

PREVALENCE OF COMPUTER VISION SYNDROME AND ASSOCIATED RISK FACTORS AMONG  
COLLEGE OF HEALTH SCIENCES (COHES) STUDENTS IN JKUAT

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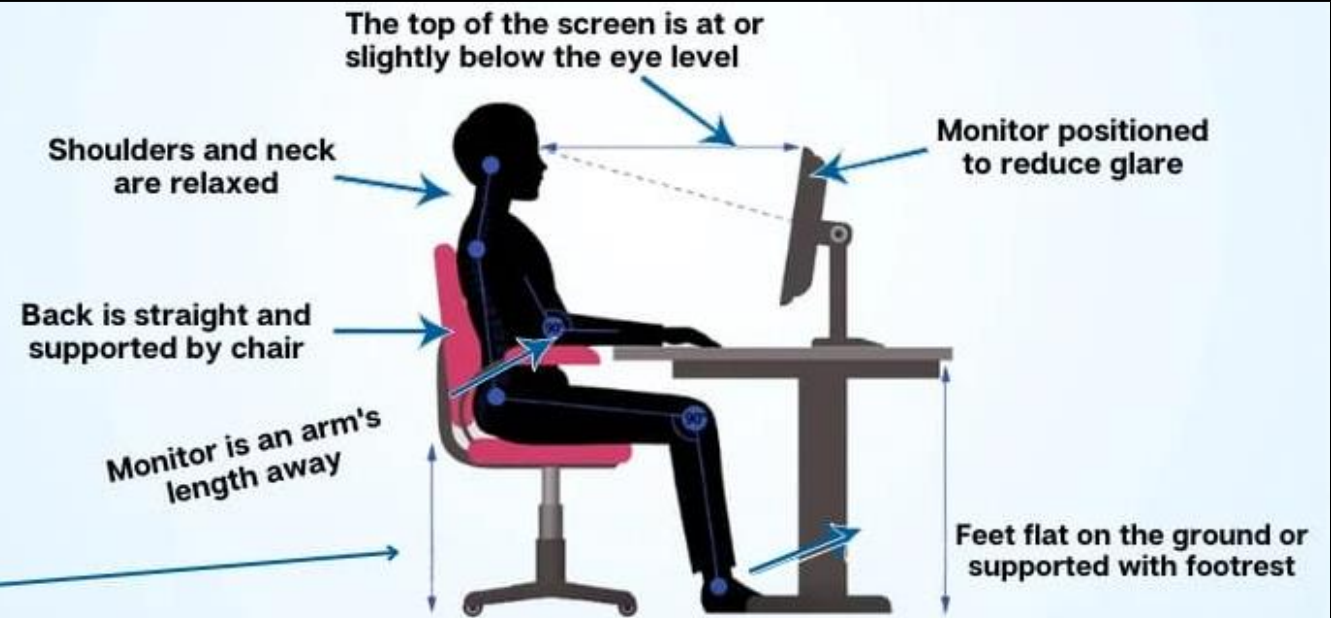
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# Background information

## Computer Vision Syndrome

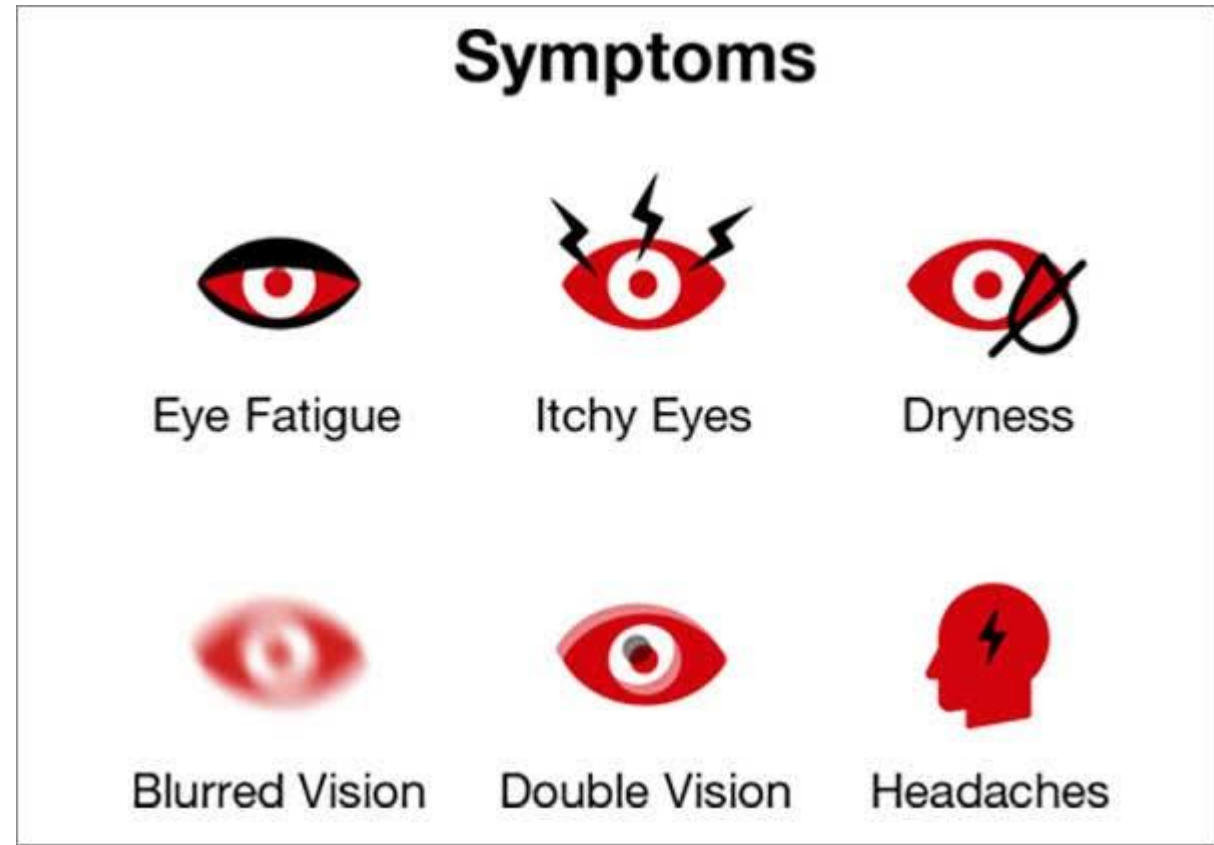
refers to the symptoms that result from excessive and prolonged use of digital screens such as computers, smartphones, tablets and other electronic devices.

### Tips to Prevent Digital Strain



# Cont'

- Symptoms
- Burning of eyes
- Increased sensitivity to light
- Neck pain
- Eye redness



# Problem statement

- Widespread use of digital devices - increase in the prevalence of CVS
- Lack of research on CVS - problem has not received much attention from healthcare professionals
- Importance- to investigate the prevalence, risk factors and to develop strategies to prevent and manage
- significance- impact on the productivity and quality of life of individuals,
- Developing countries - access to healthcare and specialized services like eye problems are limited

# Justification of the study

- High usage of digital devices
- Lack of awareness
- Long term effects
- Impact on work and studies
- Public health concern

# Research objectives

- **General objective**-To determine the prevalence and severity of computer vision syndrome among JKUAT undergraduate students in college of health sciences
- **Specific objectives –**
  - To determine the prevalence of computer vision syndromes among the students
  - To determine the associated risk factors of computer vision syndromes.
  - To determine computer vision syndrome awareness among the students

# Research question

- What is the prevalence of computer vision syndrome among COHES undergraduate students?
- What are the factors risk factors of computer vision syndrome?
- Are the students aware about computer vision syndrome?

# Research methodology

- **Study design**-descriptive cross sectional study
- **Study area**-JKUAT main campus
- **Study population** – COHES students
- **Inclusion criteria** – undergraduate students of COHES in JKUAT who gave informed consent to participate in the study; main campus students.
- **Exclusion criteria** – students of COHES in JKUAT who gave their informed consent not to participate in the study, students from other universities, JKUAT alumni students
- Students who had eye surgery in less than 3 months ago and visually impaired



# Sample size determination

- The sample size was determined using the Fischer et al 1998 formula-  $n = z^2 pq / d^2$
- Where; n = Desired sample size (assuming population is not greater than 10,000)
- z= the value of the standard variable at a given confidence level to be worked out from the table showing the area under the normal curve, set at 1.96 which corresponds to 95% confidence levels
- p= the proportion in the target population estimated to have a particular characteristic. If no reasonable estimate, then use 50%.
- q =1-p population of study with desired characteristics
- d=marginal error.it is set at 0.01 In substitution,  $n = \frac{1.96^2 \times 0.5 \times (1-0.5)}{0.1^2} = 96.01$  n= 96
- Since the population is less than 10000, the correction to the infinite population method will be used
- $n_f = n / (1 + n/N)$
- Where  $n_f$  = the desired sample size when the population size is less than 10000
- n= the desired sample size when population is more than 1000
- N= estimated size of the sample
- Therefore  $n = 96 / (1 + 96/3500)$
- n= 94
- Considering non response rate
- $94 \times 10/100 = 9.4$
- $94 + 10 = 104$  respondents

# Data collection and analysis

- **Sampling Technique**-Simple random sampling is where each member of the target population has an equal probability of being selected.
- Class representatives were approached to distribute the online questionnaire via WhatsApp groups
- Data was managed by creating using MS Excel spreadsheets, to create figures such as graphs and charts
- Other analyses will be done using the Statistical Package for the Social Sciences (SPSS)
- The analysis was guided by the data plan designed in line with the study objectives

# PREVALENCE

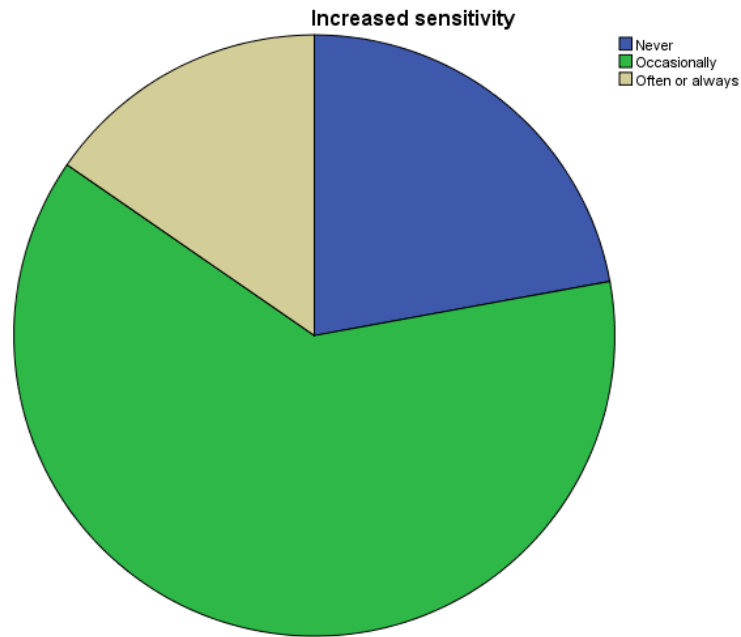
SYMPTOM	PREVALENCE(%)
headache	70.19
Sight worsening	48.04
Increased light sensitivity	77.88
Difficulty in focusing	40.38
Double vision	35.58
Blurred vision	51.92
Dryness of the eyes	36.54
Heavy eye lids	39.4
Eye pain	52.88
Eye redness	35.58
Excessive blinking	45.19
Tearing of the eye	49.03
Filling of foreign body	38.46

# PREVALENCE CONTINUED...

SYMPTOM	PREVALENCE (%)
Itching eyes	56.73
Burning eyes	32.69
Neck pain	62.5
Total	773.03
Average	48.31

# Prevalence –increased light sensitivity (most frequent)

- frequency

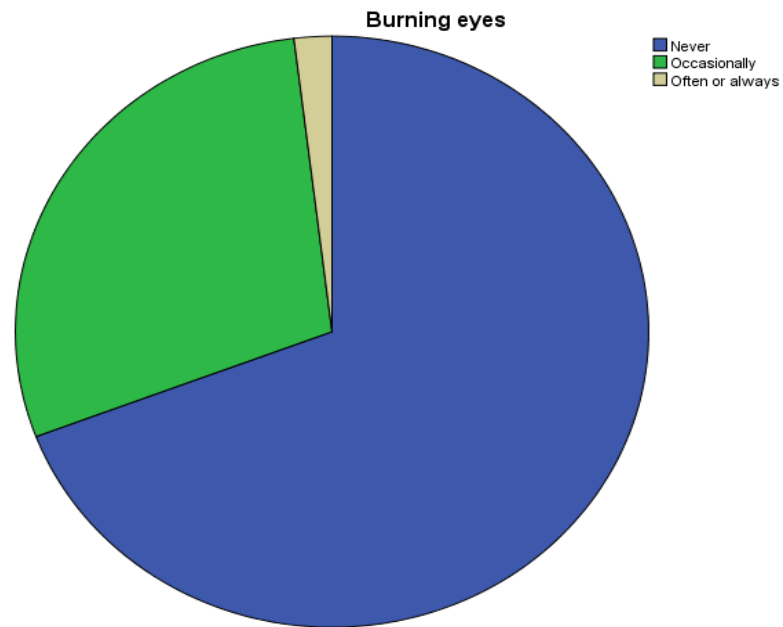


- intensity

Responses		Frequency	Percent
	Intense	12	14.8
	Moderate	69	85.2
	Total	81	100.0

# Least prevalent- burning eyes

- Prevalence

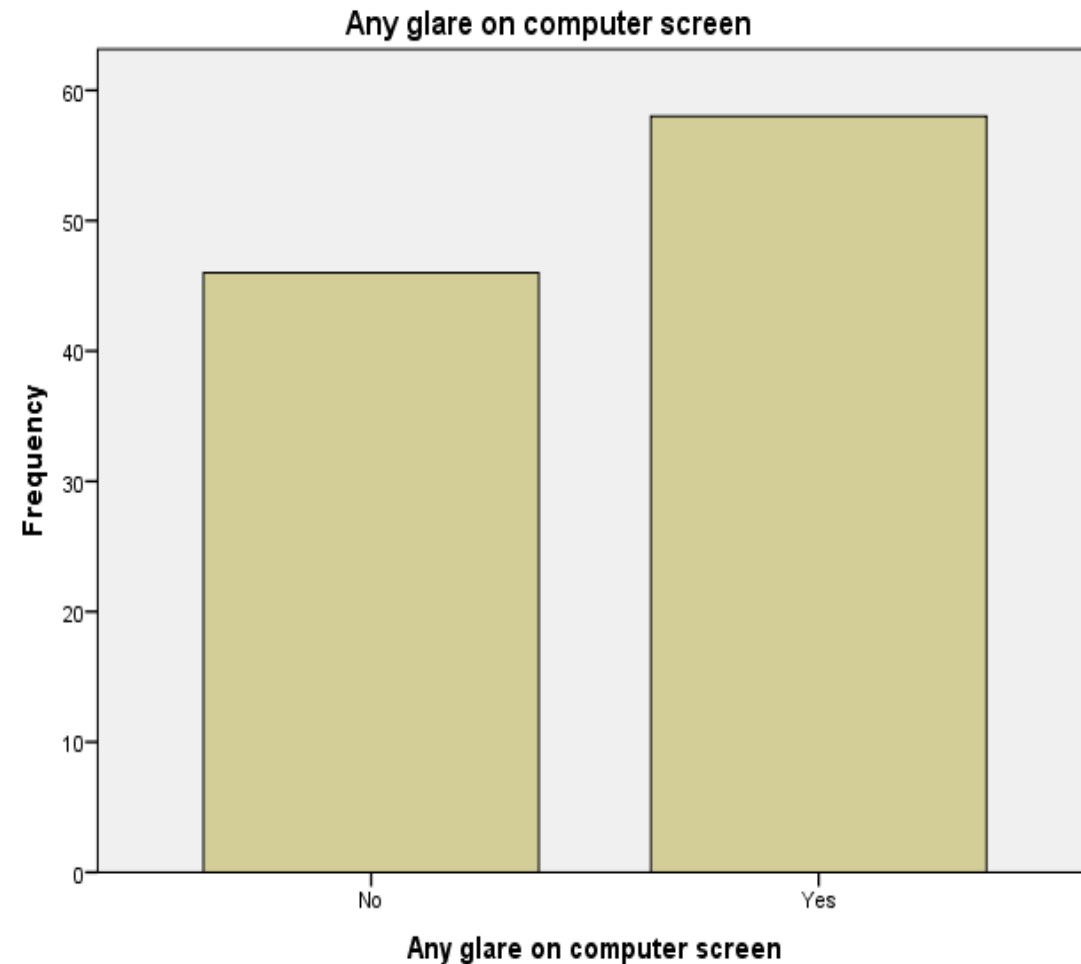


- Intensity

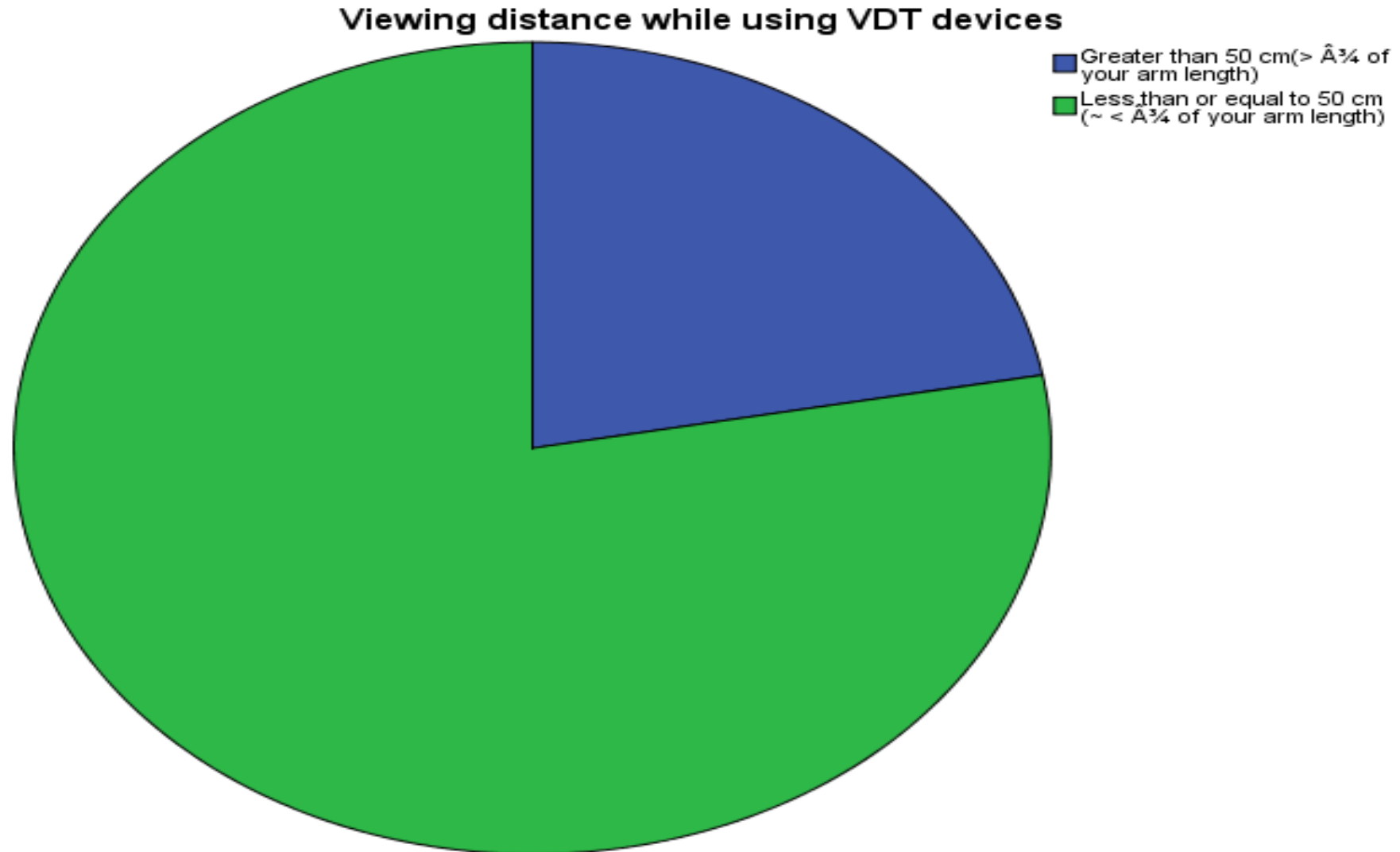
Responses		Frequency	Percent
	Intense	3	8.8
	Moderate	31	91.2
	Total	34	100.0

# Associated risk factors

- Presence of glare on screen



# Risk factors

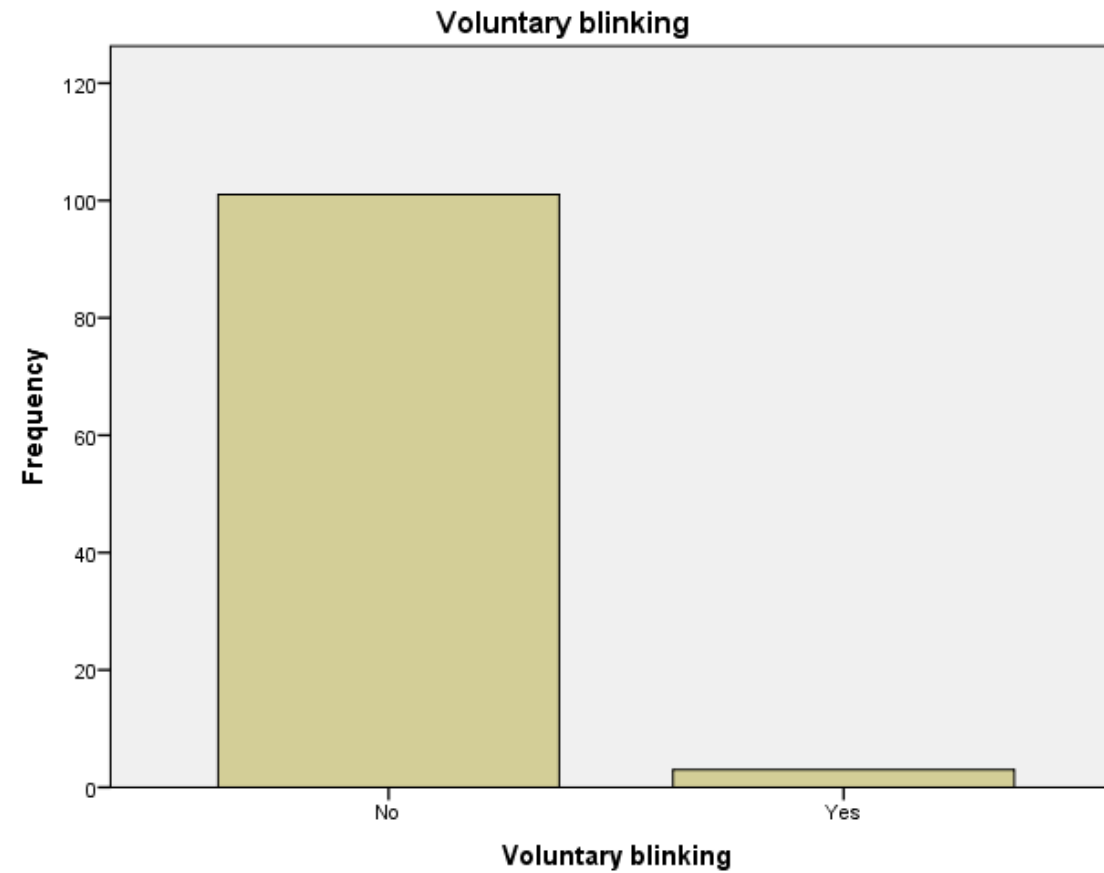




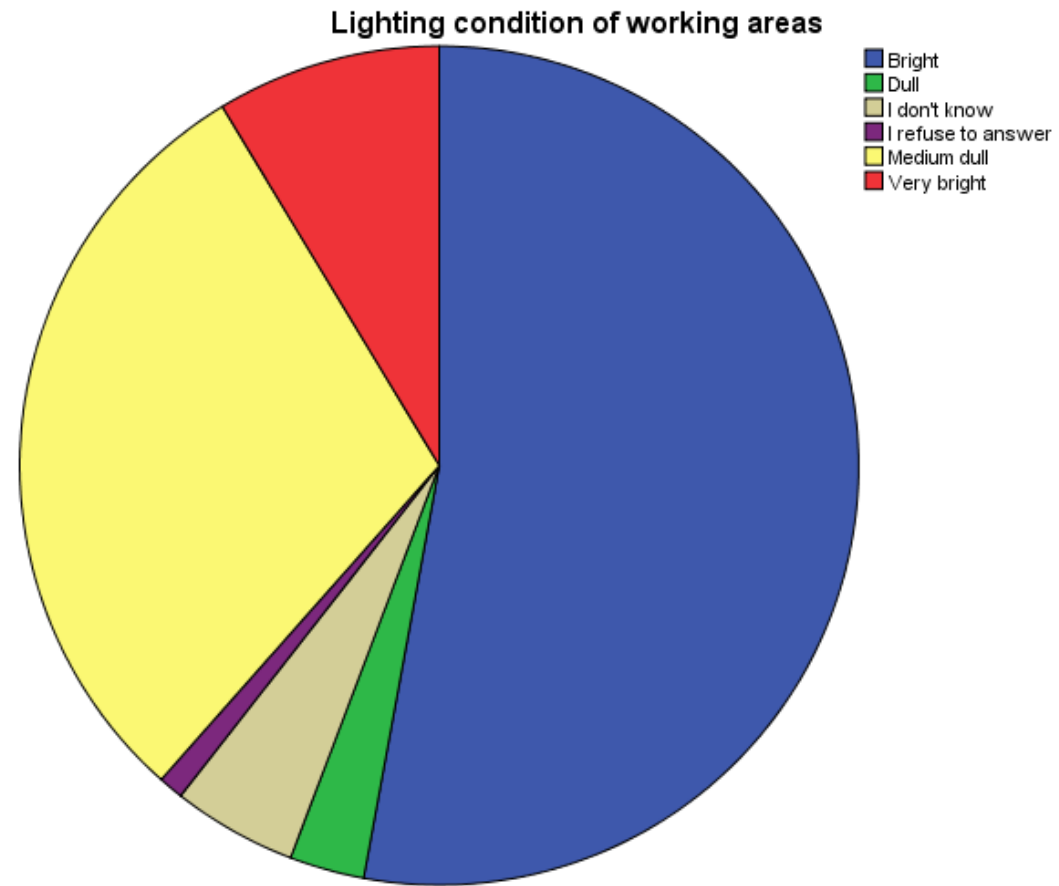
# Risk factors-taking break while using computers

Breaks		Frequency	Percent
	Every 2 hours of work	17	16.3
	Every 20 minutes of work	23	22.1
	Every 60 minutes of work	26	25.0
	More than every 2 hour	38	36.5
	Total	104	100.0

# Risk factors



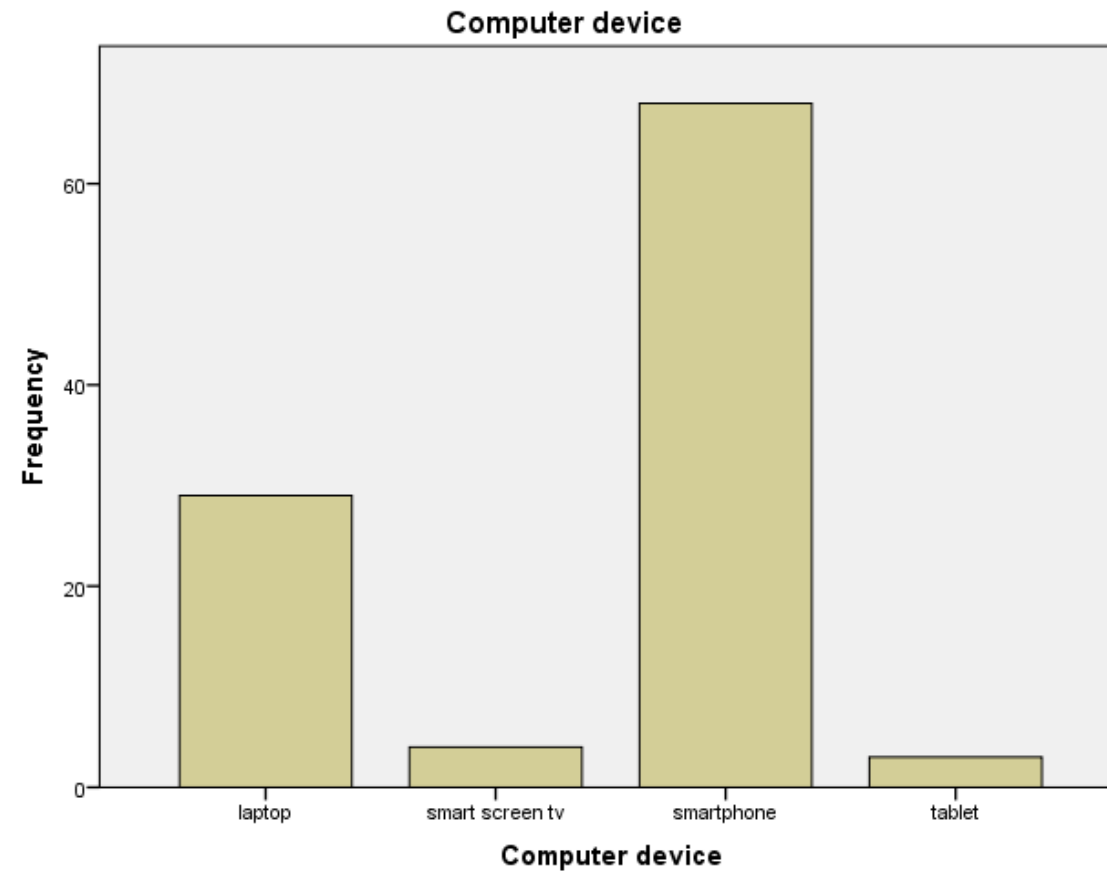
# Lighting condition of working area



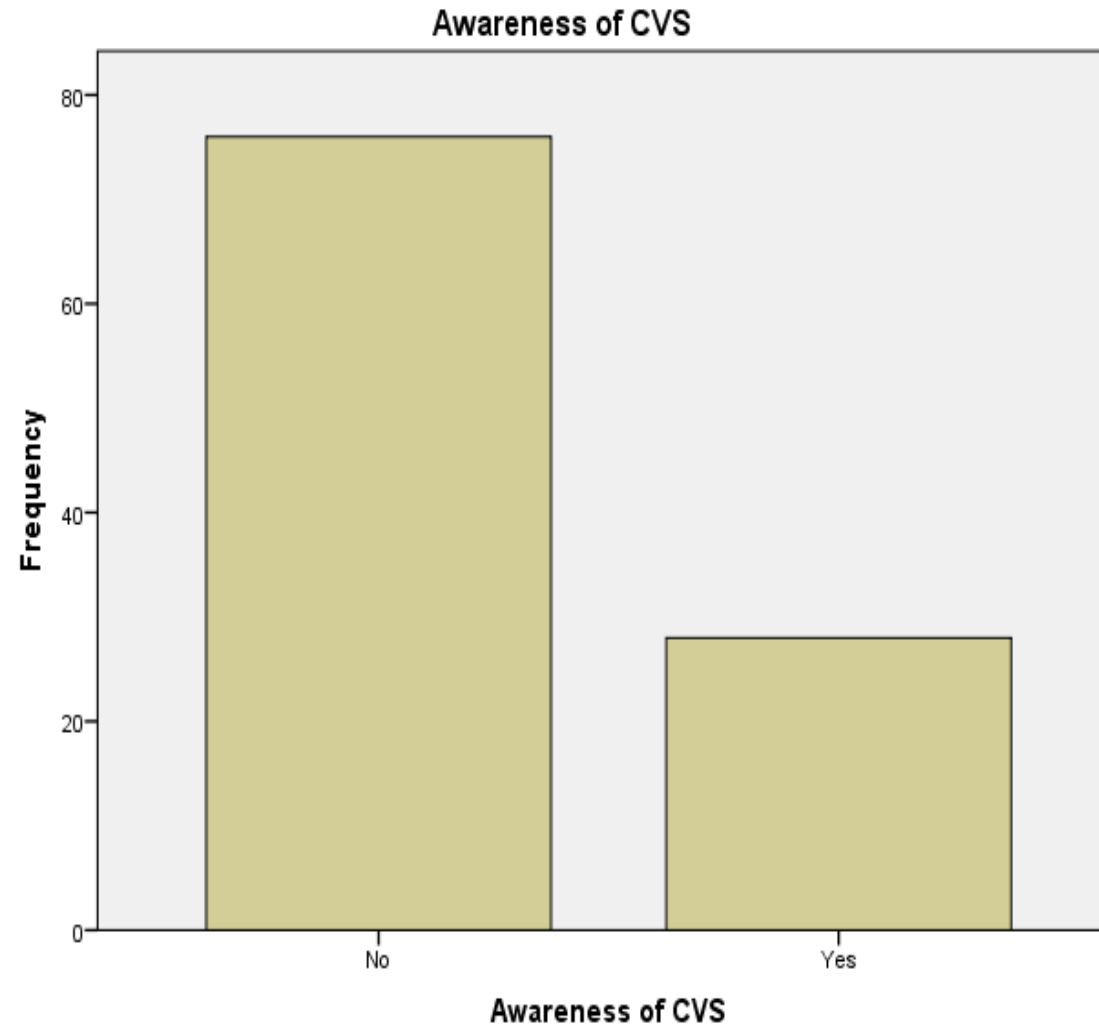
# Risk factors-duration of use

Duration	N	Minimum	Maximum	Mean	Standard Deviation
Duration of computer use(years)	104	1	20	5.68	3.383
Days in a week	104	1	6	5.05	1.354
Hours in a day	104	1	30	7.49	4.711

# Risk factor- device



# Awareness of CVS



# DISCUSSION-prevalence

- The study found out that the prevalence rate of CVS among the COHES students was 48.31%
- Increased light sensitivity had the highest frequency where it had 77.88% followed by headache and neck pain.
- Burning eye sensation was the least experienced symptom of CVS which had frequency of 32.69% followed by double vision and eye redness which both had frequency of 35.58%.
- Most intense symptom was headache which was 20.5% followed by increased light sensitivity at 14.8% frequency.
- The least intense symptoms were double vision and burning eyes which had 5.45 and 8.8% respectively

# RISK factors

- Duration of vdt use-long period, many days and hours
- Position of computer while using- less than 50cm from the eye
- Lighting condition of working environment- many were in bright room
- Breaks while using vdt-most didn't take break at recommended intervals
- Voluntary blinking- most did not practice voluntary blinking predisposing to eye drying
- Presence of glare on screen-extra light reflections on the eye lens



# Discussion -awareness

- The study found out that 73.1 % of the respondents were not aware of computer vision syndrome.
- 26.9 % of the respondents were aware of computer vision syndrome
- About 8 out of 10 were unaware of computer vision syndrome

# Limitation of the study

- The symptoms were only self-reported, and there was no ophthalmic examination to make the diagnosis of computer vision syndrome
- CVS is a diagnosis of exclusion today as almost everyone is working on computers.
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# Conclusion

- There is significant prevalence of computer vision syndrome and low level of awareness and knowledge about CVS among medical students.
- CVS is mainly associated with poor lighting conditions, prolonged use and exposure of computers without adequate breaks and wrong viewing distance and angle while using the video display terminal devices
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# Recommendations

- The level of awareness and knowledge of CVS among students can be increased by incorporation of the topic of CVS and related ergonomics in the 1st year
- Advising VDTs manufacturing companies to create public awareness by creating display programs on computer devices that states the effects of prolonged use of the device
- Further investigation on the pathophysiological effects on exposure to electronic devices is warranted because the acute responses to the short-wavelength light emitted by them may be just the tip of iceberg
- Creating public awareness to high risk persons like office secretaries and computer programmers

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