Original Research Paper

Volume - 11 | Issue - 09 | September - 2021 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Physiotherapy

EFFECTIVENESS OF PARTICIPATORY EYE CARE PROGRAMME IN IT PROFESSIONALS WITH COMPUTER VISION SYNDROME. AN EXPERIMENTAL STUDY

Mudit Raka* Intern, Modern College of Physiotherapy, Pune. *Corresponding Author

Dr. Sheetal Bamhane Asst.Professor, P.E.S.Modern College of Physiotherapy, Pune.

Dr. Sucheta golhar Principal, P.E.S.Modern College of Physiotherapy.

ABSTRACT

Background: IT Professionals spend almost 1,700 hours a year in front of a computer screen, Average of six and a half hours a day sitting at their computer or laptop. Thomson indicated that up to 90 % of computer users may experience symptoms related to CVS after prolonged computer usage.

Objectives: To find out the effectiveness of Participatory eye care programme in IT professionals with computer vision syndrome by using Computer vision syndrome questionnaire (CVS -Q) over the period of 8 weeks.

Methods: Various IT offices were visited in and around the city. The subjects were selected based on inclusion and exclusion criteria. Informed consent was taken from participants. Pre-treatment assessment was done by using CVS-Q questionnaire, application of PEP program with ergonomic advice was done. Post treatment assessment was done after 8 weeks by using CVS-Q questionnaire Data is recorded and analysis was done

Results: In this study, the participants which have undergone the participatory eye care program have found that the Pretest mean CVS-Q score was 10.143 and Posttest mean CVS-Q score was 4.489 which shows that treatment of participatory eye care program improved computer vision syndrome (5.66 = mean of Pre minus Post CVS-Q score 95% confidence interval of this difference: from 4.92 to 6.40)
The P value is less than 0.0001 by conventional criteria, this difference is considered to be extremely statistically significant.

Conclusion: In this study participatory eye care program shows significant effect on reducing computer vision syndrome in IT workers.

KEYWORDS : IT workers, Computer vision syndrome, participatory eye care program, CVS-Q

INTRODUCTION

"Computer Vision Syndrome" (CVS), is defined by the American Optometric Association as a complex of eye and vision problems related to the activities which stress the near vision and which are experienced in relation to or during the use of computers. Nearly 60 million people suffer from CVS globally, resulting in reduced productivity at work and reduced quality of life of the computer worker.

The increased use of computers benefits a variety of professional tasks but at the same time causes eye symptoms related to their usage. Prolonged use of computers can lead to complications, such as eye strain and other problems.

Symptoms of CVS includes; dry and irritated eyes, eye strain/fatigue, blurred vision, red eyes, burning eyes, excessive tearing, double vision, headache, light/ glare sensitivity, slowness in changing focus and changes in colour perception. In the twenty first century personal computers are one of the commonest office tools, used in almost all institutions/organizations, for a wide variety of vocational and/or non-vocational purposes. Hence, it is likely that CVS will continue to create a significant and growing contribution to reduced productivity at work, whilst also reducing the quality of life of the computer office worker.

IT Professionals spend almost 1,700 hours a year in front of a computer screen, Average of six and a half hours a day sitting at their computer or laptop[3], Thomson indicated that up to 90 % of computer users may experience symptoms related to CVS after prolonged computer usage.
The main cause of eye strain is thought to be fatigue of the ciliary and extra ocular muscles due to the prolonged accommodation and vergence required by near-vision work.11 Another causative factor implicated in eye strain is dryness of the eyes resulting from an increased exposed surface area of the cornea when focusing straight ahead and a decreased blink rate due to mental concentration. Blinking is often inhibited by concentration and staring at a computer screen. Therefore, the eye tends to have more amount of tear evaporation resulting in dryness and irritation. In addition, there were significant positive correlations between eye-related tiredness and orbicularis oculi muscle load and eye-related pain and muscle blood flow. Muscle pain development during intentional short-term interventions such as eye exercises can relieve strain on the eyes and also refresh the mind, reflected by improvement in the visual reaction time. Therefore, sufficient blinking and performing eye exercise may help relieve dryness and tension accumulated in the muscles of the eye

NEED OF STUDY

Computer vision syndrome is a repetitive strain disorder that appears to be growing rapidly in IT professionals. It has an overall prevalence of 90% in India. IT professionals with computer vision syndrome may suffer from mental stress due to longer Screen time on computer & due to increase in workload. This also affects their work productivity. So in order to find out the effective treatment tool by optimizing the exposure time and improving awareness on safety measures, there was a need to study the effectiveness of Participatory eye care programme in IT professionals with computer vision syndrome.

SUBJECTS

Included: Age - 25-40, IT professionals (Full time workers), Male and female, Snellen's chart score 6/6 with or without specs, Jaegers chart score (can read a text size of 0.37 mm), Computer users for more than 3 hours per day and had worked in current position for at least 12 months[5], CVS-Q score $\geq$ 6

Excluded: Participants with organic diseases like glaucoma, eye injury ,malignancy,post surgery for refractive error ,squint, Participants suffering from known medical conditions known to impact cognitive functioning like neurological disorder ,head injury, cardiovascular disease, Diabetes, Cranial nerve injuries ,Infective conditions like Herpes zoster.

METHOD

Informed consent was taken from all the participants
Participants were included in the study according to inclusion and exclusion criteria
Pre-treatment assessment was done by using CVS-Q questionnaire
Application of exercise protocol with ergonomic advice was done
Post treatment assessment was done after 8 weeks by using CVS-Q questionnaire
Data is recorded and analysis was done

PROTOCOL

All the participants were informed about the existing computer vision syndrome situation and factors contributing to CVS among the staff using computer

The 3-hour course on computer vision syndrome at the beginning of the program: the course content included symptoms of eye strain, causes and risk factors, and preventive measures.

Rest breaks: there were short and long breaks provided for the

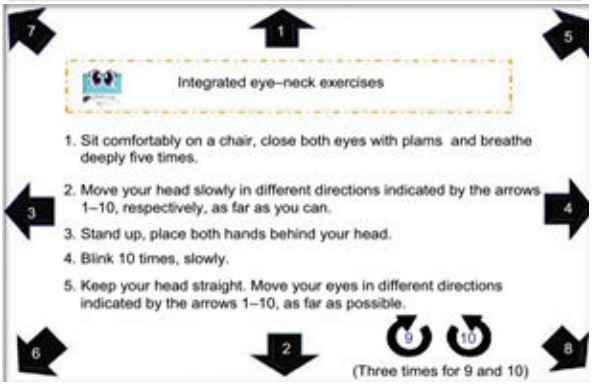
participants. A total of 30-second break every 30 minutes of computer work was provided, giving the participants a brief period to relax their eyes, stretch their body, and adjust their posture. During 15 minutes rest break in the morning and the afternoon, the participants would be recommended to do integrated eye–neck exercises and take rest after that. The audiovisual break reminders were set up to warn the participants to take breaks and do integrated eye–neck exercises on schedule as defined in Table 1.A chart will be given to the participant's for maintaining daily exercise program.

The medium for integrated eye–neck exercises was designed on a mouse pad screen printed with instructions of the exercises as shown in Figure 1.

Ergonomic advice :- Computer screen should be 15-20 degrees below eye levels (about 4 or 5 inches) as measured from the screen and 20 to 28 inches from the eyes.Chairs should be comfortably padded and conform to the body.Chair height should be adjusted so your feet rest flat on the floor. If your chair has arms, they should be adjusted to provide arm support while you are typing. Your wrists shouldn't rest on the keyboard when typing. position the computer screen properly to avoid glare

Table 1 Work schedules and rest break times for computer work

Computer work/rest breaks	Time
Start computer work (9:15–12:00 am)	9:15 am
30-second – rest break	9:45 am
15-minute – rest break (with integrated Eye–neck exercises)	10:15 am
30-second – rest break	11:00 am
30-second – rest break	11:30 am
Lunch break	12:00 am
Back to computer work (1:15–4:30 pm)	1:15 pm
30-second – rest break	1:45 pm
30-second – rest break	2:15 pm
15-minute – rest break (with integrated eye–neck exercises)	2:45 pm
30-second – rest break	3:30 pm
30-second – rest break	4:00 pm
Finish work	4:30 pm



EYE EXERCISE CHART

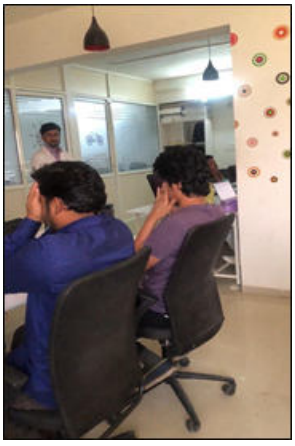


Figure 1

Figure 2

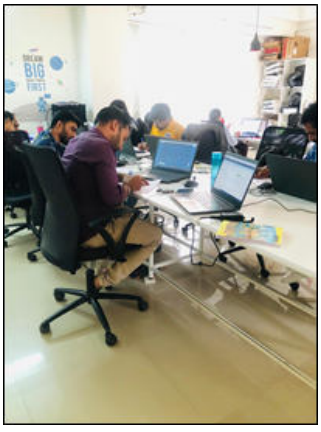


Figure 3

OUTCOME MEASURE
Computer vision syndrome questionnaire

DATA ANALYSIS
The data was entered in Excel spread sheet, tabulated and subjected to Statistical Analysis using Graph pad.

The difference between PRE and POST were compared and analyzed using paired 't'-test for all the components.

In the entire study, the p value < 0.05 is considered to be statistically significant.

P value is 0.0001, it is to be considered statistically significant.

PRE-POST CVS-Q SCORE

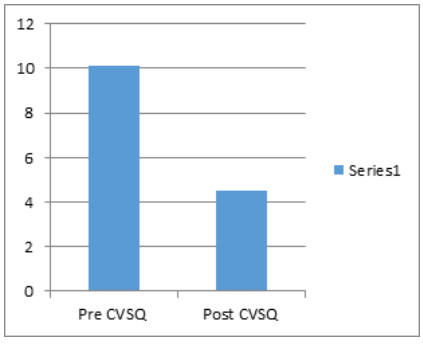


CHART 1

Table 2

	PRE CVS-Q	POST CVS-Q	DIFFRENCE
MEAN	10.143	4.489	5.66
SD	2.25	1.17	
SEM	0.38	0.2	

RESULTS

In this study, the participants which have undergone the participatory eye care program have found that the Pre test mean CVS-Q score was 10.143 and Post test mean CVS-Q score was 4.489 which shows that treatment of participatory eye care program improved computer vision syndrome (5.66 = mean of Pre minus Post CVS-Q score 95% confidence interval of this difference: from 4.92 to 6.40)

The P value is less than 0.0001 by conventional criteria, this difference is considered to be extremely statistically significant

DISCUSSION

Study has been taken into consideration with the ethical committee in PES MCOP

The present study was done to check the effectiveness of participatory eye care program on IT workers with computer vision syndrome. In this study total 35 subjects both male and female were included within the age span of 25-40 years.

We found that participatory eye care program has a good effect on reducing computer vision syndrome.

By the previous studies in reducing eye strain. Gosewade et al15 conducted the study to evaluate the effect of eye exercise techniques along with pranayama, which consisted of palming, blinking, and deeply breathing. The study results suggested that eye exercises and breathing exercises relieve strain on the eyes.29 Moreover, a systematic review of 43 studies to examine the scientific evidence base regarding the efficacy of eye exercises as used in optometric vision therapy concluded that eye exercises have been purposed to improve a wide range of conditions, including eye strain, accommodative dysfunction, visual acuity, and general well-being.30

Additionally, one of the significant strategies for reducing eye strain is taking regular rest breaks, in accordance with the study by Galinsky et al31 that reported that supplementary breaks reliably minimized discomfort and eye strain without impairing productivity.

Therefore it is possible that the participatory eye care program used in these study could have reduced symptoms of computer vision syndrome.

CONCLUSION

In this study participatory eye care program shows significant effect on reducing computer vision syndrome in IT workers.

The composition of all strategies significantly associated with a lower rate of eye strain through the participatory approach made it a successful program for the IT workers. It is recommended that the PEC program can be applied to use as a preventive tool in reducing CVS among computer users in other sectors.

REFERENCES

1. American optometric association ,Computer vision syndrome
2. Janki Barai, Chris Hammond,Computer vision syndrome: causes, symptoms and management in the pharmacy, Pharmaceutical journal ,Dec 2017
3. Grant bailey, Office workers spend 1,700 hours a year in front of a computer screen, Independent digital news, July 2018
4. Nitin gosewade,Amol drugkar,vinod shende, Effects of pranayama and eye exercises on visual acuity of medical students : A Case control study ,Journal of Clinical and Diagnostic Research, April 2016,6324.3338
5. P. Ranasinghe1,W. S. Wathurapatha,Y. S. Perera,Computer vision syndrome among computer office workers in a developing country: an evaluation of prevalence and risk factors,BMC journal ,2016,9:150,
6. María del Mar Seguí, Julio Cabrero-García, Ana Crespo, Computer vision syndrome questionnaire ,journal of clinical epidemiology , January 2015,10.1016
7. Sudaw Lertwisuttipaiboon, Tepanata Pumpaibool, Karl J Neeser, Ngamjit Kasetsuwan, Effectiveness of a participatory eye care program in reducing eye strain among staff computer users in Thailand,Dove press journal,11may 2017:10 71–80
8. KY Loh , SC Reddy, understanding and preventing computer vision syndrome, Malaysian Family Physician. 2008;3(3): 128-130