

## Prevalence Of Events And Reports Symptoms Of *Computer Vision Syndrome* (CVS) In Nursing Students In Indonesia During Virtual Face Learning Current Time Of The Covid-19 Pandemic

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### ABSTRACT

While undergoing the learning process during the Covid-19 pandemic, nursing students must deal with digital device screens such as computers, laptops, and *smartphones* that are connected to the internet for a long time and continuously. Continuous use of digital devices harms health, such as *Computer Vision Syndrome* (CVS). This condition causes sufferers to experience visual disturbances, eye muscle, and musculoskeletal disorders. This research aims to describe the prevalence of CVS events and symptoms felt by nursing students while undergoing virtual face-to-face lectures during the Covid-19 pandemic. This type of research is quantitative research with a descriptive approach. The sample of this research was 494 students from 13 public and private universities in Indonesia. This sample was selected with the *Cluster Sampling Technique*. The results of this study showed that the majority of nursing students complained of headaches with moderate complaints (80.2%), eye fatigue with moderate complaints (75.9%), eye redness with mild complaints (50.0%), blurred vision with complaints moderate (49.2%), dry eyes with mild complaints (74.5%), pain in the shoulders and neck with moderate complaints (40.1%). The majority of the time, using digital devices (laptops, computers, or smartphones) in attending online lectures  $\geq 5$  hours (98.6%). Most device screen monitor lighting is bright (78.7%), and the position when using most devices is in the wrong category (87.0%). Most CVS complaints among nursing students from various regions in Indonesia are at a moderate level related to complaints of headaches, eye fatigue, redness, blurred vision, and shoulder and neck pain. This can be attributed to using electronic devices for more than 5 hours in one day and poor behaviour when using these devices.

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### 1. INTRODUCTION

The use of digital devices such as computers harms health (Darmaliputra & Dharma, 2019). One of the health problems caused is *Computer Vision Syndrome* (CVS). *Computer Vision Syndrome* (CVS) is a condition in which a sufferer experiences a group of symptoms such as visual impairment and eye muscle disorders due to continuous use of digital devices such as computers, televisions, tablets, and *smartphones* (Atalhi, Khayyat, Khojah, Alsalmi, & Almarzouki, 2020). The CVS condition is very common among college students. Students often use digital devices such as computers, laptops, and *smartphones* connected to the internet during their lecture period (Alma & Asnicar, 2019).

The prevalence of CVS among college students reaches 78.6% for medical students and 81.9% for engineering students (Logaraj, Madhupriya, & Hedge, 2014). The incidence of CVS in the business student group is even higher than in medical students (Tawil et al., 2020). This shows that the prevalence of CVS events in college students is quite high. This phenomenon can also occur in nursing students. The learning model with Student-Centered Learning (SCL) established by the Association of Indonesian Nurse Education Institutions (AIPNI) requires students to do a lot of independent learning,

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especially in finding information on a subject (Oktovin, Wicaksono, & Imus, 2022). Apart from that, the current condition of the Covid-19 (Corona Virus Disease-2019) pandemic makes it very possible for an increase in the incidence of CVS in nursing students because the learning process is carried out online (in the network) according to the Circular Letter of the Ministry of Education and Culture of the Republic of Indonesia Number 4 of 2020 and Number 36952/MPK.A/HK/2020, as well as AIPNI circular letter Number 465/AINEC.Ka.Sr./III/2020 concerning Learning, Teaching, and Student Affairs During the Emergency Period of the Corona Virus Disease Pandemic (COVID-19).

The results of interviews with ten nursing students from private and public universities in Indonesia revealed that the time to use digital devices increased during the Covid-19 pandemic. The average student spends 5-6 hours daily taking online lectures and 2-4 hours working on individual and group assignments. This means nursing students in Indonesia spend around 5-9 hours per day completing studies during this pandemic using computers, laptops, smartphones, and the internet as learning support.

The use of digital devices between 4-6 hours a day increases the risk of experiencing eye redness, fatigue, and dry eyes (Logaraj, Madhupriya, & Hedge, 2014). Staring at the screen light from a digital device for a long time is very influential in the occurrence of CVS (Atalhi, Khayyat, Khojah, Alsalmi, & Almarzouki, 2020). The impact caused by CVS is also quite diverse, starting from the emergence of various visual and non-visual symptoms (Logaraj, Madhupriya, & Hedge, 2014) such as myopia or nearsightedness (Rashidi & Alhumaidan, 2017), and decreased sleep quality in college students. (Patil, Bhavya, Chaudhury, & Srivastava, 2019). This will certainly have a negative impact, especially for nursing students, especially nursing graduates must have health qualifications that support their future work. Therefore, the detection of CVS events in nursing students in Indonesia related to virtual face-to-face learning during the Covid-19 pandemic needs to be identified, starting from the prevalence of CVS events and complaints experienced by students. The goal is to find the right information regarding the condition of CVS in students. Future problem-solving strategies can be formulated to prevent CVS severity in the future.

## 2. METHODS

This type of research is quantitative research with a descriptive approach. This research only describes the phenomena that occur (Dahlan, 2014). Through descriptive research, researchers try to describe events that are the center of attention without giving special treatment to these events (Directorate of Education Personnel, 2008). The phenomenon described in this study relates to the prevalence of CVS events and complaints experienced by Nursing Undergraduate Students in Indonesia. The sample in this study was Semester VIII Bachelor of Nursing students who have been actively studying online since mid-2020. The sample in this study was 494 undergraduate nursing students from public and private universities who were selected using the probability sampling method, namely cluster sampling.

## 3. RESULTS AND DISCUSSION

Table 1 Characteristics of Respondents

Age	N	%
17-25 Years	441	89,3
26-35 years	53	10,7
<b>Total</b>	<b>494</b>	<b>100</b>
Gender	N	%
Man	137	27,7
Woman	357	72,3
<b>Total</b>	<b>494</b>	<b>100</b>

*Source: Primary Data*

Based on table 1.1 above, it can be seen that the majority of semester VII undergraduate nursing

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students involved in this study were aged 17-25 years (89.3%) and female (72.3%).

Table 2 Prevalence of CVS complaints among nursing students in Indonesia

CVS complaint	No Complaints		Minor Complaints		Moderate Complaint		Serious Complaints		Total
	N	%	N	%	N	%	N	%	
	<b>Headache</b>	5	1.0	67	13,6	396	80,2	26	
<b>Tired of the eyes</b>	0	0	98	19,8	375	75,9	21	4,3	494
<b>Reddish eyes</b>	57	11.5	247	50.0	179	36,2	11	2,2	494
<b>Blurred vision</b>	5	1.0	122	24,7	243	49,2	124	25,1	494
<b>Eyes feel dry</b>	78	15,8	368	74.5	46	9,3	2	0.4	494
<b>Pain in the Shoulders and neck</b>	2	0.4	163	33.0	198	40,1	131	26.5	494

Source: Primary Data

Table 3 Behaviour in using digital devices while undergoing lectures in the network (ONLINE)

Length of time using digital devices in 1 day	N	%
	< 5 hours	7
≥ 5 hours	487	98.6
<b>TOTAL</b>	<b>494</b>	<b>100</b>
Device screen monitor lighting		
Very bright	9	1,8
Bright	389	78.7
Dim	96	19,4
Dark	0	0
<b>TOTAL</b>	<b>494</b>	<b>100</b>
Position when using the device		
Very good	12	2,4
Well	52	10.5
Not good	430	87.0
<b>TOTAL</b>	<b>494</b>	<b>100</b>

Based on Table 2, it can be seen that the majority of nursing students in Indonesia complain of moderate headaches (80.2%), eye fatigue with moderate complaints (75.9%), eye redness with mild complaints (50.0%), vision blurred with moderate complaints (49.2%), dry eyes with mild complaints (74.5%), pain in the shoulders and neck with moderate complaints (40.1%). From table 3 above, it can be seen that the majority of the duration of using digital devices (laptops, computers, or smartphones) in attending online lectures is  $\geq 5$  hours (98.6%). Most device screen monitor lighting is bright (78.7%), and the position when using most devices is in the wrong category (87.0%).

## Discussion

Computer Vision Syndrome (CVS) represents a group of visual and extraocular symptoms associated with the continuous use of visual display terminals (Bogdanici, Sandulanche, & Nechita, 2017). Complaints that are commonly felt, namely headaches, blurred vision, and double vision, are one of the signs that are commonly experienced by sufferers (Atalhi, Khayyat, Khojah, Alsalmi, & Almarzouki, 2020). This is consistent with the findings in this study, where most students who often deal with layers of electronic devices during online learning complain of headaches, eye fatigue, redness, blurred vision, dry eyes, and pain in the shoulders and neck.

These complaints are closely related to individual behaviour in using electronic devices. In this study, most nursing students used electronic screens, either smartphones, laptops or computers, for an average of  $\geq 5$  hours while undergoing online lectures, as revealed by Tawil et al. (2020), where the use of electronic devices for more than 5 hours is closely related to these CVS symptoms.

Behaviour to control the emergence of CVS disorders when using electronic devices must be well practiced by users, such as distance between the eyes and the screen and good lighting. However, the findings of this study show that student behaviour when using electronic devices is in the wrong category. The knowledge of the student could influence this. Medical students' low awareness and knowledge about CVS results in a high prevalence of CVS among medical students (Patil, Bhavya, Chaudhury, & Srivastava, 2019). As a result, there are various kinds of visual and non-visual symptoms (Logaraj, Madhupriya, & Hedge, 2014), as well as decreased sleep quality in college students (Patil, Bhavya, Chaudhury, & Srivastava, 2019). Therefore, increasing knowledge related to CVS complaint control needs to be given to students.

#### 4. CONCLUSION

The majority of CVS complaints in nursing students in Indonesia are at moderate levels, both complaints of headaches, eye fatigue, eye redness, blurred vision, and pain in the shoulders and neck. This can be attributed to using electronic devices for more than 5 hours in one day and poor behaviour when using these devices.

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