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Effects Of Yogic Eye Exercises On Eye Fatigue In Computer Users Of Central India

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Abstract

This study aimed to explore the impact of yogic eye exercises on reducing eye fatigue among computer users. Employing a pre-post experimental design, 30 participants aged 20-40 were selected using convenience sampling, with 15 individuals assigned to both the exercise and control groups. The yogic eye exercise regimen involved 60-minute sessions twice daily for 120 days (4 weeks), encompassing 10 specific steps including palming, blinking, sideways viewing, rotational viewing, and guided relaxation techniques. Eye fatigue was assessed using a validated questionnaire designed to evaluate ocular fatigue. This study contributes to understanding the potential benefits of yogic eye exercises in alleviating eye fatigue among computer users.

Result: The measurements from the exercise group demonstrated a notable reduction in eye fatigue scores compared to the control group.

Conclusion: These results suggest that the implementation of yogic eye exercises has the potential to diminish eye fatigue scores in undergraduate nursing students

Key words: Eye yoga, Eye fatigue

INTRODUCTION

Eyes play a crucial role in daily functioning, serving as vital organs through which we perceive a vast array of visual information in both professional and personal settings. However, users of visual displays often experience various forms of visual discomfort, including tiredness, dryness, strain, irritation, reduced visual acuity, burning sensations, redness, and double vision[1-4]. Eye fatigue, especially prevalent among computer users engaged in academic, recreational, or social activities, is a common complaint[5].

Several factors contribute to eye fatigue, such as inadequate lighting, prolonged screen time, poor dietary habits, inefficient eye muscle function due to extended office work and academic commitments, emotional stress, and the natural aging process[6]. Studies have indicated that eye disorders often stem from functional abnormalities in ocular muscles exacerbated by the strain and tension induced by computer work[7].

Relaxation techniques, including yoga, have been proposed as potential remedies for alleviating eye fatigue[8]. Yoga practices have been linked to both physical and mental health benefits, including the modulation of stress-related pathways such as the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system[9]. Previous research has demonstrated that yoga exercises correlate with improved self-rated relaxation and reduced stress levels among computer using students[10-12]. Additionally, these practices have been shown to enhance visual perceptual sensitivity and the ability to discern flickering stimuli by increasing the frequency of blinking, thereby reducing the perceived steadiness of flickers[13].

A study involving computer workers revealed a significant decrease in stress levels among participants in the yoga exercise group over a 12-week period, contrasting with an increase in stress levels observed in the control group. However, limited evidence exists regarding the efficacy of eye yoga in alleviating eye fatigue. Therefore, this study aims to investigate the effects of yogic eye exercises on eye fatigue among computer workers.

SUBJECTS AND METHODS

This study employed a pretest-posttest design with a total of 30 participants, comprising 8 healthy females and 7 healthy males. These individuals were computer users aged 20–45 years with no medical eye conditions, no history of using eye medications, and no prior experience with yoga exercises. Participants from various occupational backgrounds, including banks, reservation counters, ultrasound centers, hospital data entry positions, and call centers, were recruited for the study. All participants were provided with detailed information regarding the study's purpose and its potential usefulness. Informed consent was obtained from each participant prior to their inclusion in the study. The participants were evenly divided into two groups: the yogic eye exercise group (n=15) and the control group (n=15). Thirty participants successfully completed the entire study.

The study received approval from the Institutional Review Board of **Sarvapalli Radhakrishna University, Bhopal, Madhya Pradesh.** Demographic data and eye fatigue scores were collected both as pretest and posttest data. Eye fatigue was assessed using a questionnaire designed to evaluate ocular fatigue. This questionnaire consisted of 12 items, each scored on a 7-point Likert scale, where 0 indicated no fatigue, 1 or 2 represented slight fatigue, 3 or 4 denoted moderate fatigue, and 5 or 6 signified severe fatigue. The questionnaire assessed various sources of eye fatigue, including tiredness, soreness, irritation, watering, dryness, eyestrain, heat/burning sensation, blurred vision, difficulty focusing, double vision, and visual discomfort. A higher score indicated a greater perceived level of fatigue.
Eye fatigue scale measurements were collected from participants both before the start of the study and upon its completion, following the yogic exercise intervention[2-4]. The yoga sessions were conducted twice daily, each lasting approximately 30 minutes, over a period of 12 weeks. The yoga instructor leading these sessions held certification from M.P Yoga Bharati in India.
The yogic exercises comprised 10 steps, namely palming, blinking, sideways viewing, frontal and lateral viewing, rotational viewing, upward and downward viewing, preliminary nose-tip gazing, near and distant viewing, Trataka, and guided relaxation techniques. Following the completion of the eye exercises, participants were guided through relaxation methods.

The scientific rationale behind yoga eye exercises is expounded as follows:
Palming: This technique aims to relax and rejuvenate the eye muscles while promoting circulation of the aqueous humor, a fluid vital for the health of the cornea and lens. It also aids in correcting vision defects.
Blinking Exercise: Encourages the natural blinking reflex, facilitating muscle relaxation and reducing eye strain.
Sideways Viewing: Alleviates tension in muscles strained by prolonged reading and close work, thus helping to prevent and correct squinting.
Front and Sideways Viewing: Enhances coordination between the medial and lateral eye muscles.
Rotational Viewing: Restores balance in the muscles surrounding the eyes and promotes coordinated movement of both eyeballs.
Up-and-Down Viewing: Balances the upper and lower eye muscles.
Preliminary Nose-Tip Gazing: Improves the focusing and accommodating abilities of the eye muscles.
Near and Distant Viewing: Similar to preliminary nose-tip gazing, this exercise expands the range of movement and enhances focusing power[6-14].

Statistical analyses were performed using the SPSS program (version 18.0) for Windows. Data were presented as number (percentage) or median (range). To assess the homogeneity of demographic and clinical characteristics between the exercise and control groups, a $\chi 2$ test with Fisher's exact test or Z test was employed. Due to nonhomogeneous ages in the demographic characteristics, significant differences between groups were determined using Wilcoxon rank sum tests. Additionally, significant differences within groups were assessed using Wilcoxon signed rank tests. A probability value of less than 0.05 was considered statistically significant.

RESULTS

The variables are detailed in Tables 1 and 2. Apart from age, no notable differences were observed in characteristics between the yoga and control groups. Pre-intervention eye fatigue scores did not significantly differ between the two groups. However, following the yoga exercise regimen, significant discrepancies in eye fatigue scores were noted between the yoga and control groups ($p<0.001$), as well as over time (pretest vs. posttest, $p<0.001$).

Table 1:- Homogeneity test results for general characteristics and eye fatigue between the experimental and control groups

Variables	Experimental Group	Control Group
Female	12(60.0)	18(90.0)
Male	8(40.0)	2(10.0)
Age (Years)	24(22-36)	22(21-25)
Acuity		
Right acuity	1.0(0.2-1.5)	0.75(0.0-1.5)
Left acuity	0.9(0.1-1.5)	0.6(0.1-1.5)
Use of visual media per day (hours)	4.0(2.0-12.0)	5.0(2.0-12.0)
Sleep duration per day (hours)	7.0(5.0-8.0)	7.0(5.0-8.0)
Eye fatigue	19(3-35)	23(7-47)

P<0.01

Table 2:- Effects of yogic eye exercise on eye fatigue

Group	Pre-test	Post-test	Within group	Between Group
Yoga group)	19 (3–35)	8 (2–30)	−6 (95% CI [−26, 3])*	-------
Control group	23 (7–47)	22.5 (5–59)	0 (95% CI [−19, 12])	−14 (95% CI [−52, −3])*

* p<0.001; CI: confidence interval

DISCUSSION

The study results indicate a significant reduction in eye fatigue scores following 12 weeks of yogic eye exercises compared to pre-exercise levels. Furthermore, nursing students participating in the yoga exercise group experienced a notable decrease in eye fatigue levels over the 12-week duration, whereas no significant change was observed in the eye fatigue levels of the control group. These findings align with prior research demonstrating that yoga practices effectively reduce visual discomfort among participants employed in software companies[1-15].

Prior studies have recommended that a comprehensive yoga program should incorporate yoga postures, breathing techniques, joint exercises, visual cleansing exercises, and relaxation strategies[1].

In contrast to the yoga group in this study, the control group did not exhibit any significant differences in their eye fatigue scores. Beyond the direct effects of eye yoga, the variations between the two groups may also stem from the psychological benefits experienced by participants in the yoga group, attributed to their regular interactions with the instructor. This underscores the potential role of psychological effects within the yoga group. Consequently, these findings underscore the efficacy of yogic eye exercises as a non-pharmacological intervention for alleviating eye fatigue.

However, the limited number of studies focusing on eye-yoga exercises suggests the need for further research to establish robust methodological evidence supporting the efficacy of eye yoga in relieving eye fatigue. Follow-up studies are thus warranted to strengthen the evidence base for the effectiveness of eye-yoga programs

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