

COVID-19 Pandemic Influence on Toddlers and Preschoolers' Screen Time

Juliana da Silva Cardoso, Cláudia Correia, Rita Gomes, Carolina Fraga, Inês Cascais, Sara Monteiro, Beatriz Teixeira, Sandra Ribeiro, Carolina Andrade, Cláudia Oliveira, Diana Gonzaga, Catarina Prior, Inês Vaz Matos

Abstract—The average daily screen time (ST) has been increasing in children, even at young ages. This seems to be associated with a higher incidence of neurodevelopmental disorders, and as the time of exposure increases, the greater is the functional impact. This study aims to compare the daily ST of toddlers and preschoolers previously and during the COVID-19 pandemic. A questionnaire was applied by telephone to parents/caregivers of children between 1 and 5 years old, followed up at four primary care units belonging to the Group of Primary Health Care Centers of Western Porto, Portugal. A total of 520 children were included: 52.9% male, mean age 39.4 ± 13.9 months. The mean age of first exposure to screens was 13.9 ± 8.0 months, and most of the children were exposed to more than one screen daily. Considering the WHO recommendations, before the COVID-19 pandemic, 385 (74.0%) and 408 (78.5%) children had excessive ST during the week and the weekend, respectively; during the lockdown, these values increased to 495 (95.2%) and 482 (92.7%). Maternal education and both the child's median age and the median age of first exposure to screens had a statistically significant association with excessive ST, with OR 0.2 ($p = 0.03$, CI 95% 0.07-0.86), OR 1.1 ($p = 0.01$, 95% CI 1.05-1.14) and OR 0.9 ($p = 0.05$, 95% CI 0.87-0.98), respectively. Most children in this sample had a higher than recommended ST, which increased with the onset of the COVID-19 pandemic. These results are worrisome and point to the need for urgent intervention.

Keywords—COVID-19 pandemic, preschoolers, screen time, toddlers.

I. INTRODUCTION

SCREEN time (ST) is defined as the daily time spent in front of any type of screen, namely television, mobile phones, tablets, computers or video games. Current World Health Organization (WHO) guidelines recommends no screen exposure in children under 2 years of age and less than 1 hour in children aged 2-5 years [1]. In a study conducted in 1997 by Whitney and Peterson, the estimated ST was 1.32 hours for children 0-2 years old and 2.47 hours for children 3-5 years old; in 2014 it increased to 3.05 hours/day in the first group [2]. In 2007, a work of Zimmerman et al., pointed to an average age of onset of regular exposure to screens of 9 months [3]. Regarding the Portuguese population, a study from 2019 concluded that 81% of children up to 18 months of age had already been

exposed to a screen and identified a very early age of first exposure, between 4 and 6 months [4].

Excessive ST has been associated with a higher incidence of obesity, metabolic syndrome and increased risk of sleep disturbances, psychomotor developmental delay, cognitive and language impairment. Additionally, it seems that the greater the exposure, the greater the impact [5], [6].

Previous studies have identified factors associated with excessive exposure to screens: child age, childcare facilities attendance, parents' age and employment status, parental behavior, household size and structure, number of screens and its location at home [7]-[11].

In Portugal, the COVID-19 pandemic motivated the closure of daycare centers on 16th of March 2020 and lockdown measures between 18th of March and 2nd of May 2020, which inevitably changed family routines. Authors wonder if these changes also had an impact on the children ST [12]-[14].

This study's main purpose was the evaluation of daily ST, in toddlers and preschool children, pre-pandemic (before March 2020) and during the first lockdown period due to the COVID-19 pandemic in Portugal (between March and May 2020). Secondary aims were to evaluate the age of onset of screen exposure, demographic characterization of the sample and identification of predictive factors of higher ST.

II. MATERIAL AND METHODS

A. Study Design

Cross-sectional study, based on the application of a questionnaire to parents/caregivers of toddlers and preschoolers, enrolled in four primary care units (PCU) belonging to the Group of Primary Health Care Centers of Western Porto, an urban area of northern Portugal - PCU Aníbal Cunha, PCU Bom Porto, PCU São João and PCU Serpa Pinto.

B. Sample

The study included children aged 1 to 5 years, registered in the four PCU listed and selected according to digital records data. Children with chronic and/or disabling pathology, lack of updated telephone contact, not residents in Portugal, and without regular follow-up at the PCU were excluded.

Juliana da Silva Cardoso, Pediatric Department, Centro Materno-Infantil do Norte/Centro Hospitalar Universitário do Porto, Porto, Portugal (corresponding author, phone: 938-837-902; e-mail: u12359@chporto.mail.com).

Cláudia Correia, Rita Gomes, Carolina Fraga, Inês Cascais, Sara Monteiro, Beatriz Teixeira, Diana Gonzaga, Catarina Prior and Inês Vaz Matos are with the Pediatric Department, Centro Materno-Infantil do Norte/Centro Hospitalar Universitário do Porto, Porto, Portugal (e-mails: u12657@chporto.mail.com, u12647@chporto.mail.com, u12981@chporto.mail.com,

u12599@chporto.mail.com, u13018@chporto.mail.com, u13122@chporto.mail.com, dianamendes.dca@chporto.min-saude.pt, catarinaprior.cmin@chporto.min-saude.pt, u09432@chporto.mail.com).

Sandra Ribeiro, Carolina Andrade and Cláudia Oliveira are with the Aníbal Cunha Primary Care Unit, Agrupamento de Centros de Saúde do Porto Ocidental Porto, Portugal (e-mails: scribeiro@arsnorte.min-saude.pt, cfandrade@arnorte.min-saude.pt, claudia_mgo@hotmail.com).

C. Study Variables

The following variables were collected: parents' age, marital status, education level and professional status (active/non-active, considering teleworking as an active professional situation); household characteristics (family structure, size, number of children and income); age and sex of the child's main caregiver; age at beginning of screen exposure, average screen time during the week and the weekend; number of screens at home, namely in the bedroom, and type of screens used.

D. Statistical Method

Variables are presented, in the case of categorical ones as frequencies and percentages, and in the case of continuous ones as mean and standard deviation or median and interquartile range (variables with skewed distributions). Normal distribution was checked using Shapiro-Wilk test of skewness and kurtosis. Categorical variables were compared using

Fisher's exact test or Chi-square test as appropriate and continuous variables with Student's t-test or Mann Whitney for independent samples. All reported p values are two-tailed, with p value of 0.05 indicating statistical significance.

Binary logistic regression was adjusted considering independent variables as the child's age, age of onset of screen exposure and maternal education. The variables were included as predictors if they were selected from bivariate analysis ($p < 0.05$). Analyses were performed with Statistical Package for the Social Sciences (SPSS) software version 25.0.

III. RESULTS

A. Characterization of the Sample

Our sample included 520 children divided into four groups according to the PCU they were enrolled. The clinical and demographic characteristics are described in Table I.

TABLE I
 CHARACTERIZATION OF THE STUDY POPULATION (N=520)

	PCU Anibal Cunha	PCU São João	PCU Bom Porto	PCU Serpa Pinto	Total
Mother	n=130	n=130	n=130	n=130	n=520
Age (y)					
Mean±SD	36.2±5.0	37.0±5.0	35.4±5.9	35.3±5.4	36.0±5.4
Education – no. (%)					
University Degree	77 (59.2)	87 (66.9)	79 (60.8)	70 (53.8)	313 (60.2)
Professionally active – no. (%)					
Before pandemic	70 (53.8)	113 (86.9)	106 (81.5)	107 (82.3)	436 (83.8)
During	39(30.0)	91 (70.0)	64 (49.2)	69 (53.1)	294 (56.5)
Marital status – no. (%)					
Single/divorced	31 (23.8)	23 (17.7)	28 (21.5)	27 (20.8)	109 (21.0)
Father					
Age (y)	n=130	n=130	n=130	n=130	n=520
Mean±SD			38.9±6.9	37.0±6.1	
Median (IQ)	38.0 (35.0-41.0)	39.0 (35.8-42.3)			38,0 (35.0-41.0)
Education – no. (%)	n=130	n=130	n=129	n=129	n=518
University Degree	70 (53.8)	74 (56.9)	71 (55.5)	61 (47.3)	276 (53.3)
Professionally active – no. (%)	n=130	n=130	n=127	n=130	n=517
Before	117 (90.0)	126 (96.9)	114 (89.8)	119 (91.5)	476 (92.1)
During	88(67.7)	110 (84.6)	98 (77.2)	88 (67.7)	384 (74.3)
Marital status – no. (%)	n=130	n=130	n=125	n=130	n=515
Single/divorced	28 (21.5)	20 (15.4)	23 (18.4)	26 (20.0)	97 (18.8)
Family					
Size (no. people)	n=130	n=130	n=129	n=130	n=519
Mean±SD	3.7±0.9		3.8±0.9	3.6±0.9	
Median (IQ)		4 (3-4)			4 (3-4)
Family – no. (%)	n=130	n=130	n=130	n=130	n=520
Single parent	20 (15.4)	12 (9.2)	20 (15.4)	19 (14.6)	71 (13.7)
Household (no. children)	n=130	n=130	n=129	n=130	n=519
Mean±SD	1.7±0.6		1.8±0.7	1.5±0.6	
Median (IQ)		2.0 (1.0-2.0)			2.0 (1.0-2.0)
Monetary income – no. (%)	n=129	n=127	n=128	n=129	n=513
<€1130	44 (34.1)	21 (16.5)	39 (30.5)	37 (28.7)	141 (27.5)
Children	n=130	n=130	n=130	n=130	n=520
Age (m)					
Mean±SD	41.9±14.8	37.4±13.2	36.1±13.1	42,0±13.6	39.4±13.9
Sex – no. (%)					
Male	61 (46.9)	70 (53.8)	79 (60.8)	65 (50.0)	275 (52.9)
Caregiver before – no. (%)					
Daycare	108 (83.1)	107 (82.3)	103 (79.2)	107 (82.3)	425 (81.7)
Caregiver change – no. (%)	116 (89.2)	69 (53.1)	115 (88.5)	120 (92.3)	420 (80.8)

Regarding family characteristics, the mean maternal age was 36.0±5.4 years, most had a university degree, (313 (60.2%)), and was professionally active before the COVID-19 pandemic, (436 (83.8%)). During the lockdown, this status decreased to

294 (56.5%) - at PCU Anibal Cunha and at PCU Bom Porto only 39 (30.0%) and 64 (49.2%) of the mothers maintained professional activity, respectively. The median paternal age was 38.0 years (35.0-41.0 years), the majority had a university

Open Science Index, Medical and Health Sciences Vol:15, No:12, 2021 publications.waset.org/10012335.pdf

degree (276 (53.3%)) and was professionally active before (476 (92.1%)) and during the pandemic (384 (74.3%)), in all PCU's. The average household size was four (3-4) people, and the average number of children was two (1-2). Seventy-one (13.7%) families had a single parent household and 141 (27.5%) described a monetary income below €1130, that corresponds to two minimum wages. The child's mean age was 39.4±13.9 months, most were male (275 (52.9%)) and attended daycare facilities before the pandemic (425 (81.7%)). During the lockdown, there was a change in the usual caregiver (mother, father, another family member) (420 (80.8%)). The average number of screens at home was 5.9±2.2, with 139 (26.7%) children having at least one screen available in their bedroom. The average age of first exposure to screens was 13.9±8.0 months. While, 514 (98.8%) children watched television, 457 (87.9%) used mobile phones and 317 (61,1%) used a tablet.

Considering excessive ST as > 0 hours under 24 months and ≥ 1 hours between 2-5 years, we found that before the COVID-19 pandemic, 385 (74.0%) children had excessive exposure to

screens during the week, increasing to 408 (78.5%) over the weekend; during the COVID-19 pandemic, there was an increase to 495 (95.2%) children during the week and 482 (92.7%) children over the weekend. Only a third of the children (161/520) had screen time in remote school context, corresponding to a median of 0.5 (0.2-1.0) hours per day. Data related to excessive screen time, number and type of screens used, per PCU, is described in Table II.

Regarding screen time, there was an increase during the COVID-19 pandemic, both during the week and the weekend, in all PCU's: median number of hours per week 1.0 (0.5-2.0) vs. 3.0 (2.0-5.0) at PCU Aníbal Cunha; 1.0 (0.9-1.6) vs. 3.0 (2.0-4.0) at PCU São João; 1.0 (0.5-1.5) vs. 3.0 (2.0-4.0) at PCU Bom Porto and 1.0 (1.0-2.0) vs. 3.0 (2.0 -5.0) at PCU Serpa Pinto; median number of hours on the weekend 1.5 (1.0-3.0) vs. 3.0 (1.0-5.0) at PCU Aníbal Cunha, 1.5 (1.0-2 .0) vs. 3.0 (2.0-4.0) at PCU São João, 1.0 (0.5-1.5) vs. 2.3 (1.0-4.0) at PCU Bom Porto and 2.0 (1.0-2.0) vs. 3.0 (2.0-4.0) in the Serpa Pinto PCU, in all cases with a statistically significant difference (p<0.01), as shown in Table III.

TABLE II
CHARACTERIZATION OF THE NUMBER, TYPE OF SCREENS AND SCREEN EXPOSURE TIME (N=520)

	PCU Anibal Cunha	PCU São João	PCU Bom Porto	PCU Serpa Pinto	Total
Onset age (m)	n=130	n=129	n=130	n=130	n=519
Mean±SD	11.8±7.7		16.3±9.1	12.2±7.4	13.9±8.0
Median (IQ)		12.0 (12.0-24.0)			
Screens at home – no. (%)	n=130	n=129	n=130	n=130	n=519
Mean±SD	5.5±2.1	6.2±2.2		5.9±2.0	5.9±2.2
Median (IQ)			6.0 (5.0-7.0)		
Screens at child's room – no. (%)	n=130	n=129	n=130	n=130	n=519
Mean±SD		0.3±0.4	0.3±0.5		
Median (IQ)	0.0 (0.0-0.0)			0.0 (0.0-1.0)	0.0 (0.0-1.0)
Screens type – no. (%)	n=130	n=130	n=130	n=130	n=520
Television	129 (99.2)	130 (100.0)	125 (96.2)	130 (100.0)	514 (98.8)
Computer	80 (61.5)	62 (48.1)	14 (10.8)	87 (66.9)	243 (46.8)
Mobile phone	125 (96.2)	101 (77.7)	102 (78.5)	129 (99.2)	457 (87.9)
Tablet	84 (64.6)	85 (65.9)	68 (52.3)	80 (61.5)	317 (61.1)
Excessive ST* week – no. (%)	n=130	n=130	n=130	n=130	n=520
Before	97 (74.6)	98 (75.4)	84 (64.6)	106 (81.5)	385 (74.0)
During	125(96.2)	122 (93.8)	120 (92.3)	128 (98.5)	495 (95.2)
Excessive ST* weekend – no. (%)	n=130	n=130	n=130	n=130	n=520
Before	102 (78.5)	110 (84.6)	86 (66.2)	110 (84.6)	408 (78.5)
During	122(93.8)	120 (92.3)	115 (88.5)	125 (96.2)	482 (92.7)
Tele school (hours/day)	n=47	n=36	n=28	n=50	n=161
Median (IQ)	0.5 (0.2-1.0)	1.0 (0.1-1.0)	0.5 (0.2-1.0)	0.5 (0.2-1.0)	0.5 (0.2-1.0)

Excessive ST* excessive screen time: > 0 hours if < 24 months and ≥ 1 hours between 2-5 years, according to WHO guidelines, IQ = interquartile range, m = months, PCU = primary care unit, SD = standard deviation, y = years.

TABLE III
CHARACTERIZATION OF ST IN THE PCUS

	ST week (hours/day), Median (IQ)			ST weekend (hours/day), Median (IQ)		
	Before	During	P value	Before	During	p value
PCU Anibal Cunha	1.0 (0.5-2.0)	3.0 (2.0-5.0)	p<0.01	1.5 (1.0-3.0)	3.0 (1.0-5.0)	p<0.01
PCU São João	1.0 (0.9-1.6)	3.0 (2.0-4.0)	p<0.01	1.5 (1.0-2.0)	3.0 (2.0-4.0)	p<0.01
PCU Bom Porto	1.0 (0.5-1.5)	3.0 (2.0-4.0)	p<0.01	1.0 (0.5-1.5)	2.3 (1.0-4.0)	p<0.01
PCU Serpa Pinto	1.0 (1.0-2.0)	3.0 (2.0-5.0)	p<0.01	2.0 (1.0-2.0)	3.0 (2.0-4.0)	p<0.01

IQ = interquartile range, PCU = primary care unit, ST = screen time

B. Univariate Analysis

When comparing variables between groups of children with

normal and excessive screen time for their age, we found a statistically significant difference regarding maternal education (basic/secondary education 3 (13.6) vs. 204 (41.0), p=0.01)),

median age of the child (24.7 (21.3-31.4) vs. 43.8 (27.7-51.7), 24.0) vs. 12.0 (8.0-18.0), p=0.02). The results are shown in p<0.01) and median age of first exposure to screens (18.0 (12.0- Table IV.

TABLE IV
UNIVARIATE ANALYSIS

	Normal ST	Excessive ST	p value
Mother			
Age (y)			p=0.86 [#]
Median (IQ)	37.0 (33.5-40)	37.0 (33.0-40.0)	
Education – no. (%)			
Basic/Secondary	3 (13.6)	204 (41.0)	p=0.01
University Degree	19 (86.4)	294 (59.0)	
Change professional activity - no. (%)			
No	16 (72.7)	359 (72.1)	p=0.95
Yes	6 (27.3)	139 (27.9)	
Marital status – no. (%)			
Married/Union fact	17 (77.3)	394 (79.1)	p=0.79 [*]
Single/Divorced	5 (22.7)	104(20.9)	
Father			
Age (y)			p=0.18 [#]
Median (IQ)	40.0 (34.0-46.0)	38.0 (35.0-41.0)	
Education – no. (%)			
Basic/Secondary	8 (36.4)	234 (47.2)	p=0.32
University	14 (63.6)	262 (52.8)	
Change professional activity – no. (%)			
No	17 (77.3)	406 (82.0)	p=0.57 [*]
Yes	5 (22.7)	89 (18.0)	
Marital status – no. (%)			
Married/Unmarried couples	17 (77.3)	401 (81.3)	p=0.58 [*]
Single/Divorced	5 (22.7)	92 (18.7)	
Family			
Size (no. people)			
Median (IQ)	4.0 (3.0-5.0)	4.0 (3.0-4.0)	p=0.58 [#]
Family – no. (%)			
Nuclear	17 (77.3)	432 (86.7)	p=0.21 [*]
Single parent	5 (22.7)	66 (13.3)	
Household (no. children)			
Median (IQ)	2.0 (1.0-2.0)	2.0 (1.0-2.0)	p=0.42
Money income – no. (%)			
>€1130	16 (76.2)	356 (72.4)	p=0.70
<€1130	5 (23.8)	136 (27.6)	
Children			
Age (m)			p<0.01[#]
Median (IQ)	24.7 (21.3-31.4)	43.8 (27.7-51.7)	
Sex – no. (%)			
Female	10 (45.5)	235 (47.2)	p=0.87
Male	12 (54.5)	263 (52.8)	
Caregiver change – no. (%)			
No	8 (36.4)	92 (18.5)	p=0.05
Yes	14 (63.6)	406 (81.5)	
Onset age (m)			p=0.02[#]
Median (IQ)	18.0 (12.0-24.0)	12.0 (8.0-18.0)	
Screens at home – no. (%)			
Median (IQ)	5.0 (4.0-7.0)	6.0 (4.0-7.0)	p=0.16 [#]
Screens at child's room – no. (%)			
Median (IQ)	0.0 (0.0-0.0)	0.0 (0.0-1.0)	p=0.06 [#]

Excessive ST excessive screen time: > 0 hours if < 24 months and ≥ 1 hours between 2-5 years, according to WHO guidelines, IQ = interquartile range; m = months, y = years; * Fisher's exact test; # Mann Whitney test

C. Multivariate Analysis

Considering the variables described as statistically significant in the univariate analysis and applying binary logistic regression, all of them -maternal education, median child age and median age of first exposure to screens- had statistically significant associations with excessive ST, with OR 0.2 (p = 0.03, 95% CI 0.07-0.86), OR 1.1 (p = 0.01, 95% CI 1.05-1.14) and OR 0.9 (p = 0.05, 95% CI 0.87-0.98), as summarized in Table V. Hence, it seems that children whose mothers have higher education are 80% less likely to develop

excessive ST; (b) for every unit increase in child's age, the odd of excessive ST increases by 10%; for every unit increase in the age of first screen exposure, the odds of excessive ST decrease by 10%.

TABLE V
BINARY LOGISTIC REGRESSION

Independent variables	p value	OR	95% CI
Mother's education	0.03	0.2	0.07-0.86
Child's age	<0.01	1.1	1.05-1.14
Age of onset ST	0.05	0.9	0.87-0.98

CI = Confidence interval, OR = odds ratios, ST = screen time

IV. DISCUSSION

We found that most of the children in our study had longer screen time exposure than recommended by WHO [1]. 74.0% during the week and 78.5% during the weekend, and these increased to 95.2% and 92.7%, respectively, during the COVID-19 pandemic. Most children are exposed to more than one screen daily.

The average age of first exposure to screens was 13.9±8.0 months, diverging from a 2019 Portuguese study, which reported that 61.3% of children at 6 months of age already had exposure to screens [4]. This discrepancy may be due to demographic differences between the samples and study methodologies: in the bibliographic reference the mean age of children was 12 months, while in our study it was 39.4 months; only 31.4% attended daycare vs. 81.7% in our sample; the previous study included a questionnaire fulfilled by caregivers at home, while ours was based on telephonic interviews.

In a 1997 study, the average ST was already estimated in 1.32 hours for children 0-2 years old and 2.47 hours in children 3-5 years old [2]. ST results are similar to ours: median of 1.0 hour in weekdays and 1.0 to 2.0 hours at the weekend. During lockdown, exposure increased to 3.0 hours on weekdays and 2.3-3.0 hours at the weekend, in all PCU's. This problem will probably worsen, as the pandemic is not yet resolved, and these kinds of measures may continue for an extended period of time.

Factors that have been considered predictive of excessive ST in previous studies are child age, childcare facilities attendance, parents' age and employment status, parenteral behavior, household characteristics, number of screens available and its location at home [7]-[11]. In our study we found a significant association with child age. Additionally, maternal education and age of first screen exposure were also related with excessive ST.

We believe that our work has as strengths: (1) large sample size; (2) the presentation of the current epidemiological data regarding ST in toddlers and preschoolers in part of the urban Portuguese population; (3) the recognition of COVID-19 pandemic's impact on ST; and, (4) the identification of factors associated with excessive ST, indicating possible areas for intervention.

It also has limitations, namely: data collection method, which depends on parents/caregivers' collaboration; lack of analysis of the association between child's screen time and that of the main caregiver and despite the inclusion of children from more than one PCU, they all belong to the Western Porto area, which may be a bias to the study presented.

REFERENCES

- [1] World Health Organization, Guidelines on physical activity, sedentary behaviour and sleep. 2019.
- [2] P. Daniel G. Whitney, PhD Mark D. Peterson, "Assessment of Screen Exposure in Young Children, 1997 to 2014," *JAMA Pediatr.*, vol. 173, Number, doi: 10.1001/jamapediatrics.2018.5399.
- [3] F. J. Zimmerman, D. A. Christakis, and A. N. Meltzoff, "Television and DVD/video viewing in children younger than 2 years," *Arch. Pediatr. Adolesc. Med.*, vol. 161, no. 5, pp. 473-479, 2007, doi: 10.1001/archpedi.161.5.473.
- [4] C. Palha, B. Tavares, D. L. Morgado, D. Fonseca, J. Castro, and P. S. Castro, "Influência das características familiares no tempo de ecrã em

- crianças até aos 18 meses de idade," *Rev. Port. Clínica Geral*, vol. 35, no. 6, pp. 438-448, 2019, doi: 10.32385/rpmgf.v35i6.12541.
- [5] L. Y. Lin, R. J. Cherng, Y. J. Chen, Y. J. Chen, and H. M. Yang, "Effects of television exposure on developmental skills among young children," *Infant Behav. Dev.*, vol. 38, pp. 20-26, 2015, doi: 10.1016/j.infbeh.2014.12.005.
- [6] T. N. Robinson et al., "Screen media exposure and obesity in children and adolescents," *Pediatrics*, vol. 140, pp. S97-S101, 2017, doi: 10.1542/peds.2016-1758K.
- [7] H. Xu, L. M. Wen, and C. Rissel, "Associations of parental influences with physical activity and screen time among young children: A systematic review," *J. Obes.*, vol. 2015, 2015, doi: 10.1155/2015/546925.
- [8] A. J. Atkin, K. Corder, and E. M. F. van Sluijs, "Bedroom media, sedentary time and screen-time in children: A longitudinal analysis," *Int. J. Behav. Nutr. Phys. Act.*, vol. 10, pp. 1-10, 2013, doi: 10.1186/1479-5868-10-137.
- [9] S. Paudel, J. Jancey, N. Subedi, and J. Leavy, "Correlates of mobile screen media use among children aged 0-8: A systematic review," *BMJ Open*, vol. 7, no. 10, pp. 1-12, 2017, doi: 10.1136/bmjopen-2016-014585.
- [10] L. Tang, G. Darlington, D. W. L. Ma, and J. Haines, "Mothers' and fathers' media parenting practices associated with young children's screen-time: A cross-sectional study 11 Medical and Health Sciences 1117 Public Health and Health Services," *BMC Obes.*, vol. 5, no. 1, pp. 1-10, 2018, doi: 10.1186/s40608-018-0214-4.
- [11] H. Duch, E. M. Fisher, I. Ensari, and A. Harrington, "Screen time use in children under 3 years old: A systematic review of correlates," *Int. J. Behav. Nutr. Phys. Act.*, vol. 10, no. 1, p. 1, 2013, doi: 10.1186/1479-5868-10-102.
- [12] Presidência da República, "Decreto do Presidente da República 14-A/2020, 2020-03-18 - DRE," *Diário da República n.º 55/2020, 3º Supl. Série I, no. 2, pp. 13-(2)-13-(4), 2020, (Online). Available: <https://dre.pt/web/guest/home/-/dre/130399862/details/maximized>.*
- [13] A. Comiss, D. Humanos, and L. Org, "Decreto do Presidente da República n.º 17-A/2020 de 2 de abril," *Diário da República n.º 66 - 1.ª série. Presidência da República, no. 31, pp. 2-5, 2020, (Online). Available: <https://dre.pt/application/conteudo/131068116>.*
- [14] 1.ª série N.º76 de 17 de abril de 2020 *Diário da República, "Presidência da República - Decreto do Presidente da República n.º 20-A/2020 de 17 de abril," no. 2, pp. 7-10, 2020.*