

---

# Association of online screen media exposure and burnout among adolescent senior high school students enrolled in different online curricula in Metro Manila: An analytic cross-sectional study

Yna Paulina A. Palma<sup>1</sup>, Vittorio J. Panaguiton Jr.<sup>1</sup>, Leo B. Pascua<sup>1</sup>, Jem Kathleen C. Pel<sup>1</sup>, Peter Jan G. Pineda<sup>1</sup>, Paul Gregory T. Polintan<sup>1</sup>, Jomar Jay V. Pucan<sup>1</sup>, Irene J. Punzalan<sup>1</sup>, and Ramon Jason M. Javier, MD, MSTM, FPAFP<sup>1</sup>

## Abstract

**Introduction** Due to COVID-19 pandemic, it became imperative for the education sector to shift to online curriculum and eventually hybrid education. However, this policy posed challenges to educators and students, such as increased workload, prolonged screen time, and burnout. This study determined the association of online screen media exposure and burnout among adolescent senior high school students enrolled in different online curricula in Metro Manila.

**Methods** This analytic cross-sectional study identified adolescent senior high school students in Metro Manila who were recruited via non-probability convenience sampling. Online screen media exposure was assessed based on the cut off value of four (4) or more hours of device usage related to online schooling, and participants answered the Copenhagen Burnout Inventory (CBI) to ascertain presence or absence of said condition. Data analysis included cross-tabulation for prevalence rate ratio (PRR), and Chi-square test for statistical significance.

**Results** Of the 117 respondents, most had significant online screen media exposure (75.21%). For the CBI, 51 study subjects garnered a score of 50 and above, suggesting that 43.59% of the adolescents might be suffering from burnout. In addition, PRR was calculated to be 3.9 (p-value of .002).

**Conclusion** Among adolescent senior high school students with significant online screen media exposure of four hours or more, there was 3.9 higher risk of exhibiting burnout symptoms, and this was statistically significant.

**Key words:** adolescents, online curriculum, screen media exposure, burnout

---

Correspondence: Jomar Jay V. Pucan, RN  
University of the East Ramon Magsaysay Memorial Medical  
Center, Inc. College of Medicine, Quezon City, PH  
Electronic Mail: pucanj1835@uerm.edu.ph

\*Presented at the International Student Congress of (Bio) Medical Sciences held at the University Medical Center Groningen in the Netherlands last June 4 2023. This paper won FIRST PRIZE in the Psychiatry Category. Presented at the WONCA Europe Conference held in Brussels, Belgium in June 2023.

<sup>1</sup>University of the East Ramon Magsaysay Memorial Medical Center, Inc.

Beginning March 2020, the COVID-19 pandemic had significantly impacted many sectors of the country, and the operations of the Philippine Department of Education (DepEd) were inadvertently affected by the stringent public health protocols set by the Department of Health (DOH). This eventually led to the complete shift of the educational system to adopt online resources and implement full online academic curricula for students under the K-12 education program. This relatively new distance learning introduced many limitations and challenges to the country's educational sector.<sup>1</sup>

The online curriculum involved both synchronous or asynchronous teaching-learning activities, using various internet-enabled devices, such as laptop /desktop computers, computer tablets, mobile phones, and other hand-held devices.<sup>2,3</sup> Across all academic year levels, students coped with this change in the educational curriculum, while some had to simultaneously attend to personal and family matters at home while online classes were ongoing.

Some students alleged that online learning made their academic load more difficult.<sup>4</sup> It came into play with the perception that lecturers merely handed out modules as part of self-directed learning for students and their family members, which consequently diminished the interactions between students and faculty members, thereby limiting the effectiveness of learning outcomes. Some students felt that teachers deliberately gave heavier workloads and academic requirements because students were believed to have more free time in their schedules since commuting to school was already eliminated given the full online curriculum. With the advent of online classes, tight class schedules, and a greater number of assignments and practice sessions, prolonged screen media time for internet-enabled devices eventually became a growing concern. Screen media time would refer to the duration of hours spent on diverse activities using a digital device.<sup>5,6</sup> For instance, screen media time encompassed unregulated hours using digital devices for educational / work purposes, leisure, and entertainment. The DepEd mandated screen time for students enrolled in online-based learning to be limited to one to four (1-4) hours per day.<sup>6</sup> With the introduction of online modules, students were burdened with self-paced studying, precipitating an increased risk of burnout. Burnout would be defined as a state of combined factors of exhaustion conceptualized as resulting from chronic workplace stress that had not been successfully managed.<sup>6</sup> One study showed that students who experienced burnout felt emotional exhaustion, which manifested as feeling irritable, worried, sad, and even depressed. If burnout was not successfully managed, it could negatively affect students' learning outcomes.<sup>7</sup>

Nevertheless, studies exploring burnout in association with increased screen media exposure were lacking. Thus, this study examined the association between online screen media exposure and burnout in adolescent senior high school

students after the shift to online learning, by looking at the demographic profile, the proportion of students with significant online screen media exposure, the proportion of students with symptoms of burnout, and the prevalence rate ratio of online media exposure and burnout among the study subjects.

## Methods

This study utilized an analytic cross-sectional design and recruited adolescent students currently enrolled in different online curricula in selected high schools in Metro Manila. This study was duly approved by the Ethics Research Committee of the UERMMMCI Research Institute for Health Sciences. Sample size for hypothesis testing for single population proportion was computed manually, and the minimum sample size required for a hypothesized proportion of 46.4% using an alpha of 0.05 in a one-tailed hypothesis was 4274. Study subjects were recruited through non-probability convenience sampling.

Included in the study were Filipino adolescents aged 13 to 19 years old, duly enrolled in selected high schools in the National Capital Region (i.e., Metro Manila) for Academic Year 2022 to 2023, which utilized blended learning (i.e., online sessions and limited face-to-face classes). In addition, these study participants should have also experienced online schooling for the previous Academic Year 2021 to 2022. Excluded were those students with existing or previously diagnosed with medical comorbidities, such as, but not limited to: (1) anxiety and other mental health conditions; (2) physical disabilities; and (3) with visual impairment or those classified to be legally blind. In addition, working students, whether part-time or full time, at the time of the study implementation were also not eligible to participate in this epidemiologic investigation.

The data collection period was from September 2022 to October 2022. Information on demographic factors and online media exposure were obtained through an online questionnaire via Google Forms. This study measured the proportion of subjects who presented with symptoms suggestive of burnout using the Copenhagen Burnout Inventory (CBI), a previously validated tool. The data were tallied, scored, and coded accordingly using Google Sheets. Prevalence risk ratio (PRR) of the variables was determined. The Chi-square test was used for statistical analysis.

Sociodemographic and online media exposure information were obtained including age, sex, their current year level, working status, type of institution they were enrolled in, hours of device usage for online classes and whether they had their own device for online schooling. Presence of online screen media exposure was accounted for if their screen time for online classes was more than four (4) hours.

The CBI was used to determine whether the study participants were experiencing burnout. This scale measured burnout level by averaging the scores of responses of the individual regarding the questions indicated in the CBI through a Likert scale. Total score on the scale was the average of the scores on the items.<sup>8</sup> Internal consistency of CBI was very high, estimated by Cronbach’s alpha ( $\alpha=0.957$ ).<sup>9</sup> The scale had four aspects: personal burnout, school / work-related burnout, and classmate / colleague-related burnout, and teacher-related burnout.

To protect the adolescent age group, which was a vulnerable population, an assent form was

provided to explain the study and ask the permission of possible minor-respondents. For anxiety, distress or other negative responses, participants were advised to inform / consult with their parents or guardian, and then inform the researchers or access the mental health / psychological first-aid establishments given in the informed consent form.

Lastly, as this research investigated the presence of burnout which had been associated with psychological exhaustion and mental distress, respondents who scored 50 or more in the CBI were notified of their result and were referred to a clinical psychologist for possible counseling and intervention.

**Results**

Out of the 161 respondents, 137 met the study criteria. However, only a total of 117 continued, including those for whom parents provided consent. Their demographic information could be seen in Table 1.

Majority were female (75, 64.10%), and the median age of the participants was 17 years old (64, 54.70%)

**Table 1.** Socio-demographic profile and online media exposure of participants.

Data	Count (n=117)	Frequency
<b>Age</b>		
16 years old	7	5.98%
17 years old	64	54.70%
18 years old	30	25.64%
19 years old	16	13.68%
<b>Sex</b>		
Male	42	35.90%
Female	75	64.10%
<b>Type of School Enrolled In</b>		
Public	12	10.26%
Private	105	89.74%
<b>Year Level</b>		
Grade 11	15	12.82%
Grade 12	102	87.18%
<b>Track / Strand</b>		
BAM	14	11.97%
HESS	72	61.54%
STEM	24	20.51%
Sports and Arts	7	5.98%
Tech-Voc	0	-
<b>Online Screen Media Exposure Per Day</b>		
4 hours or less	29	24.79%
more than 4 hours	88	75.21%
<b>Device Ownership for Online Schooling</b>		
Personal	108	92.31%
Shared	9	7.69%

with nearly all enrolled in a private institution (105, 89.74%). Most of the participants were in the year level 12 (102, 87.18%) pursuing the academic track / strand of Humanities / Education / Social Sciences or HESS (72, 61.54%), followed by Science / Technology / Engineering / Mathematics or STEM (24, 20.51%), Business / Accountancy / Management or BAM (14, 11.97%), Sports and Arts (7, 5.98%), and none from the Technical / Vocational / Livelihood track.

Of the 117 respondents, many of them had more than four (4) hours of online screen media exposure per day (88, 75.21%) and owned their own personal devices (108, 92.31%). In relation to the CBI, the majority had scored less than 50 (66, 56.41%) which comprised those without burnout (Table 2).

Cross-tabulation yielded a PRR of 3.9 (Table 3), with a p-value of 0.002.

### Discussion

The findings of the study showed a relatively high proportion of participants (43.59%) with symptoms suggestive of burnout among the 117 adolescent senior high school students enrolled in different online curricula in Metro Manila. This value appeared quite close to a previous epidemiologic study which documented burnout at 46.4% among students enrolled in distance learning.<sup>4</sup>

Based on the PRR, students who had significant, prolonged screen media exposure were four times more likely to experience burnout. The results suggested that there was a positive association between online screen media exposure and burnout among the surveyed adolescent senior high school students enrolled in different online curricula in Metro Manila, and that this was statistically significant ( $\alpha=0.05$ ,  $p=0.002$ ). Such observation could be seen as well in a previous distance learning related study wherein it was found that students who were exposed to online learning for a longer period per day were more prone to higher burnout scores 10.

Exposure to computer and smartphone screens was associated with stress-related symptoms.<sup>11</sup> Increased screen time influenced mental health negatively which could cause lack of productivity and anxiety, leading to burnout.<sup>12</sup> People could be burned out just by doing anything for too long. Digital burnout referred to the feelings of exhaustion, anxiety, depression, or loss of interest in work due to the excessive use of digital devices.<sup>13</sup>

Online classes required an accelerated shift on the students' coping mechanism for school-related activities. Too much reliance on smart devices also yielded to several negative effects, such as dependence and burnout-related health strains.<sup>6</sup> Among the

**Table 2.** Copenhagen burnout inventory scores.

CBI Score	Count (n=117)	Frequency (%)
less than 50	66	56.41%
50 or more	51	43.59%

**Table 3.** Cross-tabulation to compute for prevalence rate ratio.

(n=117)	With Burnout	Without Burnout	PRR (95% confidence interval)	p-value
With Significant Online Media Exposure	47	41	3.9	0.002
Without Significant Online Media Exposure	4	25		

youth, there were findings of increased psychological concerns due to irregular sleep cycles associated with excessive exposure to devices.<sup>5</sup> Sleep disturbance was an important risk factor during adolescence.

The presence of burnout could negatively affect the students' academic performance.<sup>6</sup> One study reported that some teachers lacked the training for proper online education and were somewhat unacquainted with technologies.<sup>6</sup> Educators should strategize, weigh in and consider innovative learning techniques to foster a favorable learning atmosphere for students, potentially minimizing the risk of burnout, or any other similar mental health condition among adolescents.

### Limitations of the Study

There might be issues regarding the generalizability of the results of this study to the entire Filipino adolescent population since the computed sample size was not achieved. During the data collection, hesitancy from the school administrative staff and the students were encountered. This was further aggravated with the timing of the academic calendar of the chosen high schools, which made subject recruitment challenging from June 2022 to August 2022. Nonetheless, internal validity of the results remained intact.

### Conclusion

Among adolescent senior high school students with significant online screen media exposure of four hours or more, there was 3.9 higher risk of exhibiting burnout symptoms, and this was statistically significant.

### References

1. Tria JZ. The COVID-19 pandemic through the lens of education in the Philippines: The new normal. *Int J Ped Devel Lifelong Learning* 2020 [cited 2022 Oct 24];1(1). Available from: <https://www.researchgate.net/publication/341981898> The COVID-19 Pandemic Through the Lens of Education in the Philippines The New Normal
2. Zhu X and Liu J. Education in and after COVID-19: Immediate responses and long-term visions. *Post-digital science and education*. 2020 [cited 2022 Oct 24];2(3):695–9. Available from: <https://link.springer.com/article/10.1007/s42438-020-00126-3>
3. Dewart G, Corcoran L, Thirsk L, and Petrovic K. Nursing education in a pandemic: Academic challenges in response to COVID-19. *Nurse Educ Today* 2020 [cited 2022 Oct 25] Sep;92:104471. doi: 10.1016/j.nedt.2020.104471. Epub 2020 May 28. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/>

4. Rohmani N and Andriani R. Correlation between academic self-efficacy and burnout originating from distance learning among nursing students in Indonesia during the Coronavirus Disease 2019 pandemic. *J Educ Eval Health Prof* [Internet] 2021 May [cited 2021 Nov 14]; 18(9). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles>
5. Pandya A and Lodha P. Social Connectedness, excessive screen time during COVID-19 and mental health: A review of current evidence [Internet] *Frontiers*. *Frontiers*; 1AD [cited 2021Nov14]. Available from: <https://doi.org/10.3389/fhumd.2021.684137>
6. Mheidly N, Fares MY, and Fares J. Coping with stress and burnout associated with telecommunication and online learning. *Front Public Health* 2020 [cited 2022 Oct 25];8. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7686031/>
7. Khairani Y and Ifdil I. Konsep burnout pada mahasiswa bimbingan dan konseling [Burnout concept in student guidance and counseling] *Konselor* 2015 [cited 2022 Oct 24];4:208–14. doi: 10.24036/02015446474-0-00. Available from: <http://ejournal.unp.ac.id/index.php/konselor/article/view/6474>
8. Borrtiz M and Kristensen T. Copenhagen Burnout Inventory: Normative data from a representative Danish population on personal burnout and results from the PUMA study. *National Institute of Occupational Health* [Internet] 2001 Jan [cited 2021 Nov 14]. Available from: <http://www.psicopolis.com/burnout/copenhbu.pdf>
9. Campos J, Carlotto M, and Maroco J. Copenhagen Burnout Inventory - Student Version: Adaptation and transcultural validation for Portugal and Brazil. *Psicologia: Reflexao e Critica* [Internet] 2012 Dec [cited 2021 Nov 14]; 26. Available from: [https://www.researchgate.net/publication/262473002\\_Copenhagen\\_Burnout\\_Inventory\\_Student\\_Version\\_Adaptation\\_and\\_Transcultural\\_Validation\\_for\\_Portugal\\_and\\_Brazil](https://www.researchgate.net/publication/262473002_Copenhagen_Burnout_Inventory_Student_Version_Adaptation_and_Transcultural_Validation_for_Portugal_and_Brazil)
10. Durmus, Serpil Çelik, et al. Determining digital burnout in nursing students: A descriptive research study. *Nurse Education Today* 2022; 111. [cited 2022 Oct 25], p. 105300. Available from: <https://doi.org/10.1016/j.nedt.2022.105300>.
11. Lemola S, Perkinson-Gloor N, Brand S, Dewald-Kaufmann JF, and Grob A. Adolescents' electronic media use at night, sleep disturbance, and depressive symptoms in the smartphone age. *J Youth Adolesc* 2015 [cited 2022 Oct 24] 44: 405–18. doi:10.1007/s10964-014-0176-x. Available from: <https://pubmed.ncbi.nlm.nih.gov/25204836/>
12. Chen Q, Dai W, Li G, and Ma N. The impact of screen time changes on anxiety during the COVID-19 pandemic: Sleep and physical activity as mediators - Sleep and biological rhythms [Internet]. *SpringerLink*. Springer Nature Singapore; 2022 [cited 2022 Oct 24]. Available from: <https://link.springer.com/article/10.1007/s41105-022-00398-1>
13. Power Down: 5 Ways To Fight Digital Burnout [Internet]. *Digital Burnout and Mental Health | McLean Hospital*. 2022 [cited 2022 Oct 25]. Available from: <https://www.mcleanhospital.org/essential/digital-burnout>