

How to Cite:

Efendi, S., Sriyanah, N., Fatmawati, F., Livana, P. H., Suswani, A., & Nuratifah, N. (2022). Duration of smartphone usage in online learning during the COVID-19 pandemic and the occurrence of computer vision syndrome in the students of MTsN 1 Bone. *International Journal of Health Sciences*, 6(S5), 7652–7659. <https://doi.org/10.53730/ijhs.v6nS5.11668>

Duration of smartphone usage in online learning during the COVID-19 pandemic and the occurrence of computer vision syndrome in the students of MTsN 1 Bone

Suradi Efendi

Sekolah Tinggi Ilmu Kesehatan Makassar, Indonesia
Correspondent author email: atolnurse@gmail.com

Nour Sriyanah

Sekolah Tinggi Ilmu Kesehatan Makassar, Indonesia

Fatmawati

STIKES Panrita Husada Bulukumba, Indonesia

Livana PH

Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia

Andi Suswani

STIKES Panrita Husada Bulukumba, Indonesia

Nuratifah

Sekolah Tinggi Ilmu Kesehatan Makassar, Indonesia

Abstract--The smartphone screen emits ultraviolet radiation and X-rays, and if exposed for a long time, eye health problems may occur. One of these disorders is Computer Vision Syndrome (CVS). This research is to determine the duration of smartphone usage in online learning during the Covid-19 pandemic and the occurrence of computer vision syndrome in the students of Mtsn 1 Bone. The research design used was descriptive research. The population was 1.289 students, and the sample used as many as 309 students were a combination of representatives from grades 7, 8, and 9 with the Proportional Stratified Random Sampling technique. The results showed the duration of smartphone usage in online learning by 170 students (55%) with ≥ 3 hours of use. And the complaints of CVS disorders were 185 students (59.9%) with neck pain. Then the duration of smartphones usage outside of online learning was 79

respondents (25.6%) with ≥ 3 hours continuously use in a day. The most complaints on CVS occurrence were 177 students (57.3%) with eyestrain. The conclusion is the duration of smartphone usage is mostly ≥ 3 hours and experiences neck pain and eyestrain. Therefore, the student of MTsN 1 Bone should prevent the long durations of smartphone usage and avoid the occurrence of CVS.

Keywords---Smartphone usage duration, CVS symptoms, COVID-19.

Introduction

One of the eye health disorders is Computer Vision Syndrome (CVS). It causes headaches, eye strain, blurring, dry eyes, irritated eyes, tired eyes, sensitivity to light (glare), double vision, and pain in the neck, shoulder, and back. (Amalia, 2018). The research results on the occurrence of Computer vision syndrome (CVS) in students of computer science at the University of Lampung with a total of 56 respondents were used as research samples, 75,51% experienced CVS, and 39 students (69.6%) experienced CVS with the duration of computer usage more than two hours continuously use. CVS occurs due to the interaction between the eye and the computer screen and other visual display terminals (VDTs) such as smartphone and tablets (Valentina dkk., 2019).

Based on the description above, researchers are interested in examining the duration of smartphone usage during online learning and outside of online learning during the COVID-19 pandemic and recognizing the computer vision syndrome in the students of MTsN 1 Bone. One of the reasons the author chose MTsN 1 Bone as the research location because the school has the highest number of students in Bone regency at the high school level and during the pandemic, students applied online learning.

Method

The type of research used was descriptive research to find out the description between the variables to be examined, and carried out on students at MTsN 1 Bone, Bone Regency, South Sulawesi Province and carried out on 30 June - 18 July 2021. Determination of the number of samples used the Proportional Stratified random sampling technique.

Result

The population was 1,289 students of MTsN 1 Bone and the sample was 309 students including class VII consisting of 11 classes, 8 people were selected from each class, for class VIII there were 11 classes as well, 7 people were selected from each class, then for class IX had 16 Classes, and 9 People were selected from each class.

Distribution of Respondents based on Smartphone usage during online learning at the students of MTsN 1 Bone in 2021

Variable	n	%
Duration of use		
< 3 Jam	139	45,0
≥ 3 Jam	170	55,0

Based on the duration of smartphone usage in a day shows that 170 people (55%) with ≥ 3 hours and 139 people (45%) with < 3 hours duration of use.

Symptom/Complaint	Yes		No	
	n	%	n	%
Eyestrain	178	57,6	131	42,4
Eyes tense	76	24,6	233	75,4
Painful Eyes	87	28,2	222	71,8
Dry Eyes	78	25,2	231	74,8
Headache	136	44,0	173	56,0
Watery eyes	86	27,8	223	72,2
Irritated Eyes Due to				
Contact Lenses	17	5,5	292	94,5
Blurred Vision	62	20,1	247	79,9
Double Vision	22	7,1	287	92,9
Difficulty Focusing	63	20,4	246	79,6
Eyes	122	39,5	187	60,5
Shoulder Pain	145	46,9	164	53,1
Back Pain	185	59,9	124	40,1
Neck Pain				
Total	309		100,0	

Complaints about the occurrence of Computer Vision Syndrome during online learning, for the answer Yes, the highest is Neck Pain as many as 185 people (59.9%). For the answer No, the highest is the complaint of irritated eyes due to contact lenses as many as 292 people (94.5%), This is because more students do not use contact lenses when using smartphones, so they are more dominant in not having these complaints.

Distribution of Respondents based on Smartphone usage Outside the Online Learning in the students of MTsN 1 Bone in 2021

Variable	n	%
Duration of use		
1 hour	49	15,9
10 hours	6	1,9
12 hours	5	1,6
13 Hours	1	0,3
2 hours	72	23,3
24 hours	1	0,3
3 hours	79	25,6
4 hours	46	14,9
5 Hours	29	9,4
6 Hours	12	3,9
7 hours	3	1,0
8 hours	5	1,6
9 hours	1	0,3
Total	309	100,0

The duration of Smartphone/Laptop usage in a day outside of online learning shows the most respondents is 79 people (25.6%) with 3 hours of use

Symptom/Complaint	Yes		No	
	n	%	n	%
Eyestrain	177	57,3	132	42,7
Eyes tense	66	21,4	243	78,6
Painful Eyes	77	24,9	232	75,1
Dry Eyes	65	21,0	244	79,0
Headache	132	42,7	177	57,3
Watery eyes	83	26,9	226	73,1
Irritated Eyes Due to Contact Lenses				
Blurred Vision	19	6,1	290	93,9
Double Vision	64	20,7	245	79,3
Difficulty Focusing Eyes	25	8,1	284	91,9
Shoulder Pain	60	19,4	249	80,6
Back Pain	113	36,6	196	63,4
Neck Pain	136	44,0	173	56,0
	163	52,8	146	47,2
Total	309		100,0	

Complaints about the occurrence of Computer Vision Syndrome outside of online learning, for the answer Yes, the highest is Eyestrain as many as 177 people (57,3%). For the answer No, the highest is the complaint of irritated eyes due to contact Lenses as many as 290 people (93,9%).

Discussion

The results showed the duration of smartphone usage in online learning by 170 students (55%) with ≥ 3 hours of use and 139 respondents (45%) with < 3 hours.

From these data, the duration of smartphone use in the online learning process for students was the same, but during the online learning process, some students answered that they used it continuously for more than 3 hours, and some answered for less than 3 hours. It is because some of the use of learning time is not entirely for online learning, but only for a short time without focusing on smartphones during the online learning process.

It is in line with research conducted at the University of Lampung, students of computer science, and mathematics faculty, that the duration of smartphone usage in a day will lead to the occurrence of Computer Vision Syndrome. It was found that there were 75.51% for > 2 hours continuously use, and 7.7 times greater experiencing CVS (Valentina dkk., 2019).

Based on the results of research on the complaints about the occurrence of Computer Vision Syndrome during online learning, the highest is Neck Pain as many as 185 people (59.9%). Then, 178 students (57.6%) complained of eyestrain, 145 students (46.9%) complained of back pain, and 136 students (44%) complained of headaches.

DS etc (2018) state that prolonged use of the VDT device will keep the eyes focused and maintain visual acuity which will force the eye muscles to work continuously to focus on an object at close range and for a long time will trigger symptoms of asthenopia and extraocular problems such as eye fatigue, neck pain, and back pain (Nurhalimah, Mardalena dan Kurniawan, 2020). Based on the duration of Smartphone usage outside of online learning shows the most respondents are 79 people (25.6%) with 3 hours of continuous use in a day.

The complaints about the occurrence of Computer Vision Syndrome outside online learning as many as 177 students (57,3%) with eye strain, followed by 163 students (57.6%) who complained of neck pain, 136 students (44%) complained of back pain, and 132 students (42.7%) complained of headache.

From a study on nursing students at Syiah Kuala University, the most common complaint was eye fatigue with 324 people (77.7%). Ardyanto and Indriani (2013) conducted research on Surabaya Container terminal operators and the most frequent symptoms are eyestrain (79.4%), dry eyes (11.8%) and headaches (5.9%). These symptoms make the respondents' eyes forced to focus at work due to exposure to the computer screen. If the exposure has been received for a long period of time, it will result in eyestrain and headaches (Febrianti dan Bahri, 2018).

Conclusion

On the duration of smartphone usage during online learning, the most were 170 students (55%) with ≥ 3 hours of use. Outside of Online Learning, the most duration used is 3 hours in a day in 79 Respondents (25,6 %). For complaints of symptoms from the occurrence of Computer Vision Syndrome (CVS) during online learning, the most complaints were 185 students (59.9%) with complaints of Neck Pain, and when outside of online learning, the highest was 177 students (57, 3%) with complaints of eyestrain.

To the students of MTsN 1 Bone should prevent long duration of Smartphones usage that can endanger health, especially eye health problems, and be able to recognize the symptoms, therefore, use the 20-20-20 technique which means looking away from the screen every 20 minutes then staring at a distant object about 20 feet for 20 seconds and let the eye muscles to relax. Then this research can be used as literature in nursing science to recognize and prevent complaints from CVS occurrence. Different research designs can be carried out with further analysis.

References

- Afdalia, R. (2014). *Hubungan Durasi Penggunaan Komputer Dengan Kejadian Computer Vision Syndrome (CVS) Pada Pegawai RSUD DR. Zainoel Abidin Banda Aceh*. <https://etd.unsyiah.ac.id/baca/index.php?id=5205&page=20>
- Alemayehu, A. M., dan Alemayehu, M. maru. (2019). Pathophysiological Mechanisms of Computer Vision Syndrome and its Prevention: Review. *World Journal of Ophthalmology & Vision Research*, 2(5), 1–7. <https://doi.org/10.33552/wjovr.2019.02.000547>
- Amalia, H. (2018). Computer Vision Syndrome. *Jurnal Biomedika dan Kesehatan*, 1(2), 117–118. <https://doi.org/10.1177/2165079917712727>
- Apriyanti, S., Sawitri, E., dan Fatmawati, N. K. (2021). *Jurnal Sains dan Kesehatan Penggunaan Smartphone Berpengaruh Terhadap Gejala Computer Vision Syndrome*. 1(5).
- Attamimi, H. R. ., Lestari, Y. ., Situmorang, B. . H. L. ., Antari, G. Y. ., & Nugrawati, N. . (2020). Application of habituation method in gernas interventionsin: the pandemic time COVID-19 . *International Journal of Health & Medical Sciences*, 3(1), 98-104. <https://doi.org/10.31295/ijhms.v3n1.175>
- Daeng, I. T. M., Mewengkang, N. ., dan Kalesaran, E. R. (2017). Penggunaan Smartphone Dalam Menunjang Aktivitas Perkuliahan Oleh Mahasiswa Fispol Unsrat Manado. *Acta Diurna*, VII(1), 1–15.
- Darmaliputra, K., dan Dharmadi, M. (2019). Gambaran Faktor Risiko Individual Terhadap Kejadian Computer Vision Syndrome Pada Mahasiswa Jurusan Teknologi Informasi Universitas Udayana Tahun 2015. *E-Jurnal Medika*, 8(1), 95–102.
- Dwi, B., Amelia, A., Hasanah, U., Putra, A. M., dan Rahman, H. (2020). Analisis Keefektifan Pembelajaran Online di Masa Pandemi Covid-19. *Jurnal Pendidikan Guru Sekolah Dasar*, 2(1), 3.
- Fathimahhayati, L. D., Pawitra, T. A., dan Tambunan, W. (2020). *Analisis ergonomi pada perkuliahan daring menggunakan smartphone selama masa pandemi covid-19: Studi kasus Mahasiswa Teknik Industri Universitas Mulawarman (Ergonomics analysis on online learning using smartphones during the covid-19 pandemic: A case s. 12(3), 308–317.*
- Febrianti, S., dan Bahri, T. S. (2018). *JIM FKBP Vol III No . 3 2018 GEJALA COMPUTER VISION SYNDROME PADA MAHASISWA KEPERAWATAN*. III(3), 201–207.
- Gonzalez, T., De la Rubia, M. A., Hincz, K. P., Comas-Lopez, M., Subirats, L., Fort, S., dan Sacha, G. M. (2020). Influence of COVID-19 confinement on students' performance in higher education. *PLOS ONE*, 15(10 October), 1–23. <https://doi.org/10.1371/journal.pone.0239490>
- Insani, Y., dan Wunaini, N. (2018). Hubungan Jarak Mata dan Intensitas

- Pencahayaan terhadap. *Manajemen kesehatan yayasan RS. Dr.Soetomo*, 4(2), 153–162.
- Irmayani, I., Irawan, B., Parinduri, A. I., dan Lubis, A. S. (2020). Hubungan Lama Penggunaan Komputer Dengan Kejadian Computer Vision Syndrome Pada Pegawai Kantor Di Rumah Sakit Grandmed Lubuk Pakam. *Jurnal Kesmas Dan Gizi (Jkg)*, 2(2), 114–118. <https://doi.org/10.35451/jkg.v2i2.393>
- Kemendagri kesehatan Republik Indonesia. (2018). *Bijak gunakan smartphone agar tidak ketergantungan*. <https://www.kemkes.go.id/article/print/18070600008/bijak-gunakan-smartphone-agar-tidak-ketergantungan.html>
- KOMINFO. (2015). *Indonesia Raksasa Teknologi Digital Asia*. https://kominfo.go.id/content/detail/6095/indonesia-raksasa-teknologi-digital-asia/0/sorotan_media
- KOMINFO. (2017). Individu memiliki Smartphone. In *Survey Penggunaan TIK 2017* (hal. 18–19). Pusat Penelitian dan Pengembangan Aplikasi Informatika dan Informasi dan Komunikasi Publik, Badan Penelitian dan Pengembangan Sumber Daya Manusia, dan Kementerian Komunikasi dan Informatika Republik Indonesia.
- Logaraj, M., Madhupriya, V., dan Hegde, S. (2014). Computer vision syndrome and associated factors among medical and engineering students in Chennai. *Annals of Medical and Health Sciences Research*, 4(2), 179. <https://doi.org/10.4103/2141-9248.129028>
- Maeda, M. B. I., Fitri, A. M., dan Amalia, R. (2020). Faktor-faktor yang berhubungan dengan Computer vision syndrome (CVS) pada karyawan PT.Depoteknik duta perkasa. *Seminar Nasional Kesehatan Masyarakat 2020*, 223–239.
- Menteri pendidikan dan kebudayaan republik indonesia. (2020). *Surat edaran pembelajaran daring dan bekerja dari rumah dalam rangka mencegah penyebaran Corona Virus Disease (COVID-19)*.
- Mohan, A., Sen, P., Shah, C., Jain, E., dan Jain, S. (2020). Symposium Recent advances and challenges in the management of retinoblastoma Globe - saving Treatments. *Indian Journal of Ophthalmology*, 17(1), 1. <https://doi.org/10.4103/ijo.IJO>
- Monaliza, Karim, D., dan Damanik, S. rahmalia hairani. (2018). Faktor-faktor yang berhubungan dengan keluhan computer vision syndrome pada mahasiswa keperawatan universitas Riau. *JOM FKp*, 5(2), 141–146.
- Muallima, N., Febriza, A., dan Putri, R. K. (2019). HUBUNGAN PENGGUNAAN GADGET DENGAN PENURUNAN TAJAM Infeksi Gadget tidak hanya sekedar dijadikan media hiburan semata tapi dengan aplikasi yang terus diperbaharui gadget wajib digunakan oleh orang-orang yang memiliki kepentingan bisnis , ataupun pengerjaan. *Jurnal ilmiah kesehatan iqra*, 7, 79–85.
- Munandar, A., dan Khairani. (2016). Gambaran Penglihatan Lanjut Usia di Unit Pelaksanaan Teknis Dinas Banda Aceh. *Jurnal Ilmiah Mahasiswa Fakultas Keperawatan*, 1(1), 1–9.
- Mussa, A. (2016). Computer vision syndrome. *Insight (American Society of Ophthalmic Registered Nurses)*, 38(4), 23. <https://doi.org/10.15406/aovs.2016.04.00110>
- Noreen, K., Ali, K., Aftab, K., dan Umar, M. (2021). Computer Vision Syndrome (CVS) and its Associated Risk Factors among Undergraduate Medical Students in Midst of COVID-19. *Pakistan Journal of Ophthalmology*, 37(1), 102–108.

- Nurhalimah, Mardalena, E., dan Kurniawan, R. (2020). *Universitas Abulyatama Pengaruh Durasi Penggunaan Komputer terhadap Kejadian Computer Vision*. 2(1).
- Panambuhan, J., Rumampuk, J., dan Moningga, M. E. W. (2019). Hubungan Penggunaan Smartphone dengan Ketajaman Penglihatan Pada Mahasiswa Laki-laki Fakultas Kedokteran Universitas Sam Ratulangi Angkatan 2015. *Jurnal Medik dan Rehabilitasi*, 1(3), 1–6.
- Pratiwi, R. A. (2021). *Penerapan metode ceramah dan diskusi selama pembelajaran online*. 1–8. <https://doi.org/10.31219/osf.io/wdm9e>
- Ramadhani, I. R., Fathurohman, I., dan Fardani, M. A. (2020). Edukasi Mengenai Dampak Penggunaan Smartphone Sebagai Upaya Pencegahan Gangguan Muskuloskeletal Pada Remaja. *Abdimas Unwahas*, 5(1), 28–32.
- Rohayani, F. (2020). Menjawab Problematika Yang Dihadapi Anak Usia Dini di Masa. *Qawwam*, 14(1), 29–50. <https://doi.org/10.20414/Qawwam.v14i1.2310>
- Sari, F. T. A., dan Himayani, R. (2018). Faktor Risiko Terjadinya Computer Vision Syndrome. *Majority*, 7(28), 278–282.
- Sari, R. P., Tusyantari, N. B., dan Suswandari, M. (2021). Dampak Pembelajaran Daring Bagi Siswa Sekolah Dasar Selama Covid-19. *Jurnal Ilmiah Kependidikan*, 2(1), 11. <https://doi.org/https://doi.org/10.37478/jpm.v2i1.732>
- Satgas penanganan COVID-19. (2021). *Data COVID-19*. <https://www.covid19.go.id/>
- Satrianawaty, L. D., Sumarno, T. M., dan Prabowo, S. (2019). Hang tuah medical journal. *Hang Tuah Medical Journal*, 17(1), 35–46.
- Sudarsana, I. K., Lestari, N. G. A. M. Y., Wijaya, I. K. W. B., Krisdayanthi, A., Andayani, K. Y., Trisnadewi, K., Muliani, N. M., Dewi, N. P. S., Suparya, I. K., Gunawan, I. G. D., Kusumawati, N. A., Purandina, I. P. Y., Sutriyanti, N. K., Sudiani, N. N., Adnyani, N. W., Iragraha, S. M. F., Winaya, I. M. A., Siswadi, G. A., dan Aryana, I. M. P. (2020). Pembelajaran daring di masa Pandemi COVID-19. In K. aria prima Dewi PF dan J. Simarmata (Ed.), *COVID-19 Perspektif Pendidikan* (1 ed., Nomor October, hal. 35–53). Yayasan Kita Menulis.
- Sulsel Tanggap COVID-19. (2021). *Sulsel Tanggap COVID-19*. <https://covid19.sulselprov.go.id/>
- Suryasa, I. W., Rodriguez-Gámez, M., & Koldoris, T. (2021). The COVID-19 pandemic. *International Journal of Health Sciences*, 5(2), vi-ix. <https://doi.org/10.53730/ijhs.v5n2.2937>
- Valentina, D. C. damiri, Yusran, M., Wahyudo, R., dan Himayani, R. (2019). Faktor risiko sindrom penglihatan komputer pada mahasiswa jurusan ilmu komputer fakultas matematika dan ilmu pengetahuan alam universitas lampung. *JIMKI*, 7(2), 29–37.
- WHO. (2020). *COVID-19. Penyakit Virus Corona*. https://www.who.int/health-topics/coronavirus#tab=tab_1
- Yan, Z., Hu, L., Chen, H., dan Lu, F. (2008). *Computer Vision Syndrome : A widely spreading but largely unknown epidemic among computer users*. 24, 2026–2042. <https://doi.org/10.1016/j.chb.2007.09.004>
- Yayasan bangun kecerdasan bangsa. (2019). *Dampak Positif dan Negatif Smartphone dalam Dunia Pendidikan*. <https://ybkb.or.id/dampak-positif-dan-negatif-smartphone-di-dunia-pendidikan/#:~:text=Dampak positif dari penggunaan smartphone,mengatur waktu mereka dalam belajar.>