


The digital child: A cross-sectional survey study on the access to electronic devices in paediatrics

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Abstract

Aim: To explore the use of electronic devices in children and possible risk factors for smartphone ownership and cyberbullying.

Methods: A cross-sectional survey study was conducted involving 62 Italian general paediatricians who administered a close-ended questionnaire about the use of electronic devices to 1732 parents/caregivers.

Results: Data of 2563 children aged 0–14 years were collected. Investigating the electronic device use by parents/caregivers of children aged 0–1 years, 72.5% of mothers were revealed to have the habit to use a smartphone during breastfeeding and bottle-feeding. The ownership of a smartphone was found in 29.5% of children aged 2–14 years, 68.1% considering only children aged 10–14. A higher parental degree level was identified as a protective factor for smartphone ownership by children (OR 0.59; 95% CI 0.36–0.98; $p=0.04$ for father; OR 0.51; 95% CI 0.33–0.78; $p=0.002$ for mother). A higher risk of cyberbullying was found when caregivers did not use any restrictions on smartphone use (OR 11.92; 95% CI 3.41–41.68; $p<0.001$).

Conclusion: The absence of rules for smartphone use represents a risk factor for cyberbullying. In this context, the general paediatrician might play an important role in helping parents/caregivers and their children adopt safer use of electronic devices.

KEYWORDS

adolescents, children, cyberbullying, smartphone, technology

Abbreviations: CI, confidence interval; OR, odds ratio.

Collaborators of the Scientific Working Group of the Italian Society of Paediatric Primary Care are presented in Appendix A

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1 | INTRODUCTION

The exponential spread of technology has a great social impact with profound cultural changes, particularly in children. Even if access to electronic devices has many advantages, such as greater access to information and communication, some dangers have been observed, including cyberbullying. Cyberbullying is defined as a form of bullying that uses electronic tools with the intention of causing harm to another person through repeated hostile conduct.¹ The prevalence of cyberbullying reported in the literature varies in different countries, with the highest median prevalence in Canada and China (23.0%–23.8%) and the lowest in Australia, Sweden and Germany (5.0%–6.3%).² Considering the negative impact of cyberbullying on the quality of life, it should be considered a severe public health issue. Many studies have focused on the impact of cyberbullying on children and adolescents' well-being and its strong association with depression, suicidal ideation, anxiety, hostility and aggression, substance misuse and use, self-harm, hyperactivity, low self-esteem, peer problems, stress and loneliness.³ Relevantly, a relationship between parental mediation and cyberbullying in adolescents has been described by Chang et al.,⁴ showing a higher risk of cyberbullying in adolescents who perceived lower parental attachment.

Obviously, easy access to many different electronic devices has made cyberbullying a greater problem in the last decade. According to a large study published in 2015, the prevalence of smartphone ownership is growing, even in children and adolescents, with 46% of young people aged 9–16 years reported to own a personal cell phone.⁵ This was especially true during the Coronavirus disease pandemic when more frequent use was reported compared to the pre-epidemic period.⁶ Literature reported up to 25% of children and adolescent smartphone users show signs of problematic smartphone use, including withdrawal, neglect of other activities, subjective loss of control and continued use despite evidence of harm.⁷

Other risks associated with electronic devices are related to video games, not infrequently with violent content. Some studies suggested that playing violent video games may represent a risk factor for increased aggressive behaviour, cognition and affect and decreased empathy and prosocial behaviour.^{8,9} Considering the risks associated with exposure to video games, the Pan-European Game Information developed an age rating which confirms that the game is appropriate for players of a certain age considering the age suitability of a game and not the level of difficulty. The Pan-European Game Information could be a useful tool for parents in choosing video games suitable for their children, minimising exposure to violent content and its potential consequences. Although the aim of the Pan-European Game Information is to protect youth, a publication by Bijvank et al.¹⁰ suggested that this classification system could obtain exactly the opposite effect. Particularly, age-based labels and violent content labels could make video games more attractive with a forbidden fruit effect.

The role of the general paediatrician is critical to ensure safe exposure to electronic devices in children. Considering the importance of becoming aware of the impact that technology has on children, we

Keynotes

- An increasing proportion of children and adolescents are exposed to electronic devices and to the risks related to access to the web.
- The absence of restrictions on electronic device use might increase the risk of cyberbullying, making education of children, adolescents and their parents or caregivers an important issue.
- General paediatricians might play a key role in educational programs with the aim of safe access to electronic devices.

conducted a survey among a large population of parents or caregivers which aimed at analysing the use of computing devices in a large paediatric population. Additionally, we aimed at identifying potential targets of educational programs realised by general paediatricians. Could the use of electronic devices by parents or caregivers of children aged 0–1 years impact bonding between mother and toddler? Could some general household factors increase smartphone use and represent a risk factor for cyberbullying?

2 | METHODS

2.1 | Design

A cross-sectional survey study was designed and carried out by sending an electronic link to parents/caregivers for the completion of a close-ended questionnaire developed by an expert panel of the Scientific Board of the Italian Society of Paediatric Primary Care. The survey was announced to all the general paediatrician members of the Board via newsletter inviting them to participate in the study by sending the questionnaire to parents or caregivers of children who were registered with them. The parents/caregivers had to be able to read and speak Italian. The sampling took place from 1 August 2021 to 13 May 2022.

Each questionnaire was filled out by the parents/caregivers anonymously after reading the information on privacy regulations in accordance with European Union Regulation number 79/2016 and acquiring consent to the processing of data necessary for the study.¹¹

2.2 | Setting

The Italian healthcare system is funded by public taxes so children are registered with a general paediatrician and receive free medical care. From birth to age 14, all Italian children are offered health examinations according to a predetermined schedule. The aim of these health examinations combines prevention and health promotion.¹²

2.3 | Questionnaire development

Each general paediatrician participating in the study offered the families of their patients the anonymous completion of a questionnaire written by paediatricians belonging to the Italian Society of Paediatric Primary Care. Information about one or more children was collected from each survey. The full questionnaire translated into English is available as Appendix S2. The questionnaire was structured in different sections. The first survey section was the consent to the processing of data, in accordance with European Union Regulation number 679/2016.¹¹ The second section was a common survey of general characteristics of the population under analysis and internet access in the household, including 14 questions. The third section was a common survey about access to technological devices in the household, including three questions. The common survey sections were followed by four sections addressed specifically to parents or caregivers with children in different age groups. Particularly, each survey section was composed of one question about the presence of a child aged 0–1, 2–5, 6–9 or 10–14 in the household, and other questions related to the access to technology by the child. For age groups 2–5, 6–9 and 10–14 years, there was one question asking whether the child or adolescent was ever involved in cyberbullying episodes. The cyberbullying episodes were related to being victimised.

For each household, the mother, father or both could fill out the survey by answering the questions related to each household member. Sections in each questionnaire could be completed for different age groups according to the age of the children in the household. In this way, information about one or more children could be collected in each questionnaire.

2.4 | Statistical analysis

Statistical analyses were performed using the STATA/SE version 10.0 software package (State Corp). A descriptive analysis by calculating frequency and percentage for categorical variables and a correlation study by the chi-squared test were performed. Univariate and multivariate logistic regression analysis was used to evaluate possible risk factors for smartphone ownership and cyberbullying, and correspondent odds ratios (ORs) and 95% confidence intervals (95% CI) were calculated. p -Value < 0.05 was considered statistically significant.

3 | RESULTS

3.1 | Sample description

A total of 535 general paediatricians were invited to participate; 62 general paediatricians (11.6%) accepted participation and recruited parents or caregivers for the study. General paediatricians involved in the study were mostly from Northern Italy (43/62, 69.4%), whereas

13/62 (21.0%) were from Central Italy and only 6/62 (9.6%) from Southern Italy. During the study period, 1769 parents or caregivers were offered anonymous completion of the questionnaire. The consent to processing personal data was not given by 14 parents or caregivers (0.8%), thus excluding them from the study. Moreover, in 23 questionnaires (1.3%), data were missed or the questionnaire was incomplete, resulting in exclusion from the study. Within the 1769 completed questionnaires, information was acquired about 2563 children, of whom 527 were aged 0–1 years (20.6%), 816 2–5 years (31.8%), 748 6–9 years (29.2%) and 472 10–14 years (18.4%). The process of sample selection is represented in Figure 1. The characteristics of the study population are collected in Table 1.

Characteristics of the general population by age group are available in Appendix S1. The four age groups were homogeneous for general characteristics, except for a higher frequency of separated or divorced parents in the older age groups ($p < 0.001$) and, not surprisingly, older parental age in the older age groups ($p < 0.001$). We also found out that parents with younger children used social networks more frequently than other parents ($p < 0.001$). Looking for statistically significant differences in access to electronic devices, we observed that knowledge of the Pan-European Game Information was higher in the age group 10–14 years ($p < 0.001$) as well as access to a free web connection ($p < 0.001$).

3.2 | Use of electronic devices in parents or caregivers of children aged 0–1 years

Only 18 parents or caregivers out of 527 (3.4%) with children aged 0–1 years declared that they did not use electronic devices when their child was awake. Interestingly, 72.5% of mothers routinely used electronic devices during breastfeeding or bottle-feeding. In 60.1% of cases, technology was used for the entertainment of the child. In contrast, 89.4% no digital support was used to try to put the child to sleep. There was almost an equal percentage of parents who posted pictures of their children on social networks (52.0%) and those who did not (48.0%). Figure 2 summarises the use of electronic devices by parents or caregivers of children aged 0–1 years.

3.3 | Use of electronic devices in age groups 2–5, 6–9 and 10–14 years

Comparing the three age groups, the use of electronic devices before sleeping was higher in the age group 10–14 years (341/409, 83.4%) than in the 6–9 (440/748, 58.8%) and 2–5 (567/816, 69.5%) age groups ($p < 0.001$). Smartphone ownership was higher in older children, with 409 children (86.7%) in the 10–14 year age group, but only 141 (18.9%) in the 6–9 year age group and 50 (6.1%) in the 2–5 ($p < 0.001$). Investigating the use of systems that restricted access to the Internet, an increased frequency in its use was observed in the 2–5 and 6–9 year age groups (respectively 68.0% and 70.2%) compared to the 10–14 year age group (57.7%) ($p = 0.02$). Almost all the

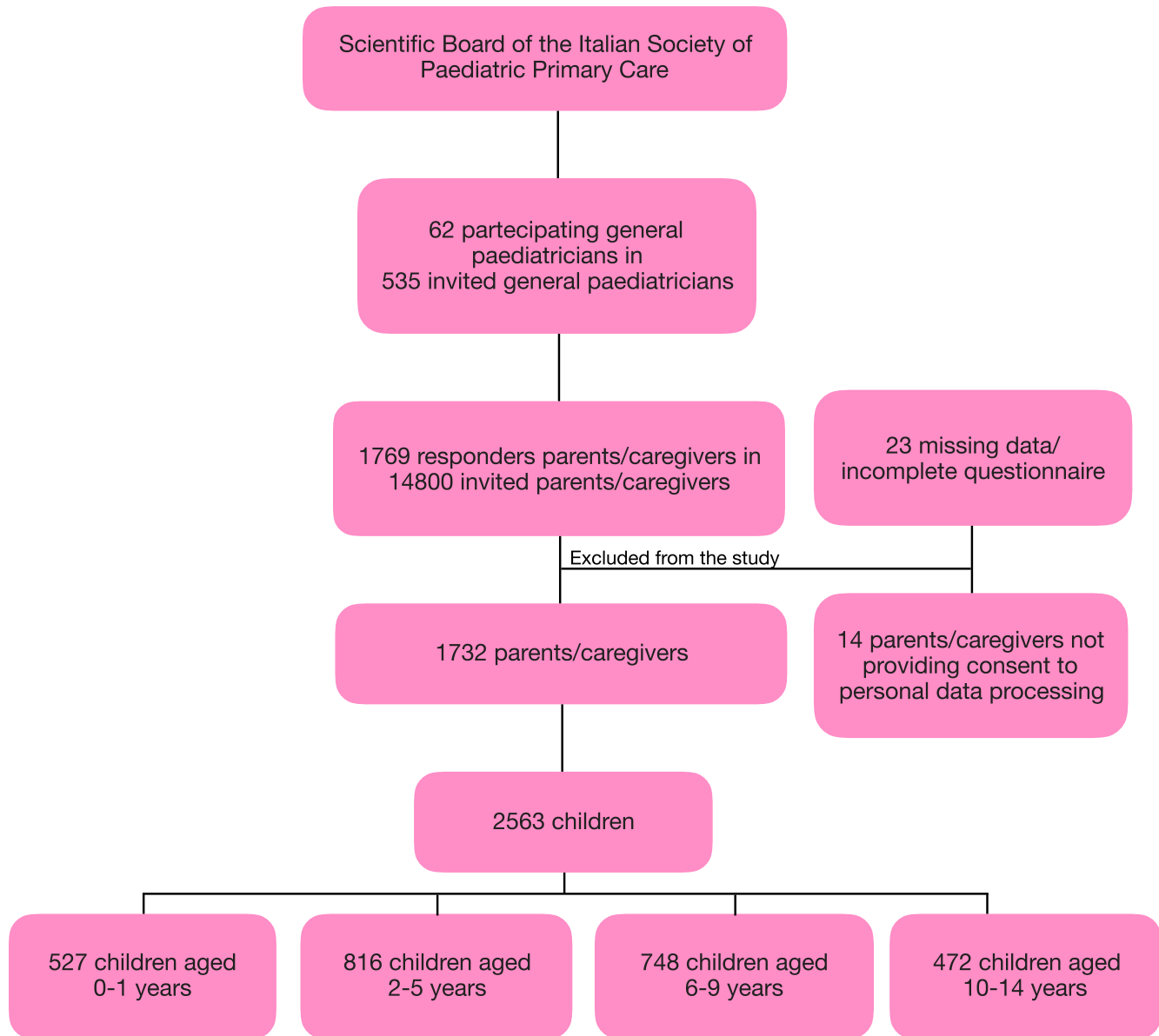


FIGURE 1 Process of sample selection.

episodes of cyberbullying were in the age group 10–14 years (11/12), although not resulting in a statistically significant difference among the other age groups ($p=0.20$). Table 2 summarises the use of electronic devices in the three age groups.

3.4 | Risk factors for smartphone owning and cyberbullying

We performed the analysis of the risk factors for smartphone ownership and cyberbullying, summarised respectively in Tables 3 and 4.

The univariate logistic regression factors showed an association between smartphone ownership and older-aged children (10–14 years) compared with those aged 2–5 (OR 0.28; 95% CI 0.20–0.40; $p<0.001$) 6–9 (OR 27.95, 95% CI 27.95; $p<0.001$). Multiple children

in the household were more associated with smartphone ownership than an only child (OR 1.95; 95% CI 1.51–2.52; $p<0.001$). An increased risk of smartphone ownership was found in cases of separated parents or caregivers compared with cohabiting or married parents or caregivers (OR 1.76; 95% CI 1.24–2.49; $p=0.002$). The parental age increased the proportion of children owning a smartphone: father's age >40 years versus <30 years (OR 3.62; 95% CI 1.40–9.36; $p=0.008$) and mother's age >40 versus <30 years (OR 3.04; 95% CI 1.72–5.40, $p<0.001$). A higher level of parental education reduced smartphone ownership in children (father: OR 0.46; 95% CI 0.51–0.80; $p<0.001$; mother: OR 0.57; 95% CI 0.46–0.69; $p<0.001$). Children with employed mothers were less exposed to smartphone use than children with unemployed mothers (OR 0.77; 95% CI 0.62–0.96, $p=0.021$). Reduced use of social networks by parents was associated with a lower percentage of smartphone ownership by children

TABLE 1 Characteristics of the study population.

	N	
	n = 1732	n (%)
Residency		
City	970/1732	56.0%
Small town	762/1732	44.0%
Parents'type of union		
Cohabiting or married	1611/1732	93.0%
Separated and divorced	107/1732	6.2%
Others	14/1732	0.8%
Father's age		
<30years	64/1732	3.7%
30–40years	706/1732	40.8%
>40years	962/1732	55.5%
Mother's age		
20–30years	123/1732	7.1%
30–40years	858/1732	49.5%
>40years	751/1732	43.4%
Father's study level		
Elementary and middle school	406/1732	23.4%
High school	839/1732	48.4%
Degree	487/1732	28.1%
Mother's study level		
Elementary and middle school	211/1732	12.2%
High school	811/1732	46.8%
Degree	710/1732	41.0%
Parent's employment		
Father	1691/1732	97.6%
Mother	1340/1732	77.4%
Time of cell phone use (father)		
<3h/day	727/1732	42.0%
3–6h/day	703/1732	40.6%
>6h/day	302/1732	17.4%
Time of cell phone use (mother)		
<3h/day	886/1732	51.2%
3–6h/day	668/1732	38.6%
>6h/day	178/1732	10.3%
Parent's cell phone turned on at home		
Father	1659/1732	95.8%
Mother	1651/1732	95.3%
Password protection on parent's cell phone		
Father	1456/1732	84.1%
Mother	1444/1732	83.4%
Access to electronic devices		
Pan-European Game Information knowledge	345/1732	19.9%
Free connection to the web at home	1233/1732	71.2%
Use of electronic devices during meals	1193/1732	68.9%

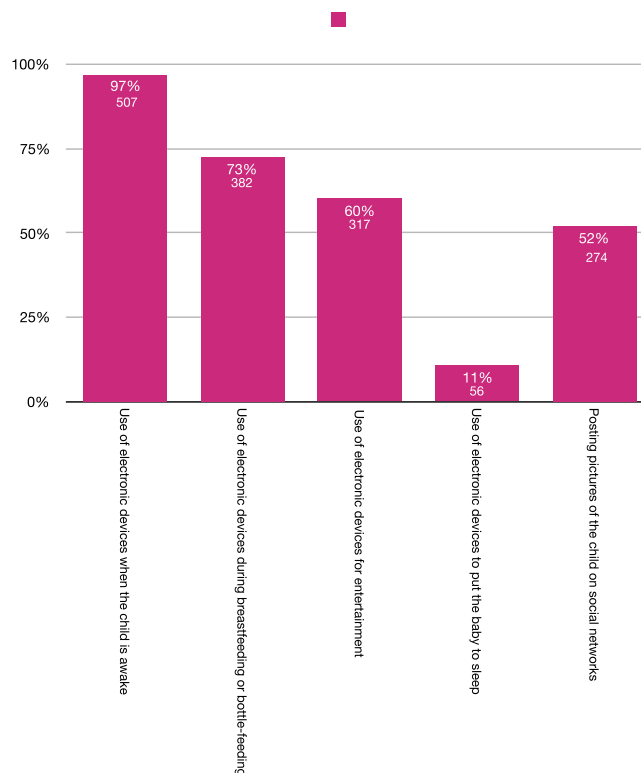


FIGURE 2 Use of electronic devices by parents or caregivers with children aged 0–1 years.

(father: OR 0.72; 95% CI 0.59–0.88, $p=0.001$, mother: OR 0.63; 95% CI 0.52–0.76; $p<0.001$). Knowledge of the Pan-European Game Information was associated with a higher percentage of smartphone ownership (OR 1.66; 95% CI 1.33–2.07; $p<0.001$) as well as having a free connection to the web at home versus not having one (OR 2.13; 95% CI 1.67–2.72; $p<0.001$). Finally, the use of electronic devices during meals versus not using them increased smartphone ownership (OR 1.35; 95% CI 1.09–1.67; $p=0.005$).

The multivariate logistic regression analysis showed the age group 2–5 years to be at lower risk of smartphone ownership compared with the age group 6–9 (OR 0.40; 95% CI 0.27–0.59; $p<0.001$). A higher parental educational level was a protection factor of smartphone ownership (father: OR 0.59; 95% CI 0.36–0.98; $p=0.040$; mother: OR 0.51; 95% CI 0.33–0.78; $p=0.002$). The Pan-European Game Information parental knowledge versus unknowledge was associated with a higher risk of smartphone ownership (OR 1.47; 95% CI 1.02–2.14; $p=0.041$), as well as having a free connection to the web at home versus not having (OR 1.65; 95% CI 1.11–2.46; $p=0.013$) and use of electronic devices during meals versus not using (OR 1.54; 95% CI 1.03–2.31; $p=0.037$).

At univariate logistic regression factors significantly associated with cyberbullying were living in country or mountain areas versus city (OR 0.746; 95% CI 1.56–35.62; $p=0.012$) and not having rules in the smartphone use versus having rules (OR 11.92; 95% CI 3.41–41.68; $p<0.001$).

TABLE 2 Use of electronic devices in the age groups 2–5, 6–9 and 10–14 years.

	2–5 years, n = 816 (%)	6–9 years, n = 748 (%)	10–14 years, n = 472 (%)	p-value
Use of electronic devices before sleeping	567/816 (69.5%)	440/748 (58.8%)	341/409 ^a (83.4%)	<0.001
Personal smartphone	50/816 (6.1%)	141/748 (18.9%)	409/472 (86.7%)	<0.001
Rules in cell phone use	46/50 (92.0%)	138/141 (97.9%)	378/409 (92.4%)	0.40
Systems that restrict internet access	34/50 (68.0%)	99/141 (70.2%)	236/409 (57.7%)	0.02
Cyberbullying	0/50 (0.0%)	1/141 (0.7%)	11/409 (2.3%)	0.20

Note: Bold values are p-values < 0.05 were statistically significant.

^a Some missed data.

4 | DISCUSSION

Our study is the first, large cross-sectional study conducted in Italy investigating access to electronic devices in the paediatric population. Moreover, few data are available in other countries in this regard.^{13,14}

More than 1750 parents or caregivers participated in the study, with data collected on 2563 children. A large use of electronics during breastfeeding or bottle-feeding by mothers of children aged 0–1 years (72.5%) was found. Investigating smartphone ownership, almost 30% of children aged 2–14 years had a personal smartphone, with a higher proportion found in the 10–14 year age group (68.1%). One of the main findings of our study was the higher risk of cyberbullying in children whose parents/caregivers did not give them rules about using electronic devices, especially smartphones.

We found that 72.5% of mothers of children aged 0–1 years routinely used electronic devices during breastfeeding or bottle-feeding. Little is known about the impact of smartphone use during breastfeeding and bottle-feeding, even if some studies revealed its possible negative impact was interference in the interaction between the mother and the toddler.¹⁵ Ventura et al.¹⁵ described a negative impact of electronic devices during breastfeeding in some aspects of interaction in the short term, such as the responsiveness to the mother's encompassed actions. Similarly, Tidemann and Melinder¹⁶ suggested a negative impact of smartphone use on the relationship between infants and parents, reporting a reduction in infant engagement and an increase in protest behaviour such as crying and kicking. Conversely, Inoue et al.¹⁷ did not find any negative impact of smartphone use on bonding.

Our study evidenced a higher exposure of younger children (aged 0–1 years) to electronic devices compared to other studies, as the one by Kiliç et al.¹⁸ reported only 42.9% of children were exposed to electronic devices in the first 2 years of life. A systematic review by Lund et al.¹⁹ reported that electronic device use was associated with difficulties in falling asleep and less sleep duration in younger children, especially those aged 0–5 years. This study points out how there should be a greater concern for the number of parents or caregivers (60.1%) who entertained their child aged 0–1 years with an electronic device.

In our study, only 600 out of 2036 children aged 2–14 years (29.5%) resulted as having a personal cell phone, most of them aged 10–14 (68.1%), corresponding to 86.7% of children in the age group 10–14 years. The use of electronic devices and particularly smartphones is rapidly increasing in children, as reported by Kabali et al.²⁰ who reported a percentage of almost 75% of children aged 4 years owning a personal smartphone.

Literature has mostly focused on the dysfunctional use of cell phones in the paediatric age, with little information regarding the factors influencing smartphone ownership. Our study evidenced how parental educational levels could impact smartphone ownership, with a lower risk in children of parents or caregivers with a higher degree of study. Although some studies focused generally on screen media devices and not only on smartphones, they found an association between higher parental education and the possession of fewer screen media devices.^{21,22} It is debated if the educational background could impact smartphone addiction. Mascheroni and Ólafsson⁵ looked for factors concerning ownership, as was done in our study, by describing the most influential factor whether parents themselves used a smartphone or a tablet to go on the web. Even if we did not examine if the parental use of electronics for internet access represented a risk factor, we did not find any association between parental cell phone use and the ownership. We noticed an association between owning a personal smartphone and a free connection to the web at home, exposing children to the many risks of the web. In a large survey study, Livingstone et al.²³ analysed the risks of the web in paediatrics, reporting the most common risks: communicating online with someone never met in person, exposure to harmful contents or to sexual images and messages, the misuse of personal data and cyberbullying.

Considering the age group 10–14 years, the prevalence of cyberbullying was 2.3%, related to episodes of victimisation. This was a lower proportion than the one reported in the literature (11.0%–42.6%).²⁴ This result has to be interpreted considering that all the information in the survey was provided by parents or caregivers, probably with the loss of some episodes of cyberbullying. We found a higher risk of cyberbullying in the group of children whose caregivers did not give restrictions on smartphone use, with an OR of 11.9 (95% CI 3.41–41.68). In agreement with our study, Hemphill and Heerde²⁵ described the clear rules given by parents or caregivers as

TABLE 3 Univariate and multivariate analyses for cell-phone owning.

	Univariate			Multivariate		
	OR	95%CI	p-value	OR	95%CI	p-value
Age group						
6-9	1					
2-5	0.28	0.20-0.40	<0.001	0.40	0.27-0.59	<0.001
10-14	27.95	20.25-38.58	<0.001			
Residency						
City	1					
Small town (excluded country/mountain areas)	1.04	0.85-1.27	0.688			
Country/mountain areas	0.99	0.65-1.51	0.963			
Only child						
Yes	1					
No	1.95	1.51-2.52	<0.001	1.31	0.86-2.00	0.203
Parents' type of union						
Cohabiting or married	1			1		
Separated/others	1.76	1.24-2.46	0.002	1.45	0.82-2.58	0.203
Father's age						
<30 years	1			1		
30-40 years	1.49	0.57-3.90	0.413	1.04	0.30-3.56	0.953
>40 years	3.62	1.40-9.36	0.008	1.08	0.31-3.91	0.901
Mother's age						
20-30 years	1			1		
30-40 years	1.09	0.61-1.94	0.780	0.70	0.31-1.58	0.391
>40 years	3.04	1.72-5.40	<0.001	0.64	0.26-1.56	0.325
Father's study level						
Elementary, middle school and high school	1			1		
Degree						
Elementary, middle school and high school	0.64	0.51-0.80	<0.001	0.59	0.36-0.98	0.040
Mother's study level						
Elementary, middle school and high school	1			1		
Degree						
Elementary, middle school and high school	0.57	0.46-0.69	<0.001	0.51	0.33-0.78	0.002
Fathers' employment						
Unemployed	1					
Employed	1.22	0.61-2.44	0.573			
Mother's employment						
Unemployed/housewife	1					
Employed	0.77	0.62-0.96	0.021			
Time of cell phone use (father)						
<3 h/day	1					
3-6 h/day	0.93	0.77-1.15	0.513			
>6 h/day	1.08	0.82-1.41	0.600			

TABLE 3 (Continued)

	Univariate			Multivariate		
	OR	95%CI	p-value	OR	95%CI	p-value
Time of cell phone use (mother)						
<3h/day	1					
3–6 h/day	1.01	0.82–1.24	0.935			
>6h/day	1.23	0.89–1.69	0.212			
Father's use of social networks						
No	1					
Yes	0.72	0.59–0.88	0.001	0.80	0.508–1.276	0.357
Mother's use of social networks						
No	1					
Yes	0.63	0.52–0.76	<0.001	0.70	0.451–1.082	0.108
Father's phone turned on at home						
No	1					
Yes	1.17	0.72–1.90	0.526			
Mother's phone turned on at home						
No	1					
Yes	1.21	0.75–1.95	0.428			
Password on father's cell phone						
No	1					
Yes	0.93	0.72–1.19	0.566			
Password on mother's cell phone						
No	1					
Yes	0.87	0.68–1.11	0.266			
Access to electronic devices						
Pan-European Game Information knowledge						
No	1					
Yes	1.66	1.33–2.07	<0.001	1.47	1.02–2.14	0.041
Free connection to the web at home						
No	1					
Yes	2.13	1.67–2.72	<0.001	1.65	1.11–2.46	0.013
Use of electronic devices during meals						
No	1					
Yes	1.35	1.09–1.67	0.005	1.54	1.03–2.31	0.037

Note: Bold values are p-values < 0.05 were statistically significant.

a protection factor against cyberbullying. Literature proposed the definition of parental mediation as the rules and parental strategies adopted in order to protect their children against online risks.²⁶ Only a little information is available about the protective role of parental mediation in cyberbullying, as reported in Navarro et al.'s²⁷ study, in which victims of cyberbullying reported lower rates of parental mediation than parents of non-victims. It is evident that the attention paid by parents or caregivers to their children, also by giving them rules, could help them to have safer access to the web. Therefore, parental neglect seemed to represent a risk factor for cyberbullying, as described by Wang and Jiang.²⁸ An interesting study by Tozzo

et al.²⁹ focused on cyberbullying prevention strategies, not only considering children's and adolescents' educational interventions but also focusing on the importance of an integrated approach involving mental health professionals, educators, and digital experts. General paediatricians should be added to these professionals as the scheduled visits could represent an educational moment for parents and children on the safe use of electronic devices, providing support in preventing cyberbullying. In agreement with the previous study, Ricci et al.³⁰ highlighted the need for optimization of internet use by youth, suggesting updated training for health professionals to guide parents or caregivers as moderators in electronic device access.

TABLE 4 Univariate analysis for cyberbullying.

	OR	95% CI	p value
Residency			
City	1		
Small town (excluded country/mountain areas)	1.24	0.31–5.05	0.760
Country/mountain areas	7.46	1.56–35.62	0.012
Only child			
Yes	1		
No	1.603	0.20–12.77	0.656
Parents'type of union			
Cohabiting or married	1		
Separated/others	0.895	0.11–7.17	0.917
Father's age			
<30years	1		
30–40years	1		
>40years	1.92	0.24–15.23	0.539
Mother's age			
20–30years	1		
30–40years	1		
>40years	0.74	0.19–2.86	0.665
Father's study level			
Elementary, middle school and high school	1		
Degree	0.30	0.04–2.36	0.251
Mother's study level			
Elementary, middle school and high school	1		
Degree	0.71	0.18–2.71	0.612
Father's employment			
Unemployed	No data suitable for univariate regression		
Employed			
Mother's employment			
Unemployed/housewife	1		
Employed	0.757	0.20–2.91	0.686
Time of cell phone use (father)			
<3h/day	1		
3–6 h/day	0.64	0.32–4.59	0.551
>6 h/day	1.75	0.45–12.96	0.453
Time of cell phone use (mother)			
<3h/day	1		
3–6 h/day	1.21	0.32–4.59	0.778
>6 h/day	2.42	0.45–12.96	0.301
Father's use of social networks			
No	1		
Yes	1.47	0.44–4.90	0.531
Mother's use of social networks			
No	1		
Yes	0.70	0.20–2.43	0.573

TABLE 4 (Continued)

	OR	95% CI	p value
Father's phone turned on at home			
No	No data suitable for univariate regression		
Yes			
Mother's phone turned on at home			
No	1		
Yes	1.08	0.23–5.10	0.923
Password on father's cell phone			
No	1		
Yes	2.17	0.27–17.23	0.463
Password on mother's cell phone			
No	1		
Yes	1.08	0.23–5.10	0.923
Access to electronic devices			
Pan-European Game Information knowledge			
No	1		
Yes	0.91	0.24–3.50	0.893
Free connection to the web at home			
No	1		
Yes	1.74	0.22–13.85	0.601
Use of electronic devices during meals			
No	1		
Yes	0.76	0.22–2.66	0.673
Rules in cell phone use			
Yes	1		
No	11.92	3.41–41.68	<0.001
Use of electronic devices before sleeping			
No	1		
Yes	1.61	0.41–5.36	0.441

Note: Bold values are *p*-values < 0.05 were statistically significant.

4.1 | Study limitations

Our aim was to administer an easy survey to parents or caregivers. Therefore, a non-validated questionnaire was developed by general paediatricians, possibly to be validated in future studies, since, to our knowledge, no validated questionnaire about electronic devices access in children and adolescents is available. Our study has some limitations: firstly, the selection of a sample of 2563 children is probably not representative of the entire Italian paediatric population. Additionally, the answers to the survey given by parents or caregivers may not always reflect what is perceived by their children. Particularly, the low prevalence of cyberbullying reported in our study may not reflect its real prevalence in the paediatric population due to the information provided by parents or caregivers instead of children. Finally, we investigated possible risk factors for cyberbullying but not its impact on children's and adolescents' quality of life. Moreover, we did not analyse children's characteristics such as school performance and comorbidities, making future

studies necessary in order to identify other important risk factors for cyberbullying.

5 | CONCLUSION

Our study is, to our knowledge, the first examination of how the paediatric population is exposed to electronics in Italy. Firstly, our study revealed a habitual use of electronics in parents or caregivers of younger children, with a high frequency of electronic device used during feeding or bottle-feeding and in entertaining the child. Little is available in the literature about the impact of electronic device use on the relationship with the toddler, although this could take time away from interaction with the child resulting in weaker bonding. For older children, we found a high prevalence of those with a personal cell phone, especially those aged 10–14 years. It is necessary to be aware of the risks related to the web and possible access to the internet by cell phone, such as. We

found the absence of rules in smartphone use to represent a risk factor for cyberbullying, suggesting the education of parents and subsequently of children as an important task for general paediatricians. In conclusion, increasing children's access to electronics should make general paediatricians and parents conscious of the risks related to the web. General paediatricians should become a crucial component in the prevention of these risks. Future studies are needed to clarify risk factors for problematic smartphone use and cyberbullying, in order to identify targets for possible educational and intervention programs.

AUTHOR CONTRIBUTIONS

GC conceived the study, contributed to the study design, to the acquisition of data for the paper, to the preliminary data analysis and drafted the initial manuscript. PB, EM, FC, GVR, GR, GM, PB, SG, GB and PLT contributed in the same ways as GC. The Scientific Working Group of the Italian Society of Paediatric Primary Care contributed to the study design and to the acquisition of data for the paper. ID wrote the final version of the article, EC and ID conducted the statistical analysis. GC, EC and ID reviewed and revised the manuscript. All authors and co-authors accepted the final version of the manuscript.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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APPENDIX A

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