

A Study to Assess the Effectiveness of Planned Teaching Program on Computer Vision Syndrome (CVS) among Students of Class Seven to Nine in a Selected School of West Jaintia Hills District Jowai Meghalaya

Lucy Suting¹, Namita Singha², C.E. Myrthong³

¹M.Sc. Nursing Student, College of Nursing, NEIGRIHMS

²Lecturer, College of Nursing, NEIGRIHMS

³Principal, College of Nursing, NEIGRIHMS, Shillong, Meghalaya-793018, India

Abstract: *Introduction: In this modern world, children and technology are inseparable. Approximately 90% of school going children now has computer access and around 54 million children connect to internet each day either at home or in school. Aims: To assess the Knowledge on Computer Vision Syndrome (CVS) and to evaluate the effectiveness of Planned Teaching Program among students of class seven to nine in a selected school, West Jaintia Hills District Jowai. Methodology: A pre-experimental one-group pre-test-post-test research design was conducted among students of class seven to nine in St. Mary Mazzerello Girls Higher Secondary School, Jowai, during the month of February to March 2020. A total of 314 participants were selected using non-probability consecutive sampling technique. Data was collected using structured knowledge questionnaire before and after Planned Teaching Program respectively. Data was analyzed using descriptive and inferential statistics. Results: Among 314 participants, the mean Pre-test knowledge score of the participants was 6.61 and the mean Post-test knowledge score was 9.99. The study reveals that there is an Effectiveness of Planned Teaching Program in improving the knowledge of participants as the t-test value was -21.890 ($p < 0.01$) at 0.05 level of significance. Conclusion: From this study, it was concluded that Planned Teaching Program had a positive impact in increasing the knowledge on Computer Vision Syndrome among the participants. Further studies however can be conducted among different categories of population with a larger sample for a better generalization of the same.*

Keywords: Computer Vision Syndrome, Effectiveness, Planned Teaching Program, Students of class seven to nine

1. Introduction

Computer plays an integral part of our day to day life. The advancement of science and technology has brought a lot of changes in our lives that we wonder what life would be without it. Computer has given us a lot of benefits but, along with benefits comes certain health related problems [1]. As we enter the 21st century, the increasing use of computers at home and office brings with it an increase risk in health, especially for the eyes which lead to the condition called Computer Vision Syndrome (CVS) [2]

The American Optometric Association (AOA) defined CVS as "A condition of eye and vision problems related to activities, which stress the near vision and which are experienced in relation with using of computers" [3]. According to Common Sense Media, children below 8 years spend more than two hours a day and children above 8 years spend up to six hours a day which can leads to the symptoms associated with Computer Vision Syndrome (CVS) [4].

In this modern world, where children and technology are inseparable [4], approximately 90% of school going children now have computer access [5] and around 54 million children connect to internet each day either at home or in school [6]. According to the article reviewed by Kozeis N, it was found that millions of children use computers on a daily basis at school and at home, both for education and recreation. [7]

According to The American Optometric Association (AOA) the main symptoms of CVS are- Eye strain, headache, blurred vision, dry eyes, neck and shoulder pain [8]. Children can experience identical symptoms related to computer use as that reported by adults [7]. Three - fourth of the students complained of one of the above symptoms of CVS while working on the computer. [9]

2. Objectives

- To assess the Knowledge regarding Computer Vision Syndrome among students of class seven to nine in a selected school, West Jaintia Hills District Jowai.
- The evaluate the effectiveness of Planned Teaching Program on Computer Vision Syndrome among students of class seven to nine by comparing Pre-test score and Post-test score.

3. Methodology

A one-group pre-test post-test research design was adopted among students of class seven to nine in a selected school, West Jaintia Hills District Jowai. Total of 314 students were selected in the study using Consecutive sampling technique. The study was conducted from 10th February to 7th March 2020. The Research tools, consisted of Socio-Demographic

characteristics and Structured Knowledge Questionnaire. Reliability of tool was established by test-retest method using Karl Pearson's coefficient co-relation formula. Pilot study was conducted and found to be feasible to be carried out in the main setting as proposed. Data was collected using self administered questionnaires consisting of 2 sections; Section I: Socio-Demographic characteristics which include 9 items, Section II: A Structured Knowledge Questionnaire consisting of 18 nos of questions. Each question was given one mark for a correct answer and zero for an incorrect answer. The maximum score was 18 and to interpret level of knowledge, the score was distributed as Good (>76), Average (51-75%) and Poor (<50%). The data was analyzed using Descriptive (Frequency, percentage, mean and standard deviation) and inferential statistics (Paired t-test).

4. Result

- **Section I:** Frequency distribution of Socio-demographic characteristics, Frequency and Percentage distribution of Spectacle used, Computer used and previous knowledge of participants on Computer Vision Syndrome (CVS).
- **Section II:** Distribution of participant's Pre-test and Post-test knowledge Score.

Section I

Table 1: Frequency and percentage distribution of participants according to socio-demographic characteristics, n=314

Demographic variables	Frequency (f)	Percentage (%)
Age		
12-14 years	194	61.8
15-17 years	120	38.2
Educational status		
Class VII	112	35.7
Class VIII	103	32.8
Class IX	99	31.5
Educational status of the mother		
Illiterate	70	22.3
Primary	100	31.8
Higher secondary	94	29.9
Above higher secondary	50	15.9
Educational status of the father		
Illiterate	104	33.1
Primary	85	27.0
Higher secondary	80	25.5
Above higher secondary	45	14.3
Occupational status of the Mother		
Housewife	138	43.9
Business	48	15.3
Teacher	46	14.6
Labourer	41	13.1
Govt. employee	41	13.1
Occupational status of the Father		
Labourer	120	38.2
Business	96	30.6
Govt. employee	77	24.5
Teacher	16	5.0
unemployed	5	1.6

Table 2: Frequency and percentage distribution of participant's wearing spectacles, n= 314

Criteria	Frequency(f)	Percentage (%)
Spectacle used		
Participants wearing spectacles	70	22.2
Duration of wearing spectacles(in months)		
<6	15	21.4
6 – 12	20	28.6
12-18	10	14.2
18 - 24	10	14.2
>24	15	21.4

Table 3: Frequency and Percentage distribution of participants on computer use, n=314

Criteria	Frequency(f)	Percentage (%)
Years of using computer(in years)		
2	112	35.7
3	103	32.8
4	99	31.5
Duration of computer used in a day(in minutes)		
30	112	35.7
60	120	38.2
90	82	26.1
Awareness of bad effect of prolonged computer used on the eyes		
Yes	240	76.4
No	74	23.6

Table 4: Frequency and Percentage distribution of participant's previous knowledge on Computer Vision Syndrome (CVS), n=314

Criteria	Frequency(f)	Percentage (%)
Participant's previous knowledge on CVS		
Yes	219	69.7
No	95	30.2
Source of information on CVS)		
Magazine	17	7.8
Pamphlet/ booklet	29	13.2
Social media	38	17.3
Others	135	61.7

Section II

Effectiveness of Planned Teaching Program on Computer Vision Syndrome (CVS) among students of class seven to class nine

Comparison of pre-test and post-test knowledge scores among students of class VII to class IX

Frequency distribution of Pre-test and Post-test knowledge scores are presented in Table below. The three categories made for the grading purposes are "GOOD" denoting scores >76%, "AVERAGE" denoting a score between 51%-75% and "POOR" denoting scores < 50%.

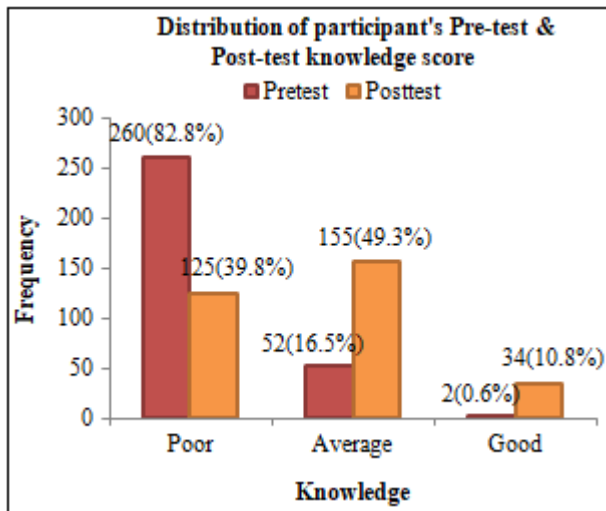


Figure 3: Frequency and Percentage distribution of Participants Pre-test and Post-test score, n=314

Table 5: Distribution of Pre-test and Post-test knowledge score of participants on meaning, importance of blinking and cause of Computer Vision Syndrome, n=314

Criteria	Pre-test		Post-test	
	f	%	f	%
Meaning Computer Vision Syndrome is a condition that leads to eye and vision problem.	219	69.7%	267	85.0%
Importance of blinking Normally, people blink at an average of 15-20 times/min	103	32.8%	137	43.6%
People blinks one third as frequently when engaged in face to face.	66	21.0%	82	26.1%
Blinking is very important while working on a computer as it prevent dryness and irritation of eyes.	151	48.0%	255	81.2%
Cause Burning sensation of the eyes while using computer may be caused by poor lighting, improper viewing distance and improper sitting posture.	35	11.1%	90	28.6%

Table 6: Distribution of Pre-test and Post-test knowledge score of participants on people affected by Computer Vision Syndrome, signs and symptoms of Computer Vision Syndrome, n=314

Criteria	Pre-test		Post-test	
	f	%	f	%
People affected by CVS Computer Vision Syndrome occurs among people using computer for more than 2 hours	95	30.2%	162	51.5%
Computer Vision Syndrome can affect all the age group	226	71.9%	278	88.5%
Sign and symptoms Dryness of eyes is the most common symptoms associated with Computer Vision Syndrome	166	52.8%	255	71.6%
Dryness of the eyes while using computer occurs because of decrease of blinking rate	74	23.5%	97	30.8%
Staring at a bright computer screen for	135	42.9%	220	70%

hours leads to burning sensation of eyes				
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Table 7: Distribution of Pre-test and Post-test knowledge score of participants on factors contributing to Computer Vision Syndrome and other negative effects of computer used, n=314

Criteria	Pre-test		Post-test	
	f	%	f	%
Factors contributing to CVS Improper body posture while working on the computer can lead to shoulder and back pain	195	62.1%	266	84.7%
Over sitting contributes to a group of conditions which included gaining weight	68	21.6%	129	41.0%
Other negative effects of computer used Late night computer sessions may lead to drowsiness	87	27.7%	132	42.0%
Spending more time on a computer can also lead to isolation	105	33.4%	194	61.7%

Table 8: Distribution of Pre-test and Post-test knowledge score of participants on prevention of Computer Vision Syndrome n=314

Criteria	Pre-test		Post-test	
	f	%	f	%
Prevention of CVS Awareness is the first step towards preventing Computer Vision Syndrome	105	33.4%	169	53.8%
The best position for your computer is slightly below the eye level	55	17.5%	79	25.1%
While using a computer, the best home remedies to prevent back pain is maintaining posture, take a break and exercise regularly	86	27.3%	154	49%
20-20-20 rule means every 20mins, take 20 seconds break, look 20 feet away	109	34.7%	192	61.1%

Effectiveness of the Planned Teaching Program on Knowledge Regarding Computer Vision Syndrome (CVS) among Students of Class Seven to Class Nine Using Paired T-Test:

To test the significant difference, the following hypothesis was formulated

H_A: There is significant difference in the knowledge score, after the Planned Teaching Program.

Table 9: Paired t-test value showing mean and standard deviations of pre-test and post-test knowledge score of participants regarding Computer Vision Syndrome(CVS), n=314

	Pre-Test	Post-test	't' value	df	p value
	Mean ± SD	Mean ± SD			
Knowledge	6.61 ± 2.697	9.99 ± 2.518	-21.890	313	0.001*

*Significant at 0.05 level of significance

5. Discussion

The findings of present study results were discussed in relation to the objectives of the study conducted and this was compared to the results of similar studies in the area of research.

In this study the objectives was to assess the Knowledge regarding Computer Vision Syndrome and to evaluate the effectiveness of Planned Teaching Program on Computer Vision Syndrome among students of class seven to nine by comparing Pre-test score and Post-test score

To assess the knowledge of participants regarding Computer Vision syndrome (CVS) before and after Planned Teaching Program

The present study conducted revealed that with respect to knowledge of participants on Computer Vision syndrome (CVS), a majority of the participants that is 260(82.8%) participants have poor knowledge, 52(16.5%) have average knowledge and 2(0.6%) have good knowledge in the pre-test. However after the administration of the Planned Teaching Program, there was a marked improvement in the knowledge level of participants. This is revealed by the findings whereby 34(10.8%) possessed good knowledge, 155 (49.3%) had average knowledge and 125(39.8%) had poor knowledge. The present results of the study support the findings of the study conducted by **Sam T.S, George JR⁽¹⁰⁾**, which showed that 3(5%) had a good knowledge, 23(38.33%) had an average knowledge and 34(56.66%) had a poor knowledge in pre-test. But, after administration of the Self instruction module a majority of the participants that is 58(96.66%) had a good knowledge, 2(3.33%) had an average knowledge and none of the participants had poor knowledge.

Menaria K et al⁽¹¹⁾ study similarly revealed that 108(77.14%) had inadequate knowledge, 32(22.86%) had moderate knowledge and none of the participants had adequate knowledge in the pre-test. But, after administration of Self instruction module, the post-test score was 49(35.00%) had moderate knowledge, 91(65.00%) had adequate knowledge and non of the participants had inadequate knowledge

Another study conducted by **Upadhyaya A and Joshi R⁽¹²⁾** indicated that, 15(8.33%) had moderate knowledge, 165(91.67%) had inadequate knowledge and non of the participants had adequate knowledge in pre-test. But after the administration of the Structured Teaching Programme the post-test knowledge score of the participants had improved where results showed that 171(95%) had adequate knowledge, 9(5%) had moderate knowledge and none of the participants had inadequate knowledge.

To evaluate the Effectiveness of Planned Teaching Program on knowledge regarding Computer Vision Syndrome (CVS)

In the present study, it was found that mean knowledge score in the post-test (9.99) was greater than the pre-test (6.61) and the t-value is -21.890 and p value is 0.001(p<0.01) which is statistically significant. Similar findings have been observed in the study conducted by

Upadhyaya A and Joshi R⁽¹²⁾, where they reported that the mean post-test knowledge score was 24.80 which were higher than the mean pre-test knowledge score of 11.08 (p >0.05), indicating statistically significance

Another study conducted by **Sam T.S, George JR⁽¹⁰⁾**, reported that the mean post-test knowledge score was 29.75 which was higher than the mean pre-test knowledge score of 15.9 at 0.05 level of significance. It was also supported by a study conducted by **Menaria K et al.⁽¹¹⁾** that reported that the mean post-test knowledge score was 28.98 which was again higher than the mean pre-test knowledge score of 14.96 at 0.05 level of significance.

6. Conclusion

Initially, computers were used almost solely by adults. Today, millions of children use computers on their daily basis at school and at home, both for education and recreation. Improper viewing distance of computer can lead to fatigue, headache, eye problems including blurred vision, dry eyes and other symptoms of eyestrain. These symptoms occurred due to poor lighting, glare, an improper posture, vision problems of which the person was not previously aware, or a combination of these factors^[7]. Children can experience many similar symptoms related to computer use as adults. Even though the visual impact of computer used, has been studied in adults, only few studies have investigated the same issue among children^[7].

In the present study, it was found that there is an effectiveness of Planned Teaching Program as the participants post test score is higher than the pre test score.

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