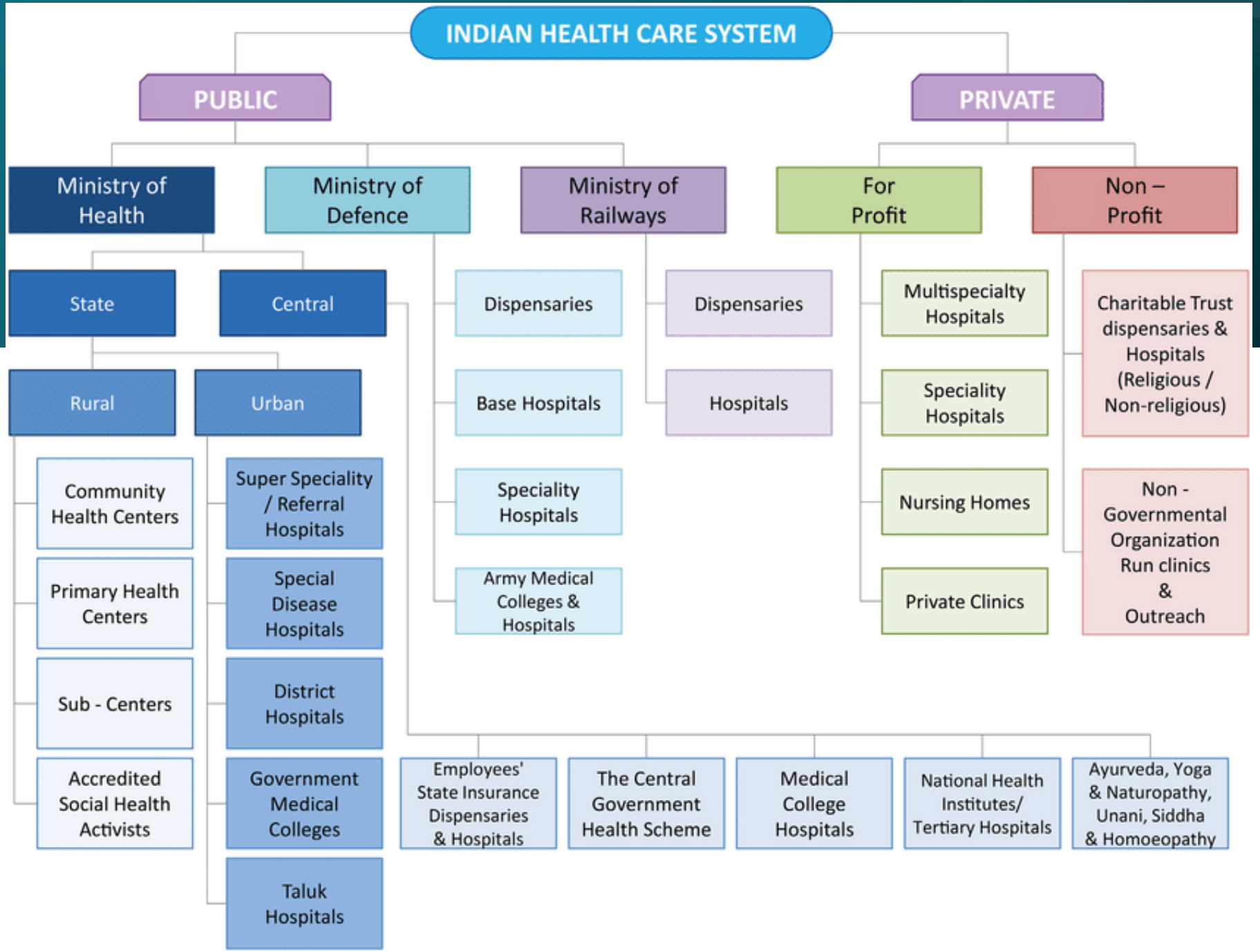
INCORPORATING OCCUPATIONAL OPTOMETRY TO STRENGTHEN YOUR CLINICAL PRACTICE

Dr. Rashima Asokan
Occupational Optometry Services
Sankara Nethralaya

QUESTION?

I have been practicing since 10 years. Do I still need to relook?

What will occupational optometry add to my practice?

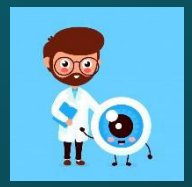


* Image adapted from Ramadas S. Is Indian Health Care System better than US ? A Sample Study.... [Internet]. Linkedin (2014). Available from: https://www.linkedin.com/pulse/20140729152938-63974960-is-indian-health-care-system-better-than-us-a-sample-study

WHO AM I ADDRESSING TO?

Physician

- Qualified to practice medicine, especially one who specializes in diagnosis and medical treatment as distinct from surgery



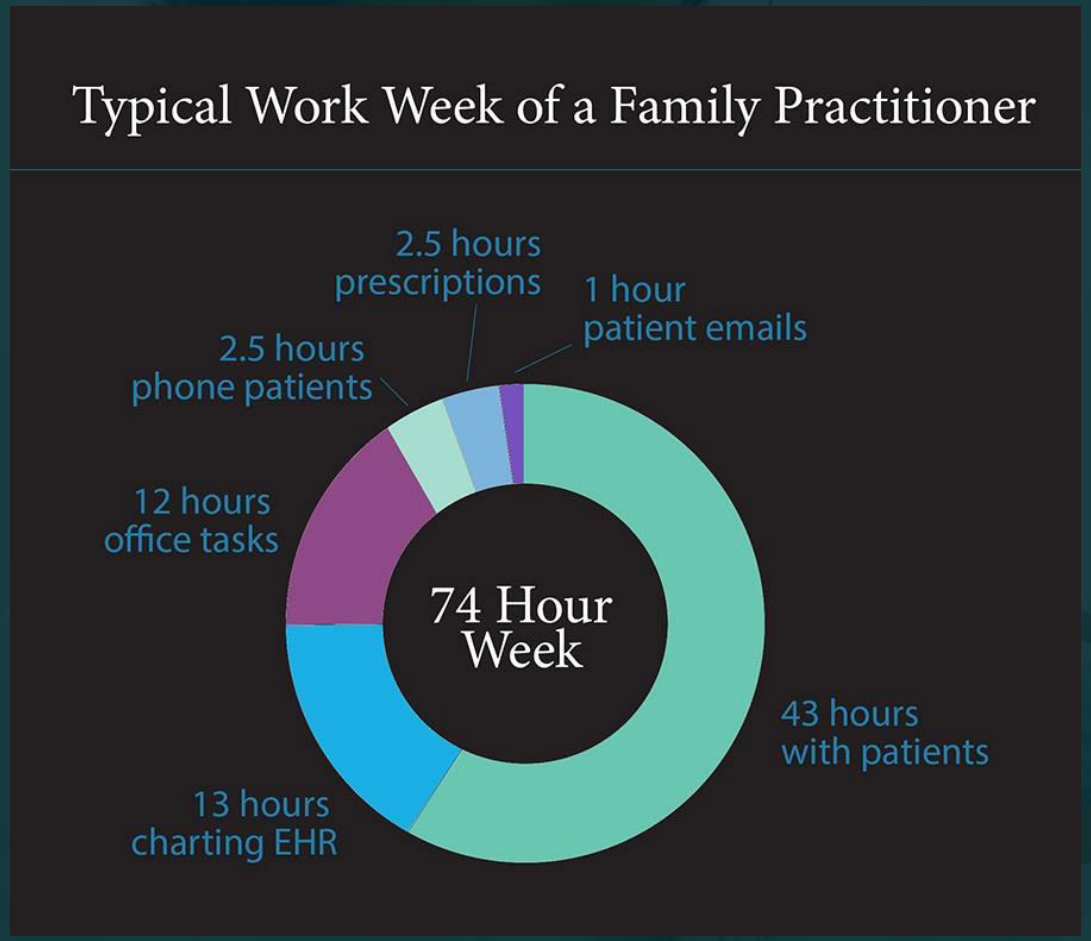
Eye Care Practitioner

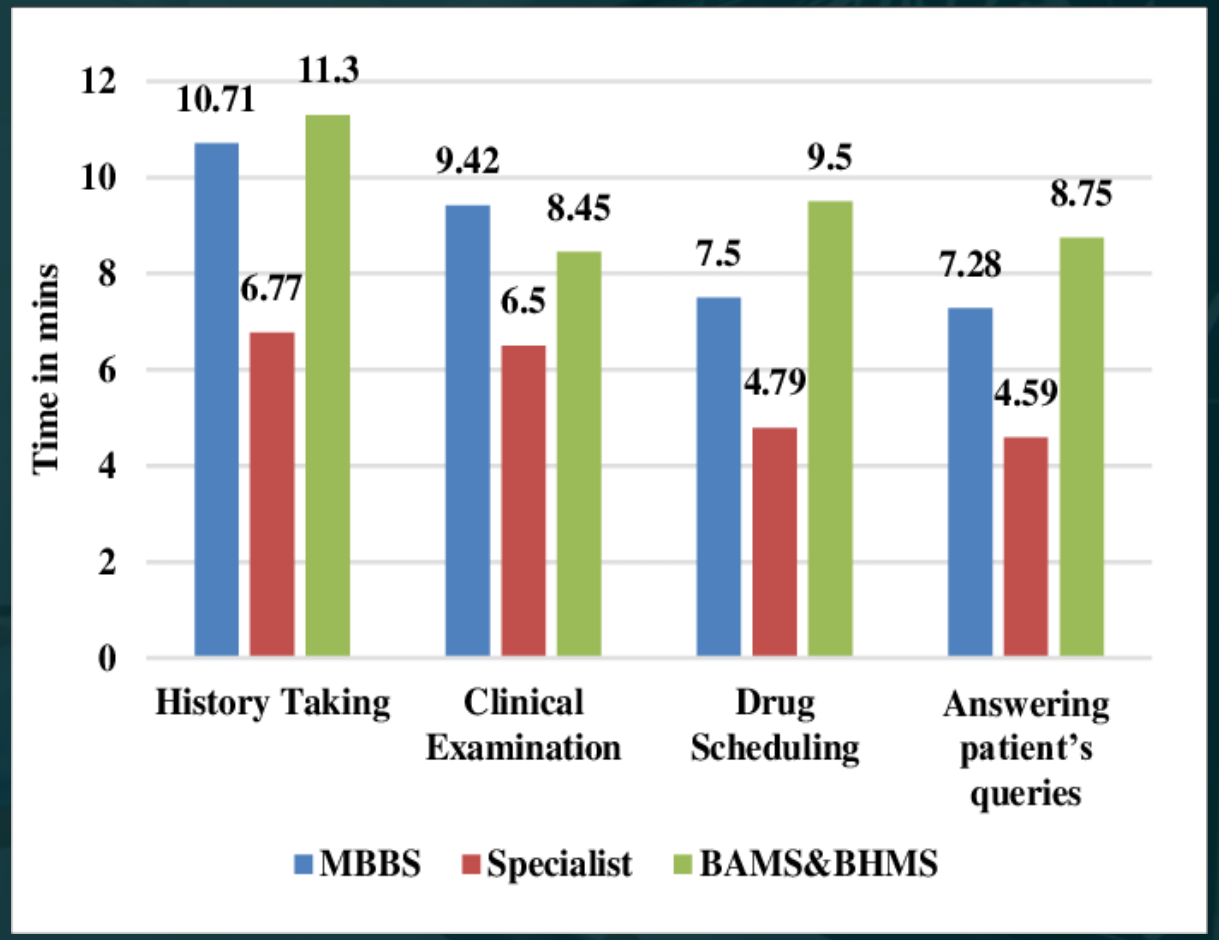
- Ophthalmologists
- Optometrist

Occupational Health Specialist

- Occupational health specialist is someone who analyzes work environments and work procedures

CLINICAL PRACTICE - TIME SPENT





* According to a Survey

SCENARIO I

30 year old man complaints of headache for about a week.

No other specific health issues

HOW IS THIS SCENARIO ADDRESSED

Physician

- No medical illness
- Examines
- Advise - Analgesics

Eye Care Practitioner

- Examines - Identifies refractive error
- Advise - Spectacles

Occupational Health Specialist

- Enquires on the occupation / environment – identifies continuous monitor usage in control panel
- Advise – frequent breaks

SCENARIO 2

30 year old man complaints of eye irritation for about two days

No other specific health issues

HOW IS THIS SCENARIO ADDRESSED

Physician

- No medical illness
- Examines - FB
- Advise – Remove debris and gives drugs

Eye Care Practitioner

- Examines - Identifies FB
- Advise - Remove debris and gives drugs

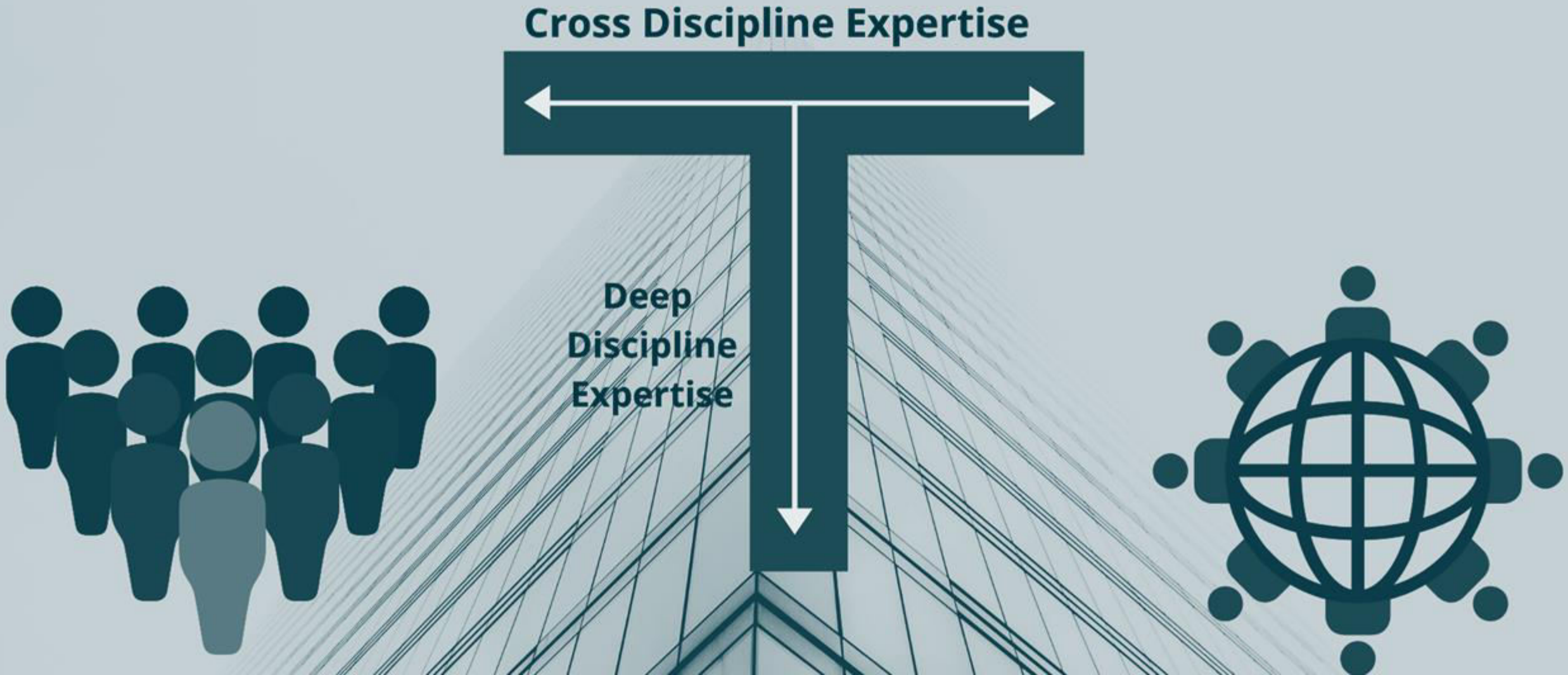
Occupational Health Specialist

- Enquires on the occupation / environment – identifies need for PPE
- Advise – Remove debris and gives drugs and ensures PPE wear

WHAT SHOULD WE FOCUS ON?

ACT NOW BEFORE IT'S TOO LATE

BECOME A T-SHAPED PERSON



OCCUPATIONAL HEALTH

- Adaptation of work to man and of each man to his job

PHYSICAL AND MENTAL DEMANDS OF THE JOB

PHYSICAL CAPACITY AND MENTAL ABILITY

OCCUPATIONAL OPTOMETRY

- The branch of optometric practice that is concerned with the ***efficient*** and ***safe visual functioning*** of an individual at work
- *It includes*
  - Assessment of the vision of the person at work
  - Matching visual demand and the visual ability
  - **Setting up of vision standards for the job**

OCCUPATIONAL OPTOMETRY SERVICES

1

Visual Task Analysis

2

Identify the battery of tests

3

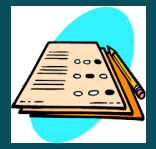
Comprehensive eye examination

4

Matching visual demand to visual ability

5

Indoctrination and education of employers, employees



6

Report to the employer

7

Periodic eye examination

7 Step Approach

TERMS

Every occupation and tasks involved in it demand visual requirements to work safely and efficiently in workplace

- **Visual Task Analysis (VTA)** helps us to quantify individual's visual factors required for accomplishing particular task that is Visual demand; based on it **Vision Standards** are set
- **Visual Demand** is the vision requirement of each particular task that varies from one occupation to another. **Visual Ability** is the individual's personal ability to accomplish a visually demanding task
- **Vision Standard** is the minimum expected level of vision that is required for the efficient and safe operation of an individual at the workplace

Dr PP Santanam, Dr R Krishna Kumar Monica R, Dr. Santanam's Text Book of Occupational Optometry, First Edition. Published by Elite School of Optometry, Unit of Medical Research Foundation, Chennai. Chapter 1: Page no: 16-17. Chapter 4: Page no:39

MATCHING VISUAL ABILITY TO VISUAL DEMAND

Occupational

Occupational Information	✓	
Working distance		Far: >2m
		Intermediate: 2m-0.55m
		Near: 0.55-0.3m
		Very near: <0.3m
Size of detail		Large/medium: >5'*
		Small: 3-5'*
		Very small: 2-3'*
		Extremely small: 1-2'*
		Minute: <1'*
Head movements		Side to side
		Up and down
		Mixture

Main working position		Sitting
		Standing
		Moving
		Mixture
Direction of gaze		Ahead
		Up
		Down
		Side
		Mixture
Task movement		Stationary
		Slow
		Fast
Changes of gaze		Frequent
		Occasional
		Seldom
Special accuracy or care		Required
		Limited requirements
		Not required

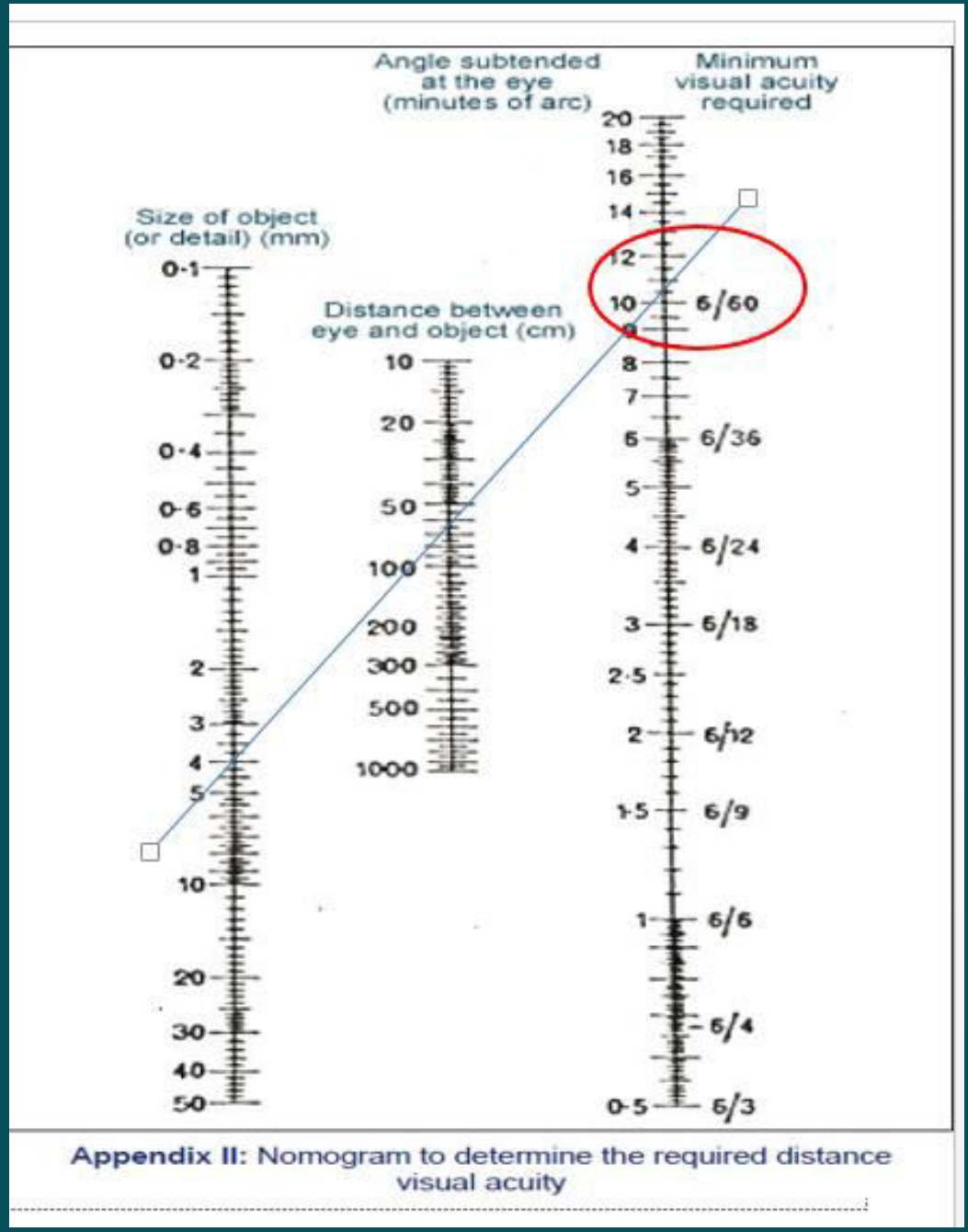
* '= in minutes of angle subtense

Clinical Requirements	✓	
Visual Acuity		Calculated by using occupational information
Binocular Vision / Stereopsis		Required
		Not required
		Monocular vision
Colour vision		Good
		Limited requirements
		Not required
Visual fields		Good
		Fair

Environmental Information	✓	
Visibility		Good
		Fair
		Poor
Eye Protection		Required
		Not required
Potential danger		High risk
		Medium risk
		Low risk
Hazards† (refer to BS EN 166)		Present
		Not present
Lighting (types in use, adequacy, suitability)		Good
		Fair
		Poor

†if present, identify and assess degree of ris

Grundys Task Analysis Grid

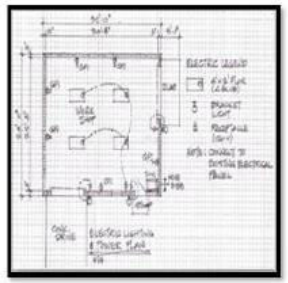


Appendix II: Nomogram to determine the required distance visual acuity

Conversion table to determine the required near visual acuity

		Large	Medium	Small		Very small	Extremely small		Minute
Angular size of critical detail	Areas Lines/ contours	10' 30"	6' 18"	4' 12"	3' 9"	2' 6"	1.5' 4.5"	1' 3"	0.75' 2.25"
Minimum VA required at 6m		6/60	6/36	6/24	6/18	6/12	6/9	6/6	6/4.5
Approx. reading test type equivalent at 40 cm		N40	N24	N16	N12	N8	N6	N4	N3
VA required for efficiency		6/30	6/18	6/12	6/9	6/6	6/4.5	6/3	6/2.25
Approx. reading test type equivalent at 40 cm		N20	N12	N8	N6	N4	N3	N2	N1.5

ELECTRICIANS

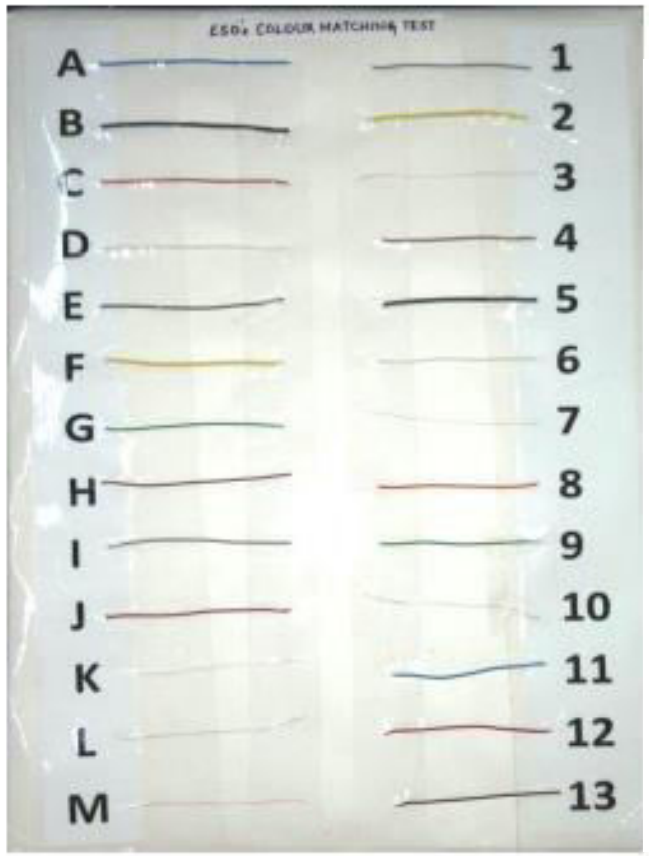


Installation

Maintenance

Repair work

Visual Task Analysis



Wire Matching Test

Variables	Identified tests	Installation	Maintenance	Repair work
Expected Distance VA for comfortable work	Log MAR VA	6/12	6/12	6/12
Expected Near VA for comfortable work	Near Text	N 10 @ 50 cm	N15 @ 50 cm	N15 @ 50cm
Binocular Vision Status: Phoria status	Binocular Vision	Dist: 0 to 2 Δ Exo Near: 0 to 6 Δ Exo		
Stereopsis	Randot test	40 arc sec		
Accommodative demand	Amplitude of Accommodation	2.00D (N6 target)	2.00D (N6 target)	2.00D (N6 target)
Vergence demand	100p/W +27mm	23 PD (NPC = 23 cms)	23 PD (NPC = 23 cms)	23 PD (NPC = 23 cms)
Color vision requirements	Pseudoisochromatic plate + Neitz text + Wire matching test + Wire identification test	Required		
Accommodative Facility (Binocular)	Accommodative flippers	15 cycles/minute		

Vision Standards

CASE SCEN

COVID–19

High prevalence of bot
MSD symptoms (45%)

Digital Eye Strain
Preventive Measures

Problem Solution

Are you facing any of the symptoms as headache,eye strain,eye fatigue,dryness,blurred vision, neck/shoulder/wrist/hand/back pain while operating your laptop/desktop/smartphone??

"Focus on the solution not the problem!!!!! " We have some tips for you.....

Practice good visual hygiene

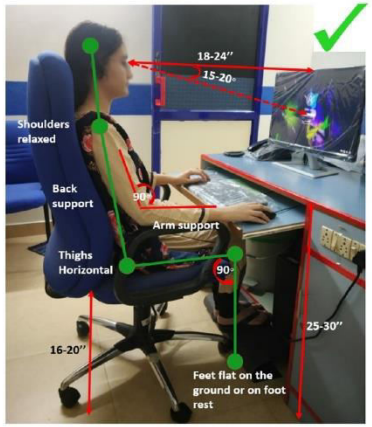
- Follow 20-20-20 rule

- Blink Frequently - Avoid dry eyes
- Make sure your glasses meet the demand of your job: Have a comprehensive eye examination

- Make sure the light source is directed at the level of target/work and not directly onto the eyes
- Avoid glare or shadow: Position your computer screen to avoid glare, particularly from windows. Use blinds or drapes on windows
- Adjust brightness and contrast of the screen according to your comfort

Adjust your workstation

Maintain a correct upright position while working



Stretching exercises during work

Neck stretch
Side bend and Diagonal bend for 15 seconds on both sides

Wrist stretch
Hold arm straight out and pull your hands backwards and then pull downward for 15-20 seconds

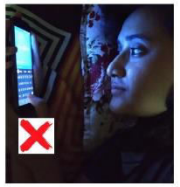
Executive Stretch
Lock your hands behind head and bring your elbows back as far as possible and then hold for 20 seconds

Warming Up
Stretch slowly and hold each position for 20 seconds

N.B. Repeat each step 3-4 times while you settle down to stretch and perform these steps at least once every 1-2 hours during work

Take care of yourself

- Maintain an active life-style
- Practice regular yoga,exercises and meditation
- Drink plenty of water to keep your body hydrated
- Have an adequate sleep of at least 7-8 hours
- Limit yourself from excess usage of digital devices
- Avoid using smartphones before bedtime

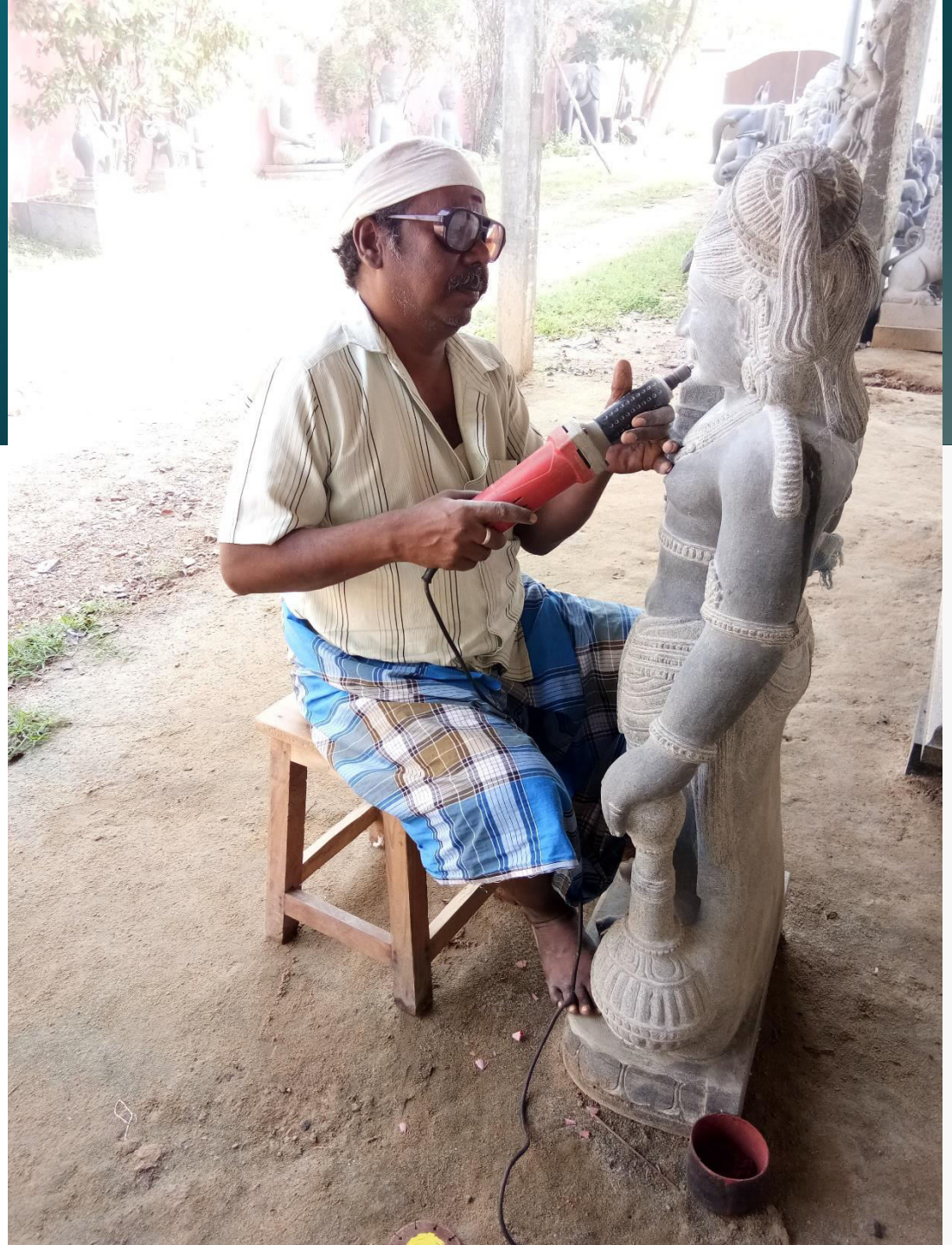


Source: American Optometric Association and National Institutes of Health, Division of Occupational Health and Safety

PREPARED BY: OCCUPATIONAL OPTOMETRY SERVICES, SANKARA NETHRALAYA, CHENNAI-600006 CONTACT US ON: 044-42271500

EXPERIENCE WITH SCULPTORS

Scenario 2



Protect your eyes.

Here's how:

1) ***Wear your safety glasses.***

2) Wear eyewear properly tinted for the particular job you are working at.

3) *Wear your safety glasses!*

4) Wear eye protection when working with power tools or chemicals.

5) Keep your eye protection clean.

6) Wear prescription lenses if you should.

7) Get regular eye exams to prevent eye problems.

8) *Wear your safety glasses!*

9) Wear glasses that provide proper UV protection.

10) *Wear your safety glasses!*

11) Get regular eye exams to prevent eye problems.

12) Get medical attention immediately if you have an accident.

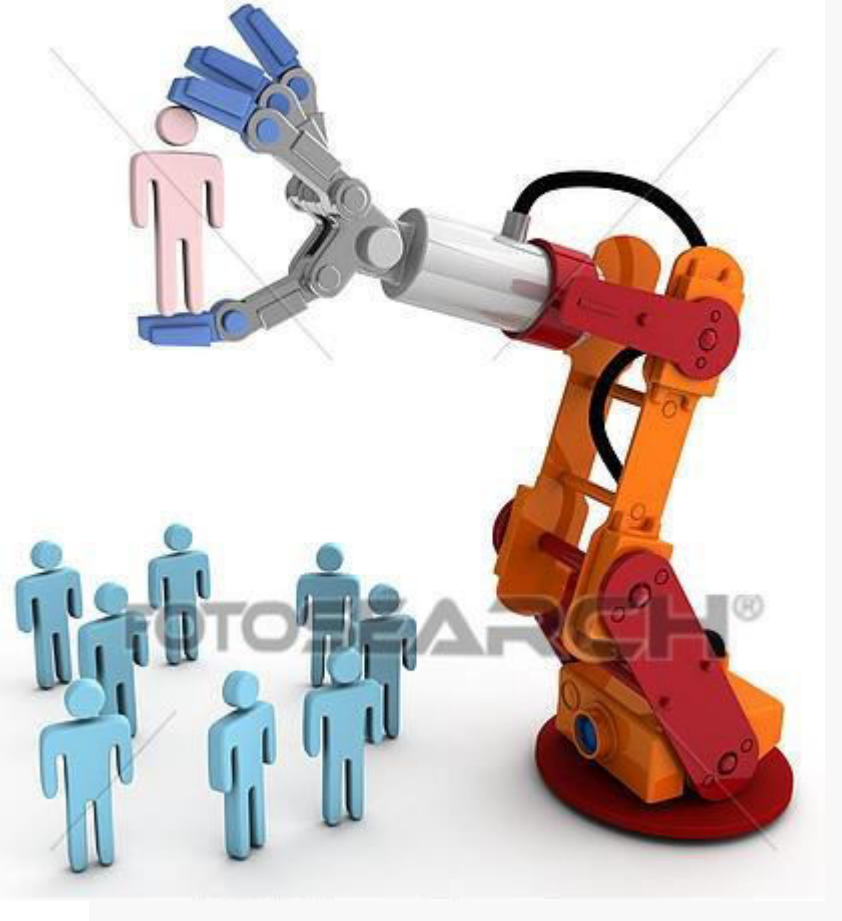
13) ...and most importantly, *Wear your safety glasses!*

ROLES

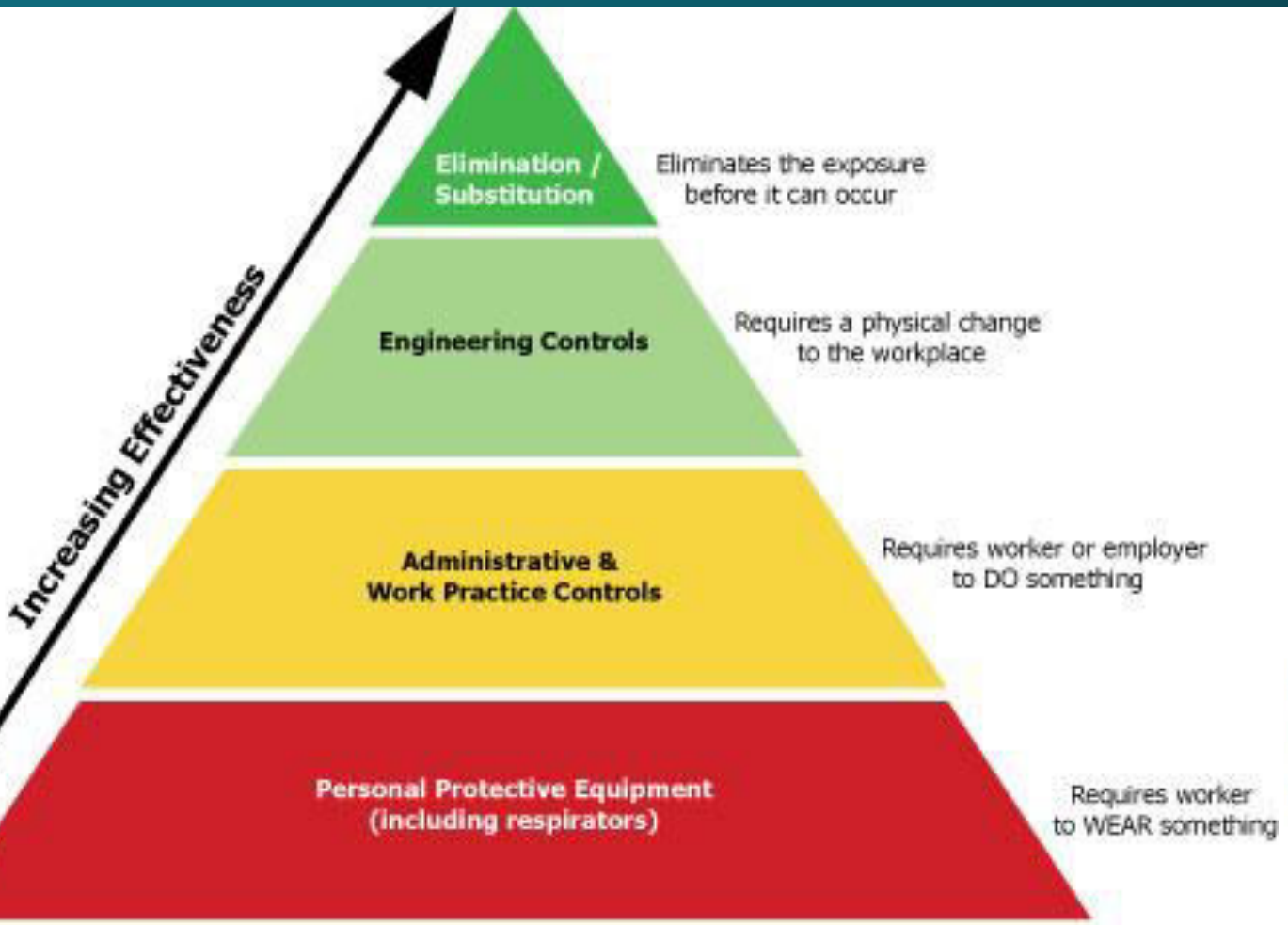
MOVE FORWARD

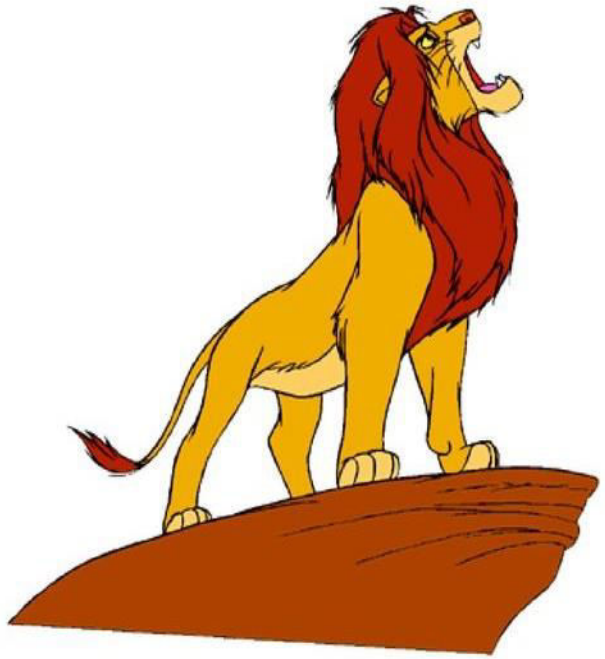
PRE-EMPLOYMENT

- Right person is employed for the right job
  - Choose the best



RISK IDENTIFICATION





Hazard 100 %
Risk depends on how close you get (and if the lion is hungry)

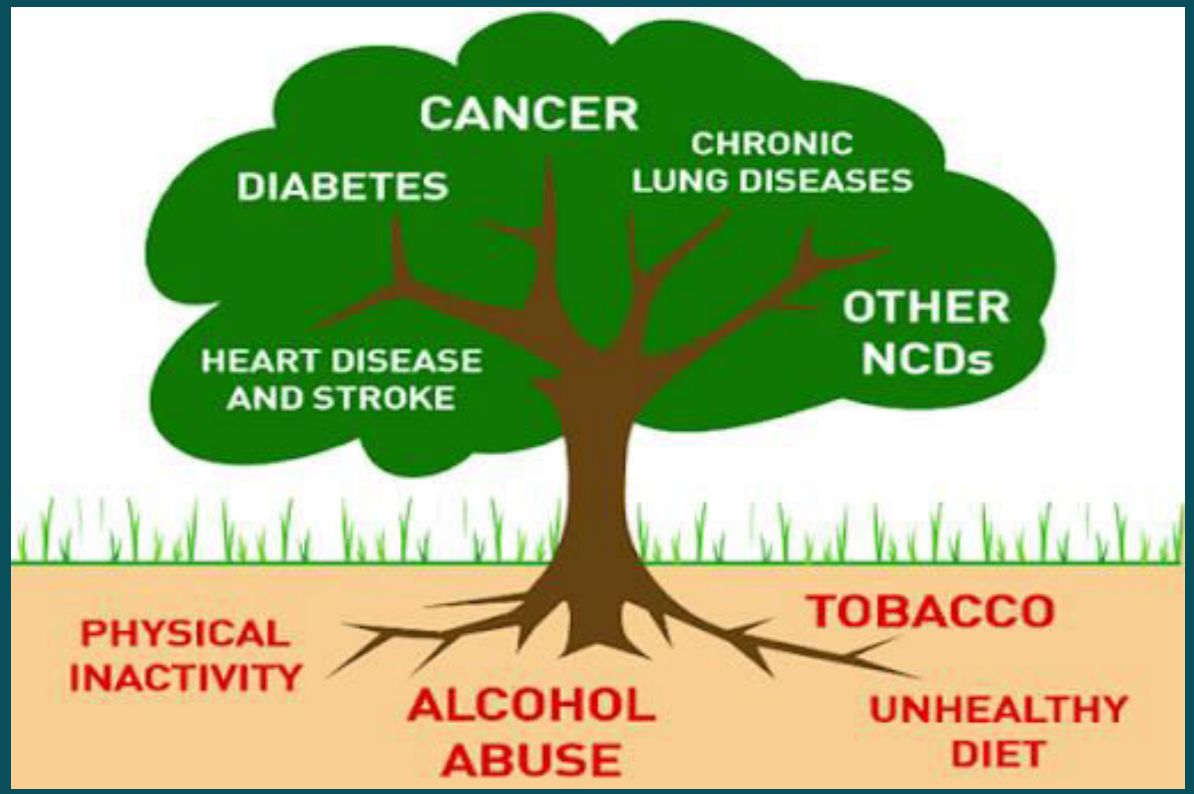
Hazard 100 %
Risk 0% as long as the cage remains closed

ROUTINE PHYSICAL EXAMINATION

- To assess signs of hazards
- Periodicity depends on
  - Years of exposure
  - Quality and Quantity
  - Age of the person

NON-COMMUNICABLE DISEASE

- Tackling NCD's form major health risk prevention at workplace



UNORGANISED SECTOR

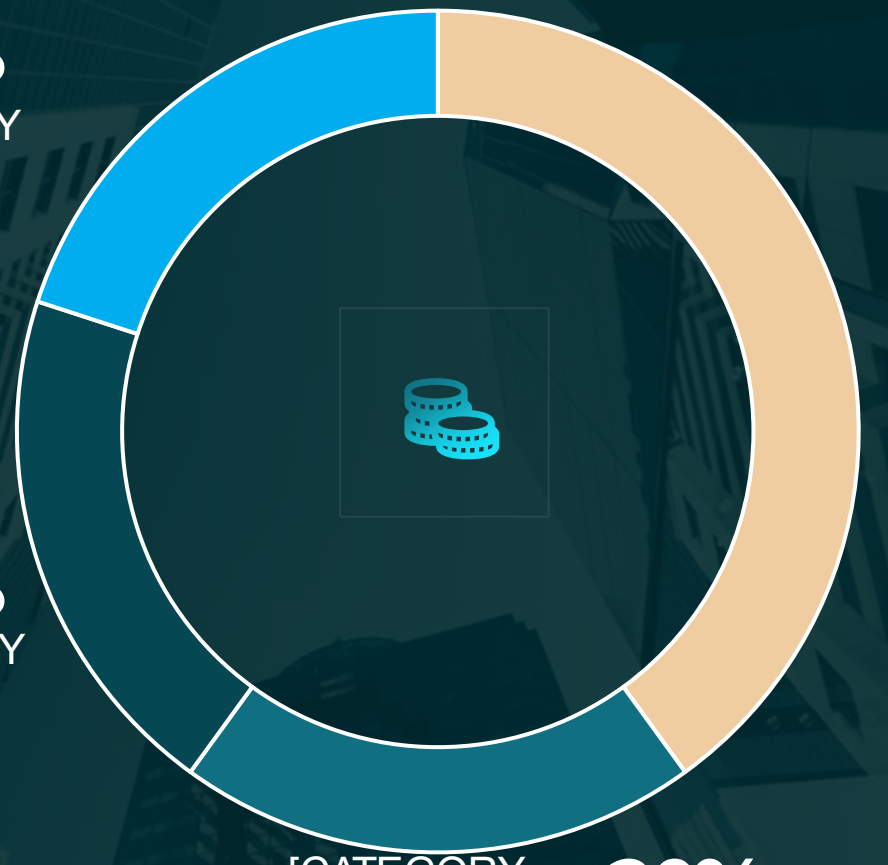
92% of workers

High need of visual requirement and preventive spectacles

SMART DEVICES IN HEALTH CARE

- Apps or devices
- Connects patients and health providers
- To diagnose, monitor, track and store vital statistics and medical information

INVESTMENT FOR OCCUPATIONAL OPTOMETRY SERVICES



TAKE HOME MESSAGE

- Every individual is different
- See your patients as person
- Do not just enquire on occupation, elicit information on task involved
- Provide preventive care and not just curative

THE TEAM

Dr PP Santanam

Advisor

Dr R Krishnakumar

Advisor

Dr Rashima Asokan

Head - Occupational Optometry Services

Ms Janani Suresh

Occupational Optometrist

THANK YOU

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