# EFFECTIVENESS OF BLINKING EXERCISE ON LEVEL OF TEAR PRODUCTION AMONG PROFESSIONALS IN SELECTED IT COMPANY

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**ABSTRACT**

Introduction: Computer users have less tear production due to less blinking. In this context, complementary therapy like blinking exercise has its own significance, thus enhancing the scope of nursing. Objective: To evaluate the effectiveness of blinking exercise on level of tear production. Design: A quantitative approach using quasi experimental pre test, post test design with control group. Participants: The sample size for the study was 60. The subjects were 30 IT professionals in Speed up networks (Sathyaraj groups) for control group and 30 IT professionals from insoft technologies for experimental group, selected by using non probability purposive sampling technique. Intervention: Blinking exercise 15 minutes once in afternoon for 15 consecutive days. Tools : The standardized schirmer's tear strips was used as the instrument to measure the level of tear production. Results: Analyzing among experimental group and control group by using independent 't' test values 19.6 and 6.08 respectively significant at $p<0.05$ level. Conclusion: Blinking exercise is effective on level of tear production among IT professionals.

**Key words:** Blinking exercise, Tears, IT professionals

## Introduction

Computers have now become basic and essential desktop equipment in almost every establishment. It has the greatest impact on our lives in the modern times. Among the advancement of the technology, computer have the first place everywhere. Computer is an inevitable electronic device for the fast and accurate work. Computer decreases the workload of man and increases the productivity.

Information Technology professionals spend increasing amounts of time sitting at their computer work-stations and take less and less breaks. With increasing demand for more productivity and tight deadlines, workers are exposed to more hours of work in front of computers. Such prolonged use of computer gives significant stress to eyes. Today it is an epidemic of a computer vision syndrome.

Computer eyestrain is the number one office-related health complaint that includes dry eyes, eye-strain, tired eyes, irritation, burning sensations, redness of eyes, blurred and double vision.

The dry eyes are caused by incomplete and inadequate blinking, poor lighting, glare on the computer screen, improper viewing distances, poor seating posture and uncorrected vision problems. The average blink rate is once every 5 seconds. In one hour the average person will blink 720 times. American Eye-Q survey has shown that computer users will blink only 144 times in an hour. Blinking is vital for a healthy eye. A full blink cleans and refreshes front of the eye and providing nutrients and dissolved oxygen for the tissues of the sensitive cornea (front surface of the eyeball). A continual flow of fresh tears containing the body's own defense mechanisms also protect the eyes from bacteria and other unwanted micro-organisms.

**Objectives**

— To assess the pretest and posttest level of tear production among IT professionals in experimental and control group.

— To evaluate the effectiveness of linking exercise on level of tear production among IT professionals in experimental group.

— To determine the association between the post-test level of tear production among IT professionals and their selected demographic variables in experimental and control group.

**Hypotheses**

$H_1$ There is a significant difference between the mean pre and post test level of tear production among IT professionals in experimental group.

$H_2$ There is a significant difference between the mean post-test level of tear production among IT professionals experimental and control group.

$H_3$ There is a significant association between the post-test level of tear production among IT professionals and their selected demographic variables.

## Methodology

## Research Approach

The research approach used for this study was quantitative evaluative approach to evaluate the effectiveness of blinking exercise on level of tear production among IT professionals.

## Research Design

A quasi experimental pre and post test design with control group was chosen to evaluate the effectiveness of blinking exercise on level of tear production among IT professionals.

The diagrammatic representation of the research design is given as follows:

| Group | Pre test $D_1$ | Intervention $D_2 - D_{16}$ | Post test $D_{17}$ |
|---|---|---|---|
| Experimental group | $O_1$ | X | $O_3$ |
| Control group | $O_2$ | -- | $O_4$ |

## Setting of the Study

The study was conducted in IT department of Speed up networks (Sathyaraj groups) and insoft technologies Coimbatore

## Population

In this study the target population was IT professionals and accessible population of the study was IT professionals in Speed up networks (Sathyaraj groups) and Insoft technologies Coimbatore.

## Sample

The sample size for the study was 60. The subjects were 30 IT professionals in Speed up networks (Sathyaraj groups) for control group and 30 IT professionals from Insoft technologies for experimental group.

## Sampling Technique

The samples for this study were selected by using non probability purposive sampling technique which means, selection of IT professionals who are having possible shortage and insufficient tear production. 30 subjects

were selected separately for experimental and control group based on inclusion criteria and exclusion criteria.

## Development of Tool

The research tool was developed in English after an extensive review of expert opinion. The standardized schirmer's tear strips was used as the instrument to measure the level of tear production

## Description of Tool

SECTION A: Demog raphi c variables.

It contains demographic profile of IT Professionals such as age, gender, religion, education, area of living, monthly income, job experience, duration of working, brightness of computer, previous complaints, and posts of employee.

SECTION B: It consist of Standardized schirmer tear strip test to measure the level of tear production.

## Scoring Procedure

The level of tear production is classified as follows:

| | | |
|---|---|---|
| >25mm (71-100%) | : | normal |
| 15mm – 25mm (41-70%) | : | possible shortage |
| <15 (0-40%) | : | insufficient |

## B l i n k i n g E x e r c i s e Intervention

Samples were explained regarding the sequence of the procedure, and were made to sit comfortably on the chair. Ask to find a window, any window; now focus on a distant tree any objects for 10 to 15 seconds. Slowly refocus eyes on an object closer to the samples without moving the head. Focus on a new object for another 10 to 15 seconds. The next step is shutting the eyes quickly, squeeze and feel the facial muscles moving for 3-5 seconds. The third step includes rolling the eyes clockwise one full round, then counter-clockwise another full round. Next, move the eyes up and down, then left and right. Finish up this exercise by looking at their nose tip. Finally rubbing the palms against each other to warm up, then Turn the palms facing upwards and place them over the eyes. Feel the warmth coming from palms and close the eyes. This procedure was done for 15 minutes once a day for 15 days.

## Validity

Validity addresses the appropriate ness, meaningfulness and usefulness of the specific inferences made from instrument scores. Content validity of the instrument and intervention were evaluated by 5 nursing experts and two medical experts. Tool was found to be valid.

## Reliability

In this studystandardized Schirmer's Tear Strip was used to assess the level of tear production, is a reliable tool.

## Data Collection Procedure

A prior permission obtained from managing director of the IT Company. The study was conducted for a period of 6 weeks. Informed written Consent was obtained from the clients before starting data collection. On day 1, the demographic variables was collected through structured questionnaire and pre test was conducted by using standardized schirmer's tear strips to measure the level of tear production for both experimental and control group in selected IT company. On day 2 to 16 blinking exercise was given for 15 minutes once a day for 15 consecutive days for experimental group only. On the day 17 post test assessment of level of tear production among IT professionals was done by using the same standardized schirmer's tear strips for both experimental and control group.

## Major study findings:

Major study findings include IT professionals with decreased tear production majority of them were belong to age group 25-30 years, were males, most of the professionals were Hindu, from urban, were getting income Rs15001 – 20000/month, having 7-10 years of experience, working above 8 hours, brightness of computer 61 -80%, were said no complaints, most of them were grade II employees.

Regarding level of tear production during pre test majority of the IT professionals had insufficient tear production in both experimental and control group. During post test experimental group majority of the IT professionals had normal tear production and among control group majority fall in the IT category of insufficient tear production.

With regard to effectiveness of blinking exercise on level of tear production among IT professionals in experimental group, the mean pre-test score 40 with standard deviation 7.17 was more than the mean post test score 85 with standard deviation 13.7. The calculated mean difference was 45 and the obtained 't' value 19.6 was highly significant at $p<0.05$ level. In control group, the mean pre-test score 45 with standard deviation 8.44 was more than the mean post test score 39 with standard deviation 7.58.The calculated mean difference was 6

and the obtained 't' value 6.08 was significant at $p<0.05$ level.

With regard to association between the level of tear production with th ei r selected demo graph ic variables, the study findings had revealed that there was no significant association between level of tear production with their selected demographic variables in experimental group such as age, gender, religion, area of living, monthly income, period of experience, duration of working, brightness of computer, posts of employee. And there is significant association between level of tear production among IT professionals with their selected demographic variable previous complaints both in experimental and control group.

**Table-1 Frequency and Percentage Distribution on Level of Tear Production Among IT Professionals in Experimental Group**

| S. No. | Level Of Tear Production | Pre-test | | Post-test | |
|---|---|---|---|---|---|
| | | F | % | F | % |
| | Experimental Group | | | | |
| 1 | Normal | 0 | 0 | 24 | 80 |
| 2 | Possible shortage | 11 | 37 | 6 | 20 |
| 3 | insufficient | 19 | 63 | 0 | 0 |

Table 1 shows that among experimental group, IT professionals 11(37%) had possible shortage of tear production and 19(63%) had insufficient tear production during pre-test. Majority 24(80%) had normal tear production and 6(20%) had possible shortage of tear production during post-test.

**Table-2 Frequency and Percentage Distribution on Level of Tear Production Among IT Professionals in Experimental Group**

| S.No. | Level Of Tear Production | Pre-test | | Post-test | |
|---|---|---|---|---|---|
| | | F | % | f | % |
| | Control Group | | | | |
| 1 | Normal | 0 | 0 | 0 | 0 |
| 2 | Possible shortage | 19 | 63 | 17 | 57 |
| 3 | insufficient | 11 | 37 | 13 | 43 |

Table 2 shows that among control group, IT professionals 19(63%) had possible shortage of tear production and 11(37%) had insufficient tear production during pre-test. Majority 17(57%) had possible shortage of tear production and 13(43%) had insufficient tear production during post-test.

**Table-3 Mean, Standard Deviation, Mean Difference and 't' Value on Pre test & Post test Level of Tear Production Among IT Professionals in Experimental Group.**

N=30

| S.No | Level Of Tear Production | Mean | Standard Deviation | Mean Difference | 't' Value |
|---|---|---|---|---|---|
| | Experimental group | | | | |
| 1. | Pre-test | 40 | 7.17 | 45 | 17.9* (2.045) |
| 2. | Post-test | 85 | 13.7 | | |

Significant at $p<0.05$ level

Table 3 reveals that among experimental group, the mean pre-test score 40 with standard deviation 7.17 was less than the mean post test score 85 with standard deviation 13.7. The calculated mean difference was 45 and the obtained 't' value 17.9 was highly significant at $p<0.05$ level. Hence the stated hypothesis $H_1$ was accepted.

**Table-4 Mean, Standard Deviation, Mean Difference and 't' Value on Pre test & Post test Level of Tear Production Among IT Professionals in Control Group.**

N=30

| S.NO. | Level Of Tear Production | Mean | Standard Deviation | Mean Difference | 't' Value |
|---|---|---|---|---|---|
| | Control Group | | | | |
| | Pre-test | 45 | 8.44 | 0.1 | 0.39 (2.045) |
| 1. | | | | | |
| | Post-test | 44.9 | 8.63 | | |
| 2. | | | | | |

-Not Significant

Table 4 reveals that among control group, the mean pre-test score 45 with standard deviation 8.44 was more than the mean post test score 44.9 with standard deviation 8.63.The calculated mean difference was 0.1 and the obtained 't' value 0.39 was not significant.

**Table-5 Mean, Standard Deviation, Mean Difference and 't' Value on Post test Level of Tear Production Among IT Professionals in Experimental and Control Group.**

| S.NO. | Level Of Tear Production | Mean | Standard Deviation | Mean Difference | 't' Value |
|---|---|---|---|---|---|
| 1 | Experimental group | 85 | 13.7 | 40.1 | 13.1* |
| 2 | Control group | 44.9 | 8.63 | | |

Significant at p<0.05 level

Table 5 reveals that among experimental group, the mean post-test score was 85 with standard deviation 13.7. Among control group, the mean post-test score was 44.9 with standard deviation 8.63. The calculated mean difference was 40.1 and the obtained 't' value 13.1 was highly significant at p<0.05 level.

Hence the stated hypothesis $H_2$ was accepted. So it is inferred that there is significant relationship between blinking exercise and level of tear production.

## DISCUSSION

The basic aim of the study was to evaluate the effectiveness of blinking exercise on level of tear production among IT professionals in selected IT Company.

The first objective was to assess the pretest level of tear production among IT professionals in experimental and control group. The study revealed that adequate blinking is essential to prevent dry eyes. Among experimental group 19 (63%) of IT professionals had insufficient tear production and 11(37%) had possible shortage of tear production during pre-test. After giving intervention majority 24(80%) of IT professionals had normal tear production and 6(20%) had possible shortage of tear production during post-test. Comparing to experimental group,

among IT professionals in control group 19(63%) had possible shortage of tear production and 11(37%) had insufficient tear production during pre-test. Majority 17(57%) had possible shortage of tear production and 13(43%) had insufficient tear production during post-test. Hence the $H_1$ is accepted.

The second objective of the study was to evaluate the effectiveness of blinking exercise on tear production among IT professionals. Intervention was given to experimental group only so the mean pre-test score 40 with standard deviation 7.17 was less than the mean post test score 85 with standard deviation 13.7. The calculated mean difference was 45 and the obtained 't' value 19.6 was highly significant at $p<0.05$ level.

Among control group, the mean pre-test score 45 with standard deviation 8.44 was more than the mean post test score 44.9 with standard deviation 8.63. The calculated mean difference was 0.1 and the obtained 't' value 0.39 was not significant.

Hence the $H_2$ was accepted. Blinking exercise is effective in increasing the level of tear production

The third objective of the study was to determine the association between the level of tear production among IT professionals and their selected demographic variables (age, sex, religion, education, area of living, monthly income, period of job experience, duration of working, brightness of computer, previous experience, posts of employee) in experimental and control group.

There is no significant association between level of tear production among IT professionals with their selected demographic variables in experimental group and control group, such as age, gender, religion, area of living, monthly income, period of experience, duration of working, brightness of computer, and posts of employee. And there is significant association between level of tear production among IT professionals with their selected demographic variable of previous complaints in experimental group.

## Recommendations

1. The study can be replicated in larger sample size.
2. Effectiveness of this technique can be compared with other complementary therapies to find its effectiveness.
3. The same study can be conducted as a longitudinal study.
4. The same study can be conducted

with time series and one group pre test- post test design.

5. Conduct further research in different settings using the above finding as a baseline data.
6. The same study can be applied for patients with blepharitis.

## Conclusion

The main conclusion drawn from the present study was that most of the IT professionals had insufficient tear production. After practicing blinking exercise there was significant improvement in level of tear production. Samples become familiar and found themselves comfortable an d also expressed satisfaction. It is thus concludedthat blinking exercise is effective and simple strategy to increase the level of tear production.

## REFERENCES


1. Ann Marriner Tomey, Martha Raile Alligood. (2006). Nursing Theorists And Their Work. 6th ed. Missouri: Mosby Publication.
2. Bare, G. Brenda, Smeltzer, C. Suzanna. (2008). Brunner and suddarths text book of medical surgical nursing. 10th ed. Philadelphia: Lippincott publication.
3. Basavanthappa, B.T. (2005). Nursing Research. 1st edition. New Delhi: Jaypee brothers medical publishers (Pvt) Ltd.
4. Basavanthappa,B.T.(2009).Medic al Surgical Nursing.1st ed. New Delhi: Jaypee Brothers Medical Publishers.
5. Black. M. Joyce and Jane Hokanson Hawks. (2006). Text Book Of Med ical Surg ical Nursing. W.B Saunders Company publication.
6. Dorothy. et.al. (1995). FundamentalsOfNursing Research. 2nd ed. USA: Jones and Bartlett publication.
7. Gupta, G.S Kappor. (1990). Fundamentals Of Mathematical Statistics. New Delhi: Sultan Chand publications.
8. Kothari, C.R. (2004). Research Met hod olo gy Met hod s And Techniques. 2nd ed. New Delhi: New Age International (p) Ltd publishers.
9. Lewis Sharon, M. Darkson ShannonIdolia, C. and Hei tk emper, M.M. (2007). Medical And Surgical Nursing. 6th ed. Missouri: Mosby publication

10. Mahajan, B.K. (1991). Methods In Biostatistics. 5th ed. New Delhi: J a y p e e B r o t h e r s M e d i c a l Publishers.
11. Polit and Beck. (2004). Nursing Research Principles And Methods. 7th ed. Philadelphia: Lippincott Williams and Wikins company.
12. Alan. D. Dry Eye Remedies And Recommendations. Journal of Ocular Pharmacology and Therapeutics. 21-25
13. Bali J. (2011). Computer Vision Syndrome A Review. -Journal of Clinical Ophthalmology. 11(2):3
14. Catherine Warren. Science And Art Of Blinking. British journal of ophthalmology.12-14.
15. Debra. Prevalence Of Dry Eye Disease Among Us Men: Estimates From The Physicians' Health Studies. Archives Ophthalmology. 20-24.
16. Fraunfelder FT.(2012).Exercise Fo r Dry Ey e . *J o urn al* of Ophthalmology. 5(1): 2.
17. Gary. (2001). Tips For ComputerE y e S t r a i n . A M J o f ophthalmology. 27(8).21.
18. Hanan Awad Alkozi . Recent Developments On Dry Eye Disease Treatment Compounds. Saudi Journal of Ophthalmology. 17-25
19. Hanan Awad Alkozi Recent Developments On Dry Eye Disease Treatment Compounds. Saudi Journal of Ophthalmology. 17-25
20.
21. Kaštelan S.(2006).Pathologic Process Of Dry Eye. *Journal* of Biomedicine. 34(4):18-22.
22. Mishra N - .(2008) .Role Of Blinking . *Journal* of Mid-Life Health. 99(28): 42.
23. NELSON JD. (2010). Effects of dry eye. Herald of BMJ . 17(3):5.
24. Ozgur O.(2006). Blinking And Dry Eyes. *Journal* of Medicine & PublicHealth. 18(2)..22.
25. R a j a R a j a n M a d h a n M . (2009).computer vision syndrome. The nursing Journal of India (TNAI). 136(10) : 6
26. Retrieved on JANUARY 2015http://www.allaboutvision.com/cvs/productivity.htm.
27. Ezaki OD. Archive For The 'Computer Vision Syndrome' Category. Retrieved on February2010.http://www.deanezakiod.com/category/computer-vision-syndrome/.
28. James Sheedy (2007). Staring at a computer monitor can cause painful dry eye. www.revophth.com/content/t/dry_eye/c/34860
29. Kothari, C.R. (2004). Research Methodology Methods And Techniques. 2nd ed. New Delhi:New Age International (p) Ltd publishers.