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Knowledge and Practice on Computer Vision Syndrome among Nursing Students

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Abstract: ***Computer vision syndrome, also known as Digital Eye Strain (DES), describes a group of eye - and vision - related problems that result from prolonged use of electronic gadgets. The prevalence of eye strain was higher among students taking online classes compared to the general public (50.6% vs 33.2%). Majority of students are not aware about computer vision syndrome which is due to the long term effect of prolonged computer use strain on the eyes. Prevention remains the main strategy in managing computer vision syndrome. The descriptive study was conducted to assess the knowledge and practice regarding computer vision syndrome among nursing students at College of Nursing, Tertiary care Training and Research Hospital, South India. The instrument consists of: Participants profile, Knowledge Questionnaire on computer vision syndrome and Practice Questionnaire on computer vision syndrome. A total of 370 students who fulfilled the inclusion criteria were selected using stratified random sampling technique. The study findings revealed that 20.6% of the students had adequate knowledge. 1.4 % of the students followed healthy practices while using electronic gadgets. There is a significant relationship between knowledge and practice on computer vision syndrome (p< 0.001). Statistically significant association was also observed between knowledge and practice on CVS with selected participants' profile. Findings of the study revealed that there is a need to organize educational program on computer vision syndrome.***

Keywords: Computer vision syndrome, Participants profile, Electronic gadgets

1. Introduction and need for the study

Computer vision syndrome (CVS) is a complex of eye and vision problems, related to the activities which stress the near vision and which are experienced in relation, or during the use of computer.1 It is characterized by visual symptoms which result from interaction with computer display or its environment. Symptoms of CVS include headache, blurred vision, neck pain, redness in the eyes, fatigue, eye strain, dryness, irritated eyes, double vision, polyopia, and difficulty in refocusing the eyes. [(1).] The visual effects of the computer such as brightness, resolution, glare and quality are known factors that contribute to computer vision syndrome[2]. Transient myopia was observed in 20% of computer users at the end of their work shift[3.] . Five years ago the rate of computer vision syndrome was 8%, there has been a 15% rise in cases of computer vision syndrome in the past two years. Today almost 25% of the total cases in outpatient departments are computer vision syndrome.4·

As computers become part of our everyday life, more and more people are experiencing a variety of ocular symptoms related to computer use. The mandatory e - learning has emerged as a method for current teaching and learning in universities and schools with COVID - 19 pandemic. Scientific evidence shows that increased screen time is associated with health problems including eye diseases. About 88% of people who use computers everyday suffer from eye strain, and children are no exception.3 A study performed to assess the knowledge level on computer vision syndrome, revealed that 92% of the students had inadequate knowledge on CVS and most of the adolescents were ignorant regarding knowledge and healthy attitude of CVS[4]. Prevention is the most important strategy in managing computer vision syndrome. It is commonly managed by non - pharmacological and pharmacological measures. Non - pharmacological management includes correct ergonomic practices, maintaining normal eye blinking, the use of appropriate lighting, careful positioning of the digital device, adjusting image parameters, and taking breaks, while pharmacological management strategies include using artificial tears. [(5).] Health care workers have a tremendous responsibility in creating awareness among the computer users on computer vision syndrome and preventive strategies. Hence, This study was conducted to assess the knowledge and practice of the students on computer vision syndrome. Based on the findings, structured information on computer vision syndrome will be provided to students. **Objectives** 1. To assess the knowledge and practice regarding computer vision syndrome among nursing students.2. To determine the relationship between knowledge and practice regarding computer vision syndrome.3. To find the association between knowledge and practice of computer vision syndrome with participants profile. **Methodology** Descriptive design was utilized. The study was conducted in College of Nursing, multispecialty Tertiary care Training and Research Hospital in South India. Population consisted of Nursing students who fulfilled the inclusion criteria.370 participants were chosen for study using stratified random sampling technique. Based on the pilot study, following formula was used to calculate the sample size: n = (4* p*q) /d*d p=30%; q=1 - p =70%; d=5% **Instruments The instrument consists of three parts *Part I: Participants profile:*** Includes age, gender, name of the course, history of refractive error, usage of spectacle, power of the glasses, usage of contact lens, last visit to Ophthalmologist, history of other ocular / systemic disorders, type of gadget used and the usage of smart phone. ***Part II: Knowledge Questionnaire on computer vision syndrome*** Had 10 multiple choice questions to determine the knowledge on computer vision syndrome. Each correct answer carried one mark. **Five** questions had more than one correct answer. The wrong answer was scored zero. The maximum score was **27**. The minimum score was **0**. The score was converted into percentage and interpreted as follows: ***Interpretation of scores:*** Adequate Knowledge: .75 - 100%, Moderately adequate knowledge: 50– 74.9% Inadequate Knowledge: 0 - 49.9% ***Part III: Practice Questionnaire on computer vision syndrome*** This section had 13 questions. Each healthy practice was scored **1.** One question **had more than one** correct answer. The unhealthy

practice was scored zero. The maximum score was **20**. The minimum score was **0**. The score was converted into percentage and interpreted as follows: ***Interpretation of score:*** Healthy Practice: 80% & above Unhealthy Practice: 0 - 79.9% The content validity of each item was calculated. The content validity index and Expert CVI were 1 for both knowledge and practice tool. The reliability of the instruments (knowledge and practice) was assessed by checking the internal consistency using Chronbach's alpha and was found to be 0.72 and 0.50 for knowledge and practices respectively. **Data Collection** The study was conducted with the permission from Dean, College of Nursing and the Research Committee of the Institution. Informed consent was obtained from all the study participants. Confidentiality and anonymity was maintained. The investigator administered the questionnaire in Google forms. **Data Analysis** SPSS 18.0 was used to perform all statistical analysis. Descriptive statistics like percentage, mean and standard deviation were used to summarize the level of knowledge, practice and the participants' profile. Pearson correlation was used to determine the relationship between knowledge and practice, Chi - square was used to find the association between knowledge and practice with the participants' profile. P value <0.05 was considered as statistically significant. **Results and Discussion** Analysis of the participants' profile revealed that, 82% of the participants were between the age group of 17 - 24 years. Females dominated more in our study than male. Majority of the participants (82.4%) use smart phone to attend the online classes. For more than four years, 31% of the students were using smart phone. These findings are similar to the study findings by Abdulah Altalhi[6], except gender. This is because nursing is a female dominant profession. The current study findings are also supported by Reddy SV et al[2]. Refractive error was present among 27% of the participants, among which 81% of the participants had near sightedness. The study findings are similar with the study findings by Sushree[7] that, the overall prevalence of refractive errors was 65%, among which 86.92% were myopic. The present study revealed that 20.6% of the participants had adequate knowledge, 27.8% of the participants had inadequate knowledge on CVS as shown in figure 1. These findings are in accordance with the findings by Aswini pati[8], that 22.46% of individuals had good knowledge regarding various aspects of CVS, while 53.99% and 23.56% had average and poor knowledge, respectively. The study findings are also supported by another study by Samhitha[9] & Kumar[10]

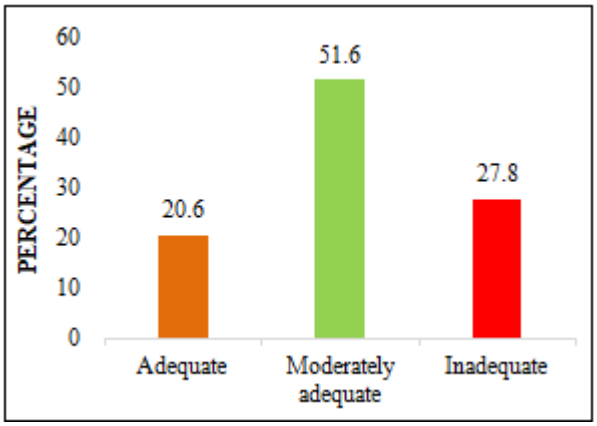

Figure 1: Participants knowledge on Computer vision syndrome

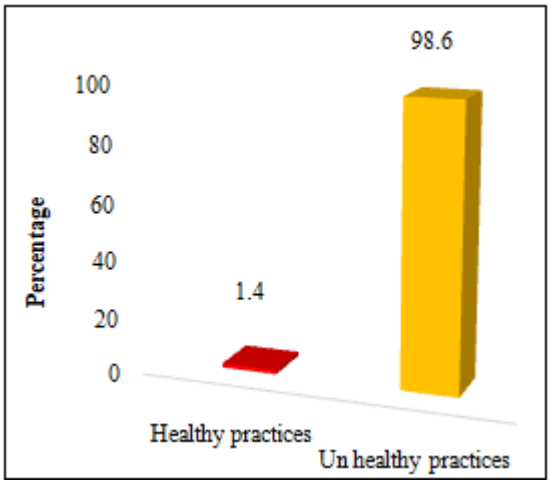

Figure 2: Practices on Computer vision syndrome

Majority of the students (98.6%) followed unhealthy practices while using electronic gadgets as depicted in figure 2. These study findings are supported by Abdullah[6] that, Ergonomic practices are not usually applied by most of the students while using electronic gadgets.

Statistically significant relationship was observed between knowledge and practice. ($p < 0.001$) as portrayed in figure 3. As the level of knowledge increased, healthy practices of using electronic gadget were also found to be increased. There are no adequate Indian studies performed on students which reveals the relationship between knowledge and practice of (ktotal - Knowledge, ptotal - Practice)

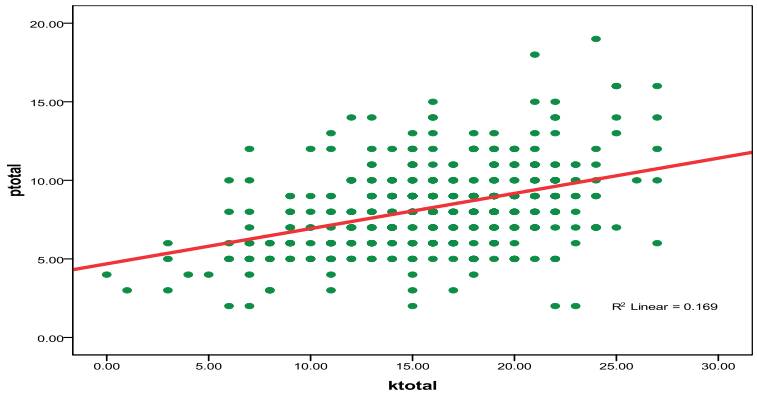

Figure 3: Relationship between knowledge and practice on Computer vision syndrome

A Statistically significant association was observed between knowledge on computer vision syndrome with the course and type of gadget used as illustrated in Table 1. However, there was no association found between knowledge and the other participants profile such as gender, presence of refractive error and history of other ocular / systemic diseases. These findings are similar with the study findings by Akhila Unnikrishnan[11], which showed no association between knowledge and demographic variables like age, education, course, duration of course and duration of computer usage per day. A study by Samhitha J[10] also supports this current study finding, no significant association was found between the level of knowledge and demographic variable.

Table 1: Association between Knowledge and participants profile (n=370)

S, No	Variables	Adequate knowledge		Moderately adequate		In adequate		χ^2	P Value
		No	%	No	%	No	%		
1	**Gender**								
	Female	70	19.7	186	52.4	99	27.9	3.903	0.142
	Male	6	40.0	5	33.3	4	26.7		
2	**Name of the course**								
	GNM	17	13.9	52	42.6	53	43.4	26.322	**0.000***
	BSc	41	22.7	103	56.9	37	20.4		
	PBBSc	9	20.9	26	60.5	8	18.6		
	MSc	9	37.5	10	41.7	5	20.8		
3	**Presence of Refractive error**								
	Yes	28	28	48	48	24	24	7.290	0.121
	No	48	17.7	143	53	79	29.2.		
4	**History of Ocular/ Systemic disorders**							8.027	0.236
	Yes	5	50.0	4	40	1	10.0		
	No	71	19.7	187	51.9	102	28.3		
5	**Type of Gadget used**								
	Smart phone	59	19.3	160	52.5	86	28.2	17.056	**0.001***
	Tab	1	14.3	2	28.6	4	57.1		
	Lap Top	5	50.0	5	50	0	0		
	Desk top	0	0	1	100	0	0		
	Smart phone &Tab	0	0	0	0	0	0		
	Smart phone & Lap top	10	22.7	22	50	12	27.3		
	Smart phone & Desk top	1	33.3	1	33.3	1	33.3		

The present study revealed that there was statistically significant association observed between practices and selected participants profile like course, history of other ocular/systemic diseases and type of gadgets used. The study by Kumar[11.] revealed that, male study participant used the computer mostly on low screen brightness with well - lighted environment than that of female. The viewing distance was found to be more in males than females. There are not much Indian studies performed on student population to find the association between practice and demographic variables to support or contradict with the current study findings.

Table 2: Association between Practice and participants profile (n=370)

S. No	Variables	Healthy Practices		Unhealthy Practices		χ^2	P Value
		No	%	No	%		
1	**Gender**						
	Female	4	1.1	351	98.9	3.313	0.069
	Male	1	6.7	14	93.3		
2	**Name of the course**						
	GNM	2	1.6	120	98.4	10.308	**0.016***
	BSc	1	0.6	180	99.4		
	PBBSc	0	0	43	100		
	MSc	2	8.3	22	91.7		
3	**Presence of Refractive error**						
	Yes	3	3	97	97	2.798	0.247
	No	2	0.7	268	99.3		
4	**History of Ocular/ Systemic disorders**					17.056	**0.001***
	Yes	0	0	10	100		
	No	5	1.4	355	98.6		
5	**Type of Gadget used**						
	Smart phone	2	0.7	303	99.3	11.259	**0.046***
	Tab	0	0	0	0		
	Lap Top	0	0	10	100		
	Desktop	0	0	1	100		
	Smart phone &Tab	0	0	0	0		

	Smart phone & Lap top	3	6.8	41	93.2		
	Smart phone & Desk top	0	0	3	100		

2. Conclusion

In today's world using computers is a necessity for majority of people but not many of them actually consider the medical consequences caused on working with computers such as damaged eyesight, bad posture, arthritis in fingers and computer stress injuries. Computer vision syndrome is the number one occupational hazard of the 21st century. CVS may affect as much as 70% of the all computer users. Study performed to assess the knowledge and practice on computer vision syndrome among nursing students revealed that, 20.6% of the participants had adequate knowledge, and 98.6% of the students followed unhealthy practices while using electronic gadgets. Hence, prevention remains the main strategy in managing computer vision syndrome. As the usage of computer had become universal in higher education institution, there is a need to educate people about limiting overall screen exposure and ergonomic methods of screen viewing.

References

[1] American Optometric Association (2021). Eye and vision conditions. Retrieved on 23.03.21 from www.aoa. org › healthy - eyes › eye - and - vision - conditions
[2] *Reddy SC. et al (2013). Computer Vision Syndrome. Nepal J Ophthalmology 5 (10): 161 - 168. Retrieved from* www.nepjol. info › NEPJOPH › article
[3] KY Loh., SC Reddy (2008). Computer vision syndrome. Retrieved from e - mfp. org › ojs3 › index. php › MFP › article › view
[4] Aslesh U., Roopalee J (2014). An Evaluation of Knowledge and attitude amongst adolescents of Ahmedabad towards computer vision syndrome and effectiveness of structured Teaching programme. IJHSR, Retrieved from www.ijhsr. org
[5] Sudip Bhattacharya., Sheikh Mohd Saleem., Amarjeet Singh (2020). Digital eye strain in the era of COVID - 19 pandemic: An emerging public health threat. Indian J Ophthalmol. Aug; 68 (8): 1709–1710. Retrieved from www.ncbi. nlm. nih. gov › pmc › articles › PMC7640814
[6] Abdullah Altalhi et al (2020). Computer Vision Syndrome among Kealth Sciences Students in Saudi Arabia: Prevalence and Risk Factor Retrieved from doi: 10.7759/cureus.7060. PMID: 32226662
[7] Sushree Priyadarsini Satapathy., Bharati Panda., Sadhu Charan Pand (2020). Prevalence and associated risk factors of refractive errors among medical students in Western Odisha: a cross - sectional study. International Journal of Scientific Reports. Oct; 6 (10): 405 - 409
[8] Retrieved from http: //www.sci - rep. com pISSN 2454 - 2156 | eISSN 2454 - 2164
[9] Aswini Patil., Bhavya., Suprakash., Smit Srivastava (2019). Eyeing computer vision syndrome: Awareness, knowledge, and its impact on sleep quality among medical students. Indian Psychiatry J, Jan - June 2019: 28 (1), 68 - 74. Retrieved from doi: 10.4103/ipj. ipj_93_18. Epub 2019 Dec 11
[10] Samhitha J., Jilta Jose., Ramya K & Indira S (2017). Knowledge of computer visionsyndrome. International journal of Applied research 3 (12) 434 - 437. Retrieved from https: //www.allreaserchjournal. com>archives
[11] Kumar B. S (2020). A study to evaluate the knowledge regarding computer vision syndrome among medical students. Biomed Pharmacol J13 (1). Retrieved from https: //dx. doi. org/10.13005/bpj/1907
[12] Akhila K Unnikrishnan et al (2019). A study to assess the knowledge Regarding Computer Vision Syndrome among Visual Media Students in Selected Institutions, Thrissur. J. Nurse Today 2019, Vol 10, Issue 1. Retrieved from www.joint. com