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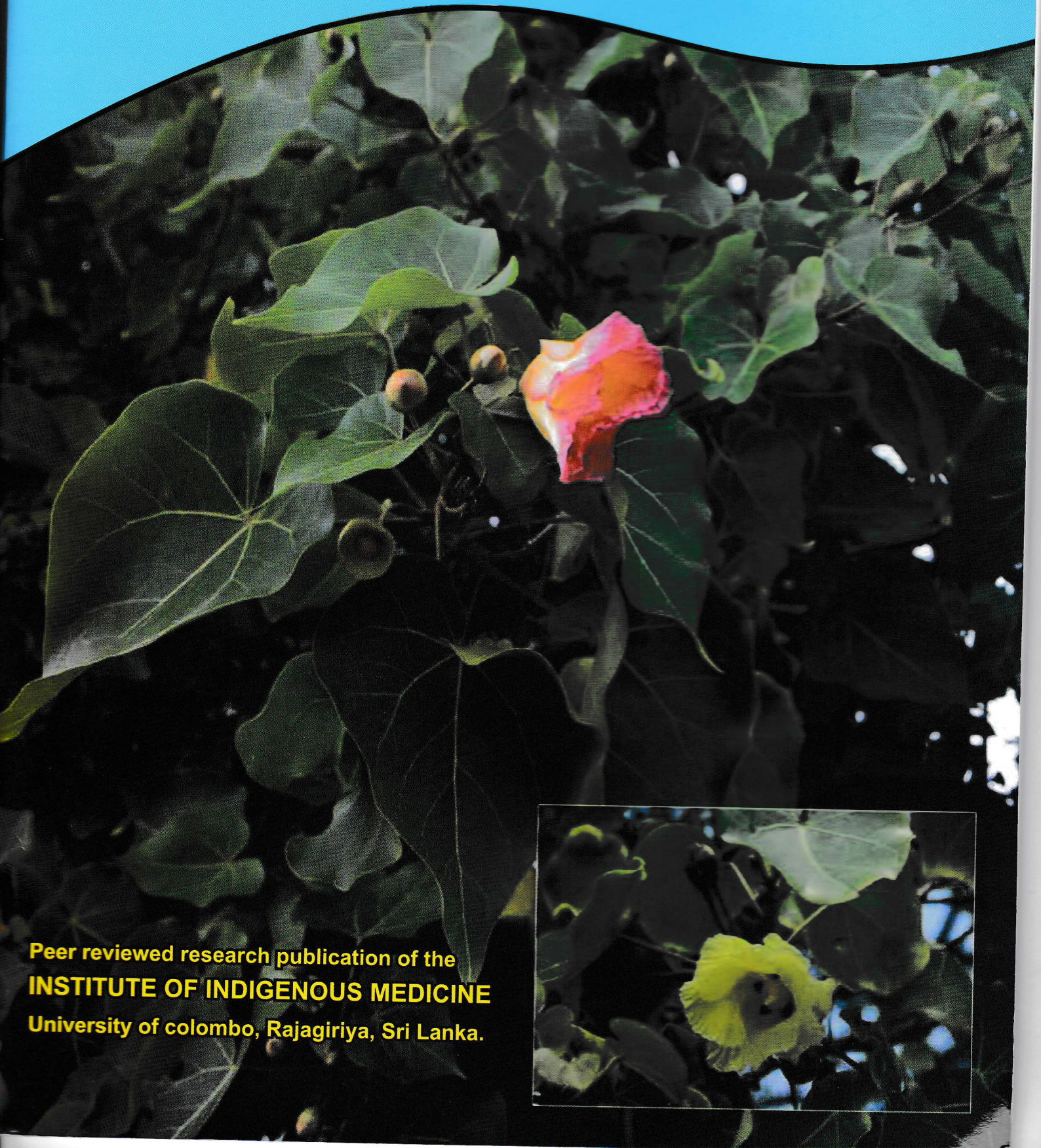
A survey study on effect of video display terminals (vdts) on vision

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Abstract

The computer has become a common item in today's society. It is estimated that approximately 45 million workers directly use computers by staring into video display terminals for hours continuously. This prolonged exposure to video display terminals has been the cause of a visual and ergonomic disorder called "Computer Vision Syndrome". Computer Vision Syndrome is a group of symptoms which crop up from the extended viewing of the video display terminals,when the demands of the task exceed the abilities of the viewer.

Ayurveda mentioned many common reasons for the eye diseases such as looking at one object for prolong time and looking at an object with glare. The main object of this study is to know the incidence of computer vision syndrome among regular computer users who were having minimum one year exposure, and having minimum eight hours per day exposure. The study was carried out as a survey among 300 volunteer computer professionals working at different centers. The data collected from the survey study was analyzed as simple percentage using Microsoft Office Excel 2007.The data was revealed that there is a high prevalence of related signs and symptoms of theComputer vision syndrome.

Key words: Computer Vision Syndrome, Video Display Terminals

Introduction

A Video Display Terminal (VDT) is commonly known as Computer screen. The computer has become a common item in today's society. It is estimated that approximately 45 million workers directly use computers by staring into VDTs for hours continuously. Computers have increased the work efficiency, communications and have opened access to information like never before. Despite of these contributions to the society, prolonged exposure to VDT's has been the cause of a visual and ergonomic disorder called "Computer Vision Syndrome" (CVS). CVS is a group of symptoms which crop up from the extended viewing of the video display terminals (VDT), when the demands of the task exceed the abilities of the viewer.

Symptoms of Computer Vision Syndrome are due to ocular (ocular surface abnormalities or accommodative spasms) and/ or extra ocular (ergonomic) etiologies.

While considered its prevalence, a number of investigators have indicated that visual symptoms occur in 75-90% of VDT workers (OSHA – Occupational Safety and Health Administration Department of the US Govt.). A study released by N.I.O.S.H. (National Institute for Occupational Safety and Health) showed that only 22% of VDT workers have musculoskeletal disorders. The incidence of Computer Vision Syndrome is as high as 50% - 90% among the employees of computer occupation.

Ayurveda, the greatest science of life, mentioned many common reasons for the eye diseases. Though it has passed more than 3000years, even for today they are valid as accepted by the modern medical science. Ayurveda ophthalmology says that looking at one object for prolong time and looking at an object with glare are the major causes (*nidana*) for the eye diseases.

In the present study, it was planned to carry out a survey among computer professionals working at different centers. The vital data and other vision related data was collected through a special survey proforma which was designed by including detailed explanation about CVS.

Even as a developing country, in Sri Lanka more than ten million IT workers at present era. Though their professional status differs from each other, all of them had to play with mouse and keyboard, more than 8hours daily. Most of them, experience eye – related discomfort and/ or visual problems.

According to the data there is none of the population based studies done in SriLanka related to Computer Vision Syndrome. However, based on current evidence it is unlikely that the use of VDT's causes permanent changes or damage to the eyes or visual system.

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Aims and Objectives

To know the incidence of Computer Vision Syndrome among regular computer users.

Materials and Methods

Total 300 volunteer participants were selected for the present survey study during the period of April 2011 to December 2011 from the different survey centers which are working with VDTs.

Survey Centers:

- Banking field
- IT divisions of various companies of the private sector
- Printing and Tele communication field
- Students who are learning information technology for their higher studies

Selection of Volunteer Participants:

- Numbers of total participants were 300 and each category consists with 75 participants.
- Participants were selected irrespectively their sex, religion, habitat etc. between the age of 18 – 55 years.

Criteria for Inclusion:

- Minimum 08 hours exposure to VDTs per day.
- Having minimum 01 year exposure of different types of VDTs.
- Having minimum 03 symptoms of CVS were considered as suffering from CVS.

Symptoms:
1. Eye strain / Fatigue
2. Dry / Irritated eyes
3. Blurred vision
4. Red eyes
5. Excessive secretion of tears
6. Double vision
7. Headache
8. Light sensitivity
9. Contact lens discomfort
10. Slowness in changing focus of eye
11. Change in color perception
12. Neck, shoulder and back pain

The information was collected from participants by giving them a questionnaire based on causes, signs and symptoms related to CVS.

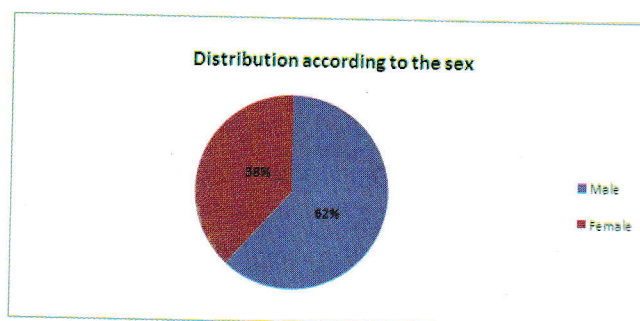The data generated in the survey study was assessed by simple percentage using Microsoft Office Excel 2007.

Results and Discussion

Table 1: Distribution of Total number of survey people at Different Survey centers
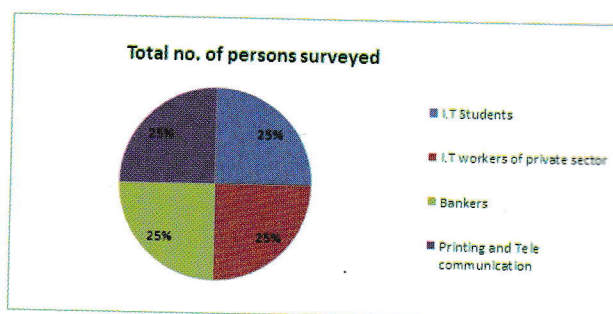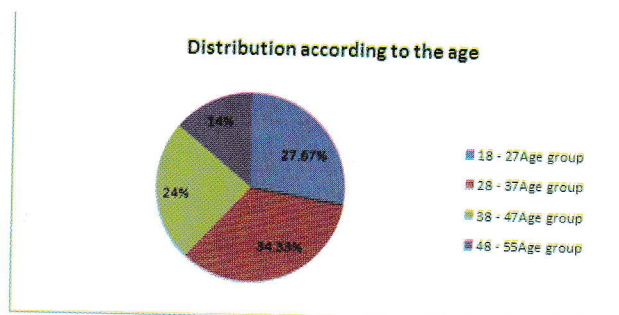

25% from each category has been surveyed.

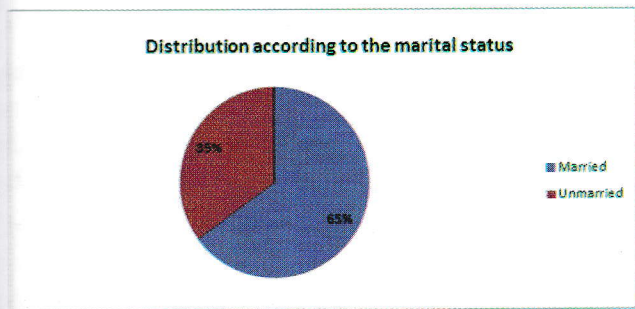**Table 2**: Sex wise distribution of 300 survey populace

Out of all volunteers, maximum computer professionals i.e. 185 (61.67%) were males and 115 (38.33%) were females.

**Table 3**: Age wise distribution of 300 survey populace

The above series indicates that maximum computer professionals i.e. 103 (34.33%) were from the age group of 28 – 37 years. 83 (27.67%) professionals were between 18 – 27 years, 72 (24%) computer professionals were between 38 – 47 years and 42 (14%) professionals were from 48 – 55 years age group.

Table 4: Marital status wise distribution of 300 survey people

Distribution according to the marital status

According to the marital status of the participants 195 (65%) were married and 105 (35%) were unmarried.

Table 5: Number of years working with computer wise distribution of 300 survey people

Distribution according to the No. of years working with computers
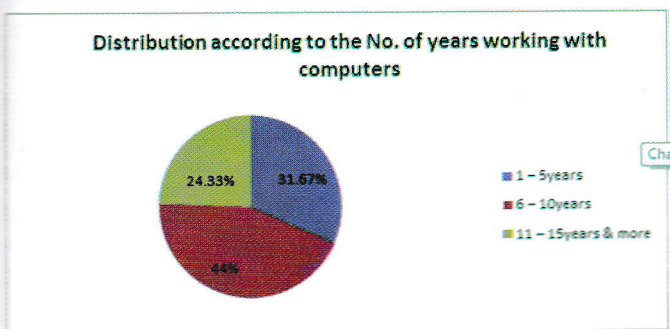
The survey has shown that majority of the computer professionals i.e. 132 (44%) were using computer since 6 – 10years, followed by 95 (31.67%) people were using since 01 – 05years and 73 (24.33%) were using computer since 11 – 15years and more.

Table 6: Number of working hours with computer wise distribution of 300 survey people

Distribution according to the No.of working hrs perday
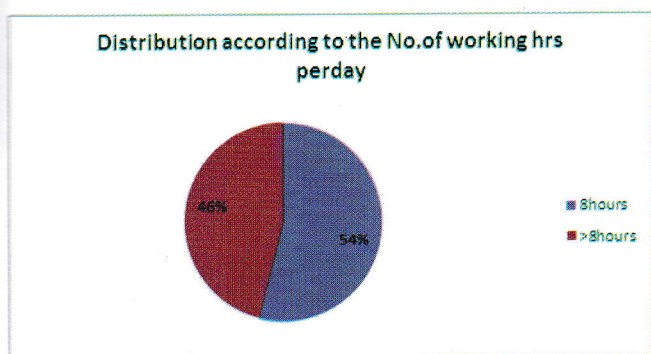
The survey has shown that majority of the computer professionals i.e. 162 (54%) were reported to work for 8hrs / day. 138 (46%) computer professionals used to work more than 8hrs / day with the computer.

**Table 7**: Education wise distribution of 300 survey people

Distribution according to the Education
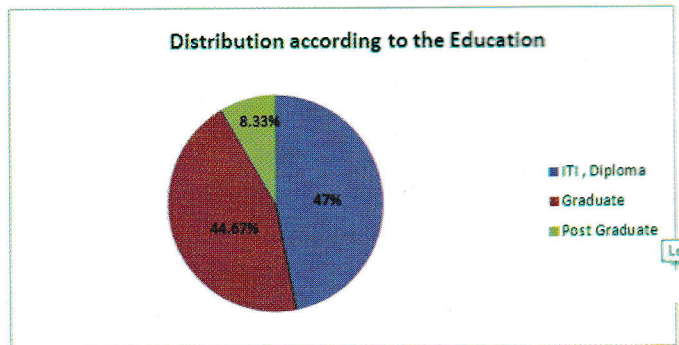
In the above survey study maximum computer professionals 141 (47%) were ITI & Diploma holders. 134 (44.67%) were graduates and 25 (8.33%) computer users were post graduates.

Table 8: Type of VDT used wise distribution of 300 survey people

Distribution according to the Type of VDT used
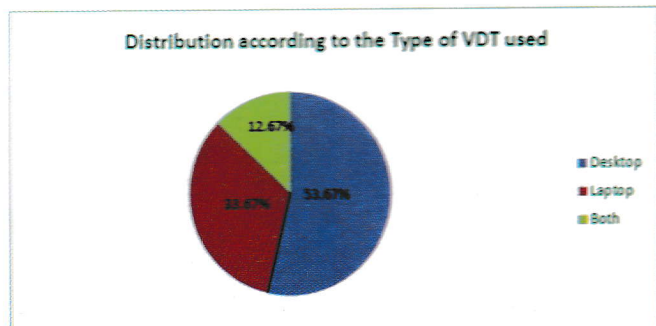
The survey study shows that majority of the computer professionals i.e. 161 (53.67%) were using Desktop, where as 101 (33.67%) were using Laptop and 38 (12.67%) were using both desktop and laptop for their work.

Table 9 : Symptoms wise distribution of 300 survey people

Distribution according to the symptoms
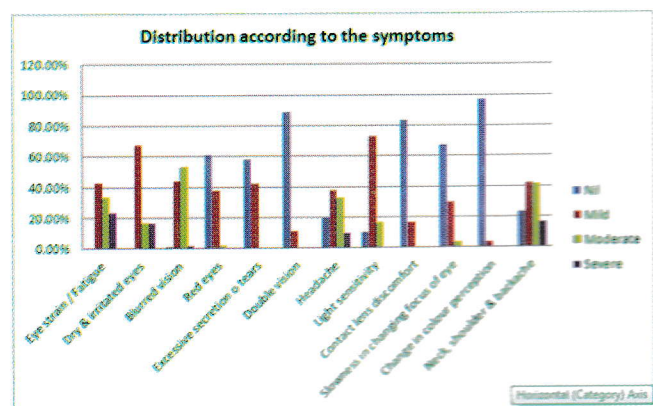
The present survey study revealed that maximum i.e. 298 (99.33%) computer professionals had eye strain / fatigue, all the professionals had complained of dry and irritated eyes. Blurred vision was observed in 297 (99%) computer professionals and 268 (89.33%) computer professionals had light sensitivity. But maximum i.e. 298 (99.33%) computer professionals had neck, shoulder and backache. Headache was observed in 240 (80%) computer professionals. 117 (39%) professionals had red eyes. 126 (42%) had excessive secretion of tears and 98 (32.67%) had slowness in changing focus of eyes. Contact lens discomfort was observed in 50 (16.67%) computer professionals. 33 (11%) professionals were complained of double vision and very less, i.e.10 (3.33%) had shown change in color perception.

Table 10: Number of symptom wise distribution of 300 survey people
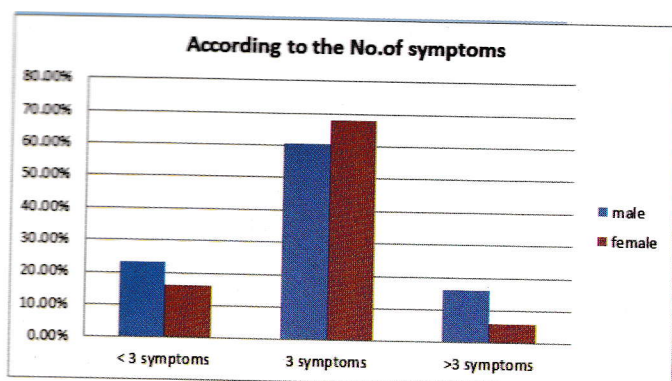
The survey has shown that majority of the male computer professionals i.e. 112 (60.54%) were presented with 03 symptoms of CVSfollowed by 43 (23.24%) computer professionals were presented with less than three symptoms of CVS 30 (16.22%) volunteers were presented with more than three symptoms of CVS.

Among female volunteers, majority of the computer professionals i.e. 78 (67.83%) were presented with three symptoms of CVS followed by 30 (20.09%) computer professionals were presented with less than three symptoms of CVS and 07 (6.09%) volunteers were presented with more than three symptoms of CVS.

Conclusion

As a whole, out of the 300 computer professionals surveyed, 227 computer professionals have shown the symptoms of CVS. That means 75.7% of the total surveyed population have shown the prevalence of "Computer Vision Syndrome". It is recognized that poorly organized work station environment,more working hours and stress …etc are reason for it. Even with an advantage of good ergonomics incidence of CVS is more.

So, to overcome this problem, provide very good working environment, proper illumination, proper furniture set up, a rest after every 2hours in between the work, Using of screen filters encouraging the users to wear cooling glasses or suitable spectacles with a filtering effect while working and switch to LCD monitors instead of Cathode Ray Tube monitors to reduce exposure to the radiationare can be suggested.

References

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