



Research Paper

A Study To Assess The Effectiveness Of 20-20-20 Rule To Prevent Eye Strain Among It Workers At Selected It Company, Puducherry.

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ABSTRACT: Human life is full of problems that need solving, and technology provides Innovative solutions to those problems that reduce effort and increase efficiency. Technology is the use of scientific knowledge for practical purposes that benefit our everyday lives, as well as the industries created by humans. The main objective of the study to assess the effectiveness 20-20-20 rule reduce the signs and symptoms of computer vision syndrome among IT workers. Descriptive research design was adopted for this study. The study was conducted among the IT workers. The study sample consists of IT workers working at IT company, who fulfil the inclusion criteria. 50 IT workers were selected by Convenient sampling technique who fulfils the criteria. This study had preliminary effort that focused on assessing the effectiveness of 20- 20-20 rule to prevent eye strain among the IT workers. on the basis of the study results, a pre- test and post-test was conducted. In the pre test, out of 50 samples 36 (72 %) were suffered from severe computer vision syndrome symptoms and 14 (28 %) were suffered from moderate computer vision syndrome. In post test after explanation about the 20-20-20 rule, out of 50 samples, 49 (98%) were suffered from mild computer vision syndrome symptoms and 1 (2%) were suffered from moderate computer vision syndrome symptoms.

Keywords: Eye strains, Computer Vision Syndrome, IT workers.

I. INTRODUCTION:

Human life is full of problems that need solving, and technology provides Innovative solutions to those problems that reduce effort and increase efficiency. Technology is the use of scientific knowledge for practical purposes that benefit our everyday lives, as well as the industries created by humans.

Digital-related eye strain affects people of all ages. If you spend hours a day using digital devices, you might notice your vision blurs, and your eyes feel achy and tired. You may also find your eyes become dry, and will tear or sting. This eye strain is no different from the symptoms you may have when reading, writing or doing “close work” like sewing for long for long stretches of time.

Digital devices are everywhere; from using computers at school, to watching TV at home or playing games on a smartphone gone are the days when families shared one computer or sat around the TV in the living room. But it might be surprising that children now a days owned a tablet or a smartphone.

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. It encompasses a group of visual symptoms which crop up from the extended viewing of the digital screen when the demands of the task exceed the abilities of the viewer.

Symptoms of CVS which are referred to as digital eye strain 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.

Computer Vision Syndrome (CVS) is the leading occupational hazard of the 21st century and its symptoms affect nearly 70 percent of all computer users. Globally, CVS is one of the major public health problems and reduced productivity at work, increased error date, reduced job satisfaction, and impaired visual abilities. A worldwide data shows nearly 60 million people suffering from CVS and 1 million new cases occurred each year. Given the low availability and utilization of personal protective equipment, the high workload, and the limited break time while using computer in developing countries, the burden of CVS is very high. The public health

burden of CVS was becoming the concern of policy makers and attracts the attention of researchers. A study conducted in Abuja, Nigeria, reported that 40% of computer users engaged as security and exchange commissioner has suffered from at least one symptom of CVS. A nationwide study in Sri Lanka reported more than two-thirds of computer office workers were suffering from CVS. A couple of studies conducted in Gondar, Ethiopia, reported that more than 73% of computer users who are working as secretaries, data processors, and bankers were developing CVS.

One of the most common consequences of starting at a screen all day is Computer Vision Syndrome, or CVS. Computer Vision Syndrome (CVS) is one potential condition, more common for adults, which may arise due to screens. The symptoms of CVS include blurred vision, fatigue, headaches, and difficulty focusing. In addition, some people experience back, neck and shoulder pain from hunching over to look at small screens and focus on small text.

Using the 20-20-20 rule can help to prevent this problem. The rule says that for every 20 minutes spent looking at a screen, a person should look at something 20 feet away for 20 seconds. Following the rule is a great way to remember to take frequent breaks. This should reduce eye strain caused by looking at digital screens for too long.

NEED FOR THE STUDY

At Global Level

Vision – related problems are the most frequently reported health-related problems, occurring in over 70% of computer workers. it is estimated that nearly 60 million people suffer from CVS globally, and that a million new cases occur each year. Since personal computers are one of the commonest office tools used extensively, CVS will continue to cause significant and growing contribution to diminished productivity at work while also reducing the quality of life of a computer worker. Many studies have been conducted in an attempt to address questions concerning safety and health for visual display terminal (VDT) users.

At national level

In India the computer using population is more than 40 million, and 80% have discomfort due to CVS. Eye strain, headache, blurring of vision and dryness are the most common symptoms. Workstation modification, voluntary blinking, adjustment of the brightness of screen and break in between can reduce CVS. The computer was invented by Charles Babbage in 1791 and, in India, the first computer was used in the Indian Statistical Institution in Calcutta in 1956.

At state level

A cross-sectional study was conducted among final year medical and engineering (computer science and information technology streams) college students of a University situated in the sub-urban area in Chennai . all those students who used computer in 1 month preceding the date of the study were included in the study. The participants were surveyed using a pre-tested structured questionnaire, which included the basic demographic profile, hours of computer use per day, frequently of break while working on computers. The outcome variables in this study was CVS.

STATEMENT OF THE PROBLEM

“ A study to assess the effectiveness of 20-20-20 rule to prevent eye strain among the IT workers at a selected IT company, Puducherry.”

OBJECTIVES

- To assess the effectiveness 20-20-20 rule reduce the signs and symptoms of computer vision syndrome among IT workers.
- To associate the effectiveness of 20-20-20 rule among IT workers for preventing computer vision syndrome with their selected demographic variables.

II. REVIEW OF LITERATURE

Clayton Blehm MD Et. Al., (2021) As computers become part of our everyday life, more and more people are experiencing a variety of ocular symptoms related to computer use. These include eyestrain, tired eyes, irritation, redness, blurred vision, and double vision, collectively referred to as computer vision syndrome. This article describes both the characteristics and treatment modalities that are available at this time. Computer vision syndrome symptoms may be the cause of ocular (ocular-surface abnormalities or accommodative spasms) and/or extraocular (ergonomic) aetiologies. However, the major contributor to computer vision syndrome symptoms by far appears to be dry eye. The visual effects of various display characteristics such as lighting, glare, display

quality, refresh rates, and radiation are also discussed. Treatment requires a multidirectional approach combining ocular therapy with adjustment of the workstation. Proper lighting, anti-glare filters, ergonomic positioning of computer monitor and regular work breaks may help improve visual comfort. Lubricating eye drops and special computer glasses help relieve ocular surface-related symptoms. More work needs to be done to specifically define the processes that cause computer vision syndrome and to develop and improve effective treatments that successfully address these causes.

III. RESEARCH METHODOLOGY

RESEARCH APPROACH:

Research approach is the basic procedure for conducting the study. A quantitative research approach was adopted for this study.

RESEARCH DESIGN:

Research design is an investigator's overall plan for obtaining answers to the research and it spells out strategies that the researcher adopted to develop information that is accurate, objective, and interpretable. Descriptive research design was adopted for this study.

POPULATION:

The population is referred as a group of all the elements like individuals or objects that are available in the same geographical area. The target population for this study comprises of IT workers working at IT company.

SAMPLE

Sample is a selected proportion of the defined population. It is a subset of a population. The study sample consists of IT workers working at IT company, who fully fill the inclusion criteria.

SAMPLE SIZE:

Sample size is the number of subjects involved in the study. Sample size consists of 50 IT workers working at IT company.

SAMPLING TECHNIQUE:

Sampling technique is defined as the process of selecting a group of people or the other elements with which to conduct a study. Convenient sampling technique was used for the present study.

SETTING OF THE STUDY:

The study was conducted at Datamatics, at Puducherry.

SAMPLE SELECTION CRITERIA:

Inclusion criteria:

- IT workers working in IT company
- Who are available during the time of data collection

Exclusion criteria:

- Absent during the time of data collection
- IT workers who don't want to participate

DESCRIPTION OF THE TOOL

The tool used for this study is a standardized tool, and the tool consists of 2 sections namely,

Section A : Variables, it consists of Demographic variables: Age, Gender, Marital status, Religion, Type of family, Income, Education, Occupational areas, Years of experience, Previous exposure to vision problems.

Section B : Practice questionnaire regarding symptoms assessment.

SCORING INTERPRETATION FOR SYMPTOMS:

SYMPTOMS	SCORING	PERCENTAGE
MILD	0-7	>35%
MODERATE	8-13	35%-65%
SEVERE	MORE THAN 14	<65%

IV. RESULTS AND DISCUSSION

This study was conducted to assess the effectiveness of 20-20-20 rule to prevent eye strain among IT workers at selected IT company, Puducherry. Regarding the socio-demographic variables among IT workers. Out of the 50 IT workers who were interviewed, Majority of IT workers 19(38%) were in the age group <25 years, 31(62%) were male, 45(90%) were Married, 32(64%) were Hindu, 35(70%) were Joint family, Family income 22(44%) were Rs . 10,000-15,000 / month, Education 14(28%) were Secondary education and Under graduate, Occupational areas 29(58%) were Office worker, Years of experience 22(44%) were 1-3 years and 36(72%) were not had Previous exposure to vision problems.

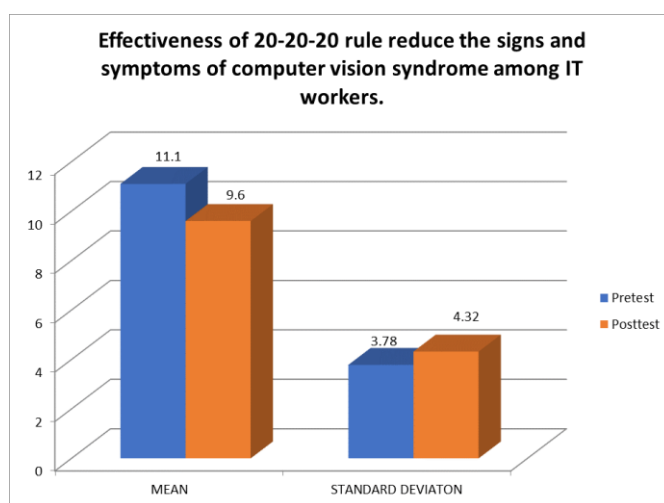
In pretest, Majority of IT workers 25(50%) had Moderate, 17(34%) had Severe and 8(16%) had Mild and the mean and standard deviation of the level of the signs and symptoms of computer vision syndrome among IT workers is 11.10 ± 3.78 .

In post- test, Majority of IT workers 23(46%) had Mild, 20(40%) had Moderate and 7(14%) had Severe and the mean and standard deviation of the level of the signs and symptoms of computer vision syndrome among IT workers is 9.60 ± 4.32 .

Table shows that, Effectiveness of 20-20-20 rule reduce the signs and symptoms of computer vision syndrome among IT workers.

Effectiveness of 20-20-20 rule reduce signs and symptoms of computer vision syndrome	TEST	MEAN	STANDARD DEVIATION	MEAN DIFFERENCE	't' VALUE Paired -t test	df	'p' VALUE
	Pretest	11.10	3.78				
Posttest	9.60	4.32					

(N=50)



The mean score of Effectiveness of 20-20-20 rule reduce the signs and symptoms of computer vision syndrome among IT workers in the pre-test was 11.10 ± 3.78 and the mean score in the post- test was 9.60 ± 4.32 . The calculated paired 't' test value of $t = 2.54$ shows **statistically significant** difference of effectiveness of 20-20-20 rule reduce the signs and symptoms of computer vision syndrome among IT workers.

The table depicts that the socio-demographic variables, **Age (in years), Education and Years of experience** had shown statistically significant association between the post-test level of the signs and symptoms of computer vision syndrome among IT workers with their selected demographic variables.

The other socio-demographic variables ha not shown statistically significant association between the post-test level of the signs and symptoms of computer vision syndrome among IT workers with their selected demographic variables.

V. CONCLUSION

The present study assessed the effectiveness of 20-20-20 rule among the IT workers in a selected IT company, puducherry. This study had preliminary effort that focused on assessing the effectiveness of 20-20-20 rule to prevent eye strain among the IT workers. on the basis of the study results, a pre-test and post-test was conducted. In the pre test, out of 50 samples 36 (72 %) were suffered from severe computer vision syndrome

symptoms and 14 (28 %) were suffered from moderate computer vision syndrome. In post test after explanation about the 20-20-20 rule, out of 50 samples, 49 (98%) were suffered from mild computer vision syndrome symptoms and 1 (2%) were suffered from moderate computer vision syndrome symptoms.

IMPLICATION OF NURSING RESEARCH:

The study has implicated for nursing practice, nursing education, nursing Administration and nursing research.

NURSING EDUCATION:

- Efforts should be made and expand nursing curriculum to provide more content in the Area of nursing care on prevention and management of computer vision syndrome as It is a growing occupational disorder among computer users.
- Conference, workshop, seminars can be given for nurse to improve their education Towards the prevention and management of computer vision syndrome.
- Students should provide with adequate opportunity in development skills in handling such events and how to identify their difficulties and help them to promote their wellbeing.

NURSING SERVICES

- Nurses working in hospital setup should have enough knowledge on prevention and management of computer vision syndrome to help the IT workers.
- Nurses act a counsellor and educator to provide proper guidance and knowledge regarding the computer vision syndrome.
- Prevention and management of computer vision syndrome to IT workers as it has association with occupational disorders.

NURSING ADMINISTRATION.

- Nurses administration can make necessary policies to implement the nursing services to the prevention and management of computer vision syndrome.
- Nurses administrators should give attention on proper selection, placement and effective utilization of the nurses in all areas with their ability in educating of IT Workers, working in IT fields.
- Nurses administrators can organize in service education programme and adequate staffing in occupational areas to improve the knowledge on the prevention and management of computer vision syndrome.

NURSING RESEARCH:

- The findings of the study help the nurse and the nursing students to develop the inquiry by providing baseline data. The general aspect of the study results can be made further replication of the study.
- A nurse researcher can provide supportive care which may improve the knowledge about the prevention and management of computer vision syndrome among IT workers.

RECOMMENDATION

- Other methods of preventing computer vision syndromes can assessed to find this effectiveness.
- The study can do in various work settings
- The study can be done in a large population.

REFERENCE

BOOK REFERENCE

- [1]. Lewis, A textbook of medical surgical nursing, Elsevier publication, edition-2011.
- [2]. Brunner and Suddarth's, Textbook of Medical-Surgical Nursing, published by Wolters Kluwer health / Lippincott Williams & Wilkins, 13th edition.
- [3]. BT Basvanthappa, Textbook of medical surgical nursing, Jaypee publications, 2nd edition 2009.
- [4]. Suresh K. Sharama, Nursing Research & Statistics, Elsevier publications, 3rd edition.
- [5]. Shafer's Textbook of Medical Surgical nursing, Phipps long woods, B.I publications Pvt,Ltd, New Delhi, 7th edition.
- [6]. Inderbir Singh, Anatomy & physiology for nurses, Jaypee publications.
- [7]. Ross and Wilson's Anatomy and Physiology in health and illness, Elsevier publications, 10th edition.
- [8]. Moroney's surgery for nurses, edited by Malcolm R. Colmer, Elsevier publications, 16th edition.
- [9]. PR Ashalatha & G Deepa, Textbook of anatomy & physiology for nurses, Jaypee publications, 4th edition.
- [10]. Renu Jogi, Basic Ophthalmology, Jaypee publications, 4th edition.
- [11]. Denise F. Polit, Chery Tatano Beck, Nursing Research generating and assessing evidence for nursing practice, Wolters Kluwer publications, 10th edition.

JOURNAL REFERENCE

- [12]. Rajendra Rajarathnam, A study of computer vision syndrome at the workplace prevalence and causative factors, August 2016, www.ijcmr.com.
- [13]. Sultan H.AIRashidi , computer vision syndrome prevalence, knowledge and associated factors among Saudi Arabia University Students <https://www.ncbi.nlm.nih.gov/pubmed/?term=AI%20Rashidi%20SH%5B>

- [14]. Awrajaw Dessie, Computer Vision Syndrome and Associated Factors among computer, Volume 2018 Article, 16Sep 2018, <https://doi.org>.
- [15]. P.Katulanda, Computer Vision Syndrome among computer office workers in a developing country: an evaluation of prevalence and risk factors, published online 2016 mar 9. Doi, <https://www.ncbi.nlm.nih.gov>.
- [16]. Ranganatha S C, Sheetu Jaikhani, prevalence and association risk factors of computer vision syndrome among the computer science students of an engineering college of Bangaluru- A Cross- Sectional study, July-September 2019, <https://www.gijhsr.com>
- [17]. Mark Rosenfield, Prevalence of computer vision syndrome (CVS) and dry eye in office workers, the association for research in vision and ophthalmology , Inc., all rights reserved, March 2012 volume 53, issue 14, <http://iovs.arvojournals.org>.