ORIGINAL ARTICLE

FACTORS ASSOCIATED WITH PROLONGED SCREEN EXPOSURE AMONG CHILDREN AGED 6 TO 59 MONTHS IN YAOUNDE (CAMEROON).

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ABSTRACT

Introduction: The recommendations regarding screen time for children under five years are clearly defined by the World Health Organization (WHO). The objective was to study the factors associated with prolonged screen exposure among children aged 6 to 59 months in Yaounde.

Materials and methods: We conducted a cross-sectional, analytical study in three referral hospitals in Yaounde from February 1 to July 31, 2025. The study population consisted of accompanying parents and children aged 6 to 59 months attending the outpatient, vaccination, and hospitalization units of the pediatric departments of these hospitals. Ethical clearance and free and informed parental consent were obtained. Prolonged screen exposure was defined as exposure exceeding the age-based recommended standard according to the WHO. The significance threshold was set at <5%.

Results: A total of 468 children were included. Screen exposure was prolonged in 71.6% of children and early in 83.1% of them. The average daily exposure time was 1.5 hours. Children under 24 months ($p < 0.001$), the availability of television ($p = 0.004$) or tablet ($p = 0.031$) at home, screen ownership by the child ($p = 0.036$), having 2-3 children ($p = 0.030$) or ≥ 4 children ($p = 0.037$), and lack of awareness about screen use ($p < 0.001$) were independent factors associated with prolonged screen exposure.

Conclusion: Seven out of ten children aged 6 to 59 months have prolonged screen exposure in Yaounde. The majority are exposed at an early age. Numerous associated factors have been identified, pointing toward targeted prevention strategies.

ARTICLE HISTORY

Received 8 February 2026

Accepted 7 April 2026

KEYWORDS

Associated factors, Prolonged exposure, Screens, Children, Yaounde.

Essentials

- What was already known on the subject: Excessive screen exposure is harmful to young children's development. The World Health Organization recommends no exposure before the age of 2 years and less than one hour per day between the ages of 2 and 4 years. African data on this emerging public health issue remains limited.
- The question addressed in this study: What factors are associated with prolonged screen exposure among children aged 6 to 59 months in Yaounde, Cameroon?
- Key findings: Seven out of ten children (71.6%) have prolonged screen exposure, with 83.1% exposed early before the age of 2 years. The average daily exposure time was 1.5 hours. The independant factors significantly associated identified are : age under 24 months ($p < 0.001$), the availability of television ($p = 0.004$) or tablet ($p = 0.031$) at home, screen ownership by the child ($p = 0.036$), having 2-3 children ($p = 0.030$) or ≥ 4 children ($p = 0.037$), and lack of awareness about screen use ($p < 0.001$).
- Implications for clinical practice, policy, or research: There is an urgent need to integrate systematic screening for screen exposure into pediatric consultations at all points of entry. Targeted parental education programs and national guidelines adapted to the African context must be put in place to protect the optimal development of young children.

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Introduction

The term "screens" refers to electronic devices that display images or data.[1] It includes televisions, computers, touchscreen tablets, smartphones, and video game consoles. In Europe, there are an average of 6.5 screens per household.[2] In less than a quarter of a century, new digital technologies have become part

of almost every human activity and every stage of life. New digital technologies have become part of almost every human activity, at every stage of life.

The World Health Organization (WHO) recommends that school-aged children (5 to 17 years old) limit their screen time for recreational purposes. For children aged 2 to 4 years old, the recommendation is to limit screen time to no more than one hour per day; it suggests that children under 2 years old should have no screen time.[3] Research findings suggest that children were already exceeding these recommendations and the COVID-19 pandemic has made the situation worse.[4]

Numerous studies have demonstrated the harmful effects of prolonged screen exposure on children's health: sleep disorders, psychomotor and intellectual development disorders, obesity, psycho-affective disorders, and eating disorders.[5,6] A review of the literature has identified numerous factors associated with prolonged screen exposure in children. In Colombia, González et *al*. found that screen exposure time was prolonged in 50% of preschool children, with associated factors being the availability of a television in the child's bedroom and eating while using screens.[7] In India, Paldiwal et *al*. found that 53.7% of children aged 6 months to 6 years were exposed to excessive screen time, with an average prolonged exposure time of 1.6 hours.[8]

In Africa, few authors have addressed this topic. In the Democratic Republic of Congo, Makaje et *al*. reported high rates of screen use among preschool children, with significant exposure from an early age.[9] Problems related to screen use among children are becoming a public health issue, and the scarcity of data on this subject in Cameroon justifies the interest in this work.

The objective of this study was to study factors associated with prolonged screen time among children aged 6 to 59 months in Yaounde in order to propose targeted preventive intervention strategies.

Methods & Materials

Type and study location

We conducted a cross-sectional, analytical study with prospective data collection in three referral hospitals in the city of Yaounde: the Yaounde University Teaching Hospital, the Mother and Child Center of the Chantal Biya Foundation, and the Yaounde Gynaeco-Obstetric and Pediatric Hospital. These three healthcare facilities serve all social classes and categories.

Study period

Data collection took place over a period of 6 months, from February 1 to July 31, 2025.

Study population and sampling

The study population consisted of children aged 6 to 59 months and their accompanying parents attending outpatient, vaccination, and hospitalization units in the pediatric departments of the three hospitals. All children aged between 6 and 59 months whose parents consented to participate in the study were included. Children with severe developmental disorders, sensory disabilities, or neurological conditions reported by their accompanying parents, as well as children whose respondents were unreliable, were excluded.

The sampling was consecutive and non-probabilistic. The minimum sample size calculated with an accuracy of 5% and an alpha risk of 5% was estimated at 277 children based on a prevalence of 90% of children exposed to screens according to a previous study conducted in the city of Douala in Cameroon.[10]

Data collection

Data were collected using a pre-established and tested questionnaire, completed by parents after obtaining their free and informed consent. The variables studied included sociodemographic and economic characteristics (age, gender of the child, parents' education level and income, number of children), as well as data on screen exposure (types of screens, exposure time, content viewed, reasons for exposure, rules of use).

Operational definition of terms

Prolonged screen exposure was defined as exposure exceeding the WHO age-based recommended standard, which is: no exposure before age 2, less than one hour per day between ages 2 and 4, and less than two hours per day for children aged 5. Early exposure was defined as exposure before age 2.

Statistical analysis

The data were analyzed using SPSS version 23.0 software. Qualitative variables were presented as counts and frequencies and compared using the Chi-square test. Quantitative variables were expressed as the median and interquartile range. A bivariate analysis followed by a stepwise downward multivariate logistic regression was performed to identify factors associated with prolonged screen exposure. The significance threshold was set at $p < 0.05$.

Ethical considérations

The study obtained ethical clearance from the Institutional Research Ethics Committee of the Faculty of Medicine and Biomedical Sciences of the University of Yaounde I (Reference: No. 015/UYI/FMSB/VDRC/DAARS/CSD/emr of May 7, 2025) and YGOPH (Reference: No. 135/CIERSH/DM/ATTD/2025 of June 5, 2025), as well as administrative authorizations from the directors of the three hospitals. Free and informed consent was obtained from all participating parents. The confidentiality and anonymity of the data were guaranteed.

Results and Discussion

General characteristics of the population

A total of 468 children were included in the study. The median age was 24 [12-39] months, with extremes of 6 and 59 months. The majority were male (53.4%) and lived in urban areas (87.6%) (Table 1).

Mothers were the primary accompanying parents (83.1%). The average age of the parents was 32.21 ± 6.70 years. The majority had a higher education level (68.4%) and were self-employed (43.2%) (Table 2).

Screen exposure

The median number of screens in the home was 2 [2-3], with extremes of 1 and 5 screens. Televisions (91.5%) and smartphones (78.2%) were the most common screens in homes, located mainly in the living room

(92.5%) and parents' bedroom (23.3%). A quarter of children had one or more personal screens, particularly tablets (71.9%).

Among the 413 children (88.2%) who had access to screens, 67.5% accessed them with parental permission, compared to 20.7% who had unrestricted access. Prolonged screen exposure affected 71.6% (n=335) of the children in the study and was early (before age 2) for 83.1% of them (Table 3).

Children under 24 months were exposed to screens at an early age in 83.1% of cases (177/213), with the majority being exposed for less than 30 minutes daily (34.7%). Among children aged 24 to 59 months, 92.5% (236/255) were exposed. The frequency of prolonged exposure was 83.1% among children under 24 months and 62.0% among children aged 24-59 months. The average daily exposure time was 1.5 hours.

The main reasons given by parents for screen exposure were entertainment (48.9%), hobbies (39.2%), and digital babysitting (26.6%). Cartoons were the main content viewed by exposed children (88.1%). Only 17.9% of parents believed that screens contributed to children's learning.

Nearly half of parents (n=205, 43.8%) believed that screens disrupt children's health, development, and behavior, causing attention disorders (46.3%) or sleep disorders (30.2%).

Factors associated with prolonged screen exposure

Multivariate logistic regression analysis identified several independent factors significantly associated with prolonged screen exposure (Table 4). Age under 24 months was the most strongly associated factor [OR= 5.30 (3.16-8.90), p < 0.001]. The availability of a television at home [OR= 3.08 (1.42-6.66), p = 0.004] and a tablet [OR= 2.06 (1.06-3.98), p = 0.031] significantly increased the risk. The child's possession of personal screens doubled the risk of prolonged exposure [OR= 2.08 (1.05-4.15), p = 0.036].

The number of siblings was also associated with prolonged exposure, with an increased risk for families with 2-3 children [OR= 1.88 (1.06-3.34), p = 0.030] and ≥4 children [OR= 1.74 (1.03-2.94), p = 0.037]. Lack of parental awareness about screen use was the most important factor [OR= 10.69 (3.22-35.45), p < 0.001].

Table 1: Sociodemographic characteristics of the children

Variables	**Frequency (n=468)**	**Percentage (%)**
Age (months)		
6-23	189	40,4
24-59	279	59,6
Gender		
Male	250	53,4
Female	218	46,6
Place of résidence		
Urban	410	87,6
Rural	58	12,4

Table 2: Sociodemographic et socioeconomic characteristics of parents

Variables	**Frequency (n=468)**	**Percentage (%)**
Family relationship		
Mother	389	83,1
Father	38	8,1
Others	41	8,8
Level of study		
None	8	1,7
Primary	15	3,2
Secondary	125	26,7
Higher	320	68,4
Profession		
Self-employed	202	43,2
Government employee	91	19,4
Student	90	19,2
Housewife/ Unemployed	85	18,2
Number of children in charge		
1	85	18,2
2-3	147	31,4
4-5	153	32,7
>5	83	17,7

Table 3: Distribution of daily screen time by age

Exposure duration	**< 24 months** (n=213)	**24-59 months** (n=255)	**Total** (N=468)
0 minute	36 (16,9)	19 (7,5)	55 (11,8)
< 30 minutes	74 (34,7)	36 (14,1)	110 (23,5)
30-60 minutes	31 (14,6)	42 (16,5)	73 (15,6)
1-2 hours	34 (16,0)	66 (25,9)	100 (21,4)
2-3 hours	19 (8,9)	33 (12,9)	52 (11,1)
3-4 hours	7 (3,3)	27 (10,6)	34 (7,3)
> 4 hours	12 (5,6)	32 (12,5)	44 (9,4)

Table 4: Independent factors associated with prolonged screen exposure

Indépendants factors	Prolonged screen exposure		Adjusted Odds ratio (IC à 95%)	p-value
	Yes (335) n(%)	No (133) n(%)		
Age < 24 months	177 (83,1)	36 (16,9)	5,30 (3,16-8,90)	< 0,001
Television at home	314 (73,4)	114 (26,6)	3,08 (1,42-6,66)	0,004
Tablet at home	105 (81,4)	24 (18,6)	2,06 (1,06-3,98)	0,003
Possession of personal screen	98 (82,4)	21 (17,6)	2,08 (1,05-4,15)	0,036
2-3 children at home	110 (74,8)	37 (25,2)	1,88 (1,06-3,34)	0,030
≥4 children at home	173 (73,3)	63 (26,7)	1,74 (1,03-2,94)	0,037
Lack of parental awareness	133 (57,8)	97 (42,2)	10,69 (3,22-35,45)	< 0,001

Discussion

The aim of this study was to study factors associated with prolonged screen exposure among children aged 6 to 59 months in Yaounde. The results show that a significant proportion of children (71.6%) are exposed to screens for prolonged periods, with 83.1% exposed before the age of 2, in violation of WHO recommendations. Several factors were identified, including age under 24 months, availability of screens at home, possession of personal screens, high number of siblings, and lack of parental awareness.

This study has certain limitations. Data collection based on a self-reported questionnaire may be subject to social desirability bias, as parents may underestimate actual exposure time. The study was conducted only in urban referral hospitals, limiting the generalizability of the results to rural areas. Despite these limitations, this study provides original data on screen exposure among young children in Cameroon and identifies modifiable factors that could guide public health interventions.

The high prevalence of prolonged screen exposure in our study is comparable to that found by Bulu et *al*. in Douala, who reported that 90% of children watch screens for more than 3 hours per day.[10] However, it is higher than that observed in other African contexts, such as South Africa, where Tomaz et *al*. found 67% excessive exposure in urban areas.[11] These differences could be explained by variations in the definitions of prolonged exposure, the age groups studied, and the socioeconomic contexts.

The average exposure time of 1.5 hours per day in our study is similar to that reported by Paldiwal et *al*. in India (1.6 hours)[8], but lower than that reported by Eddaoudi et *al*. in Morocco, who found daily exposure between 2 and 4 hours for 56% of children.[12] Although this duration appears moderate, it greatly exceeds WHO recommendations, particularly for children under 2 years of age, who should not be exposed.

Age under 24 months emerged as the factor most strongly associated with prolonged screen exposure (OR= 5.30), a result consistent with several international studies.[13,14] This paradox can be explained by the fact that parents use screens as a means of calming or occupying young children, particularly restless infants. This practice is all the more worrying given that, it is precisely during this period that brain development is most active and vulnerable to the harmful effects of screens.[15,16]

The availability of screens at home, particularly televisions (OR= 3.08) and tablets (OR= 2.06), as well as children's ownership of personal screens (OR= 2.08) are modifiable factors identified in our study. These results are consistent with those of a study conducted in Colombia, which found an association between the availability of a television in the child's bedroom and prolonged screen exposure.[7] The proliferation of screens in the home and their increased accessibility create an environment conducive to excessive screen use.

Having a large number of siblings was also associated with prolonged exposure, with an observed dose-response effect (OR= 1.88 for 2-3 children and OR= 1.74 for ≥4 children). This result could be explained by a dilution of parental attention and reduced supervision as the number of children increases, leaving more room for unsupervised screen use. Similar results were reported by Bassul et *al*. who showed that the number of children in the household influenced screen time.[17]

Parents' lack of awareness about screen use is the most significant factor (OR= 10.69), highlighting the urgent need for targeted parental education programs. This result is particularly significant because it indicates that only 17.9% of parents consider screens to contribute to learning, suggesting a lack of awareness of the real risks and educational alternatives. Studies have shown that parental education can significantly reduce screen time and improve usage practices.[18,19]

The reasons for exposure identified in our study (entertainment 48.9%, hobbies 39.2%, digital babysitting 26.6%) reflect the use of screens as a substitute for parent-child interaction and traditional play activities. This trend is concerning because it deprives children of social interactions that are essential to their cognitive and emotional development.[20,21]

It is encouraging to note that 43.8% of parents recognize the harmful effects of screens on their children's health and development, citing attention disorders (46.3%) and sleep disorders (30.2%) in

particular. This awareness provides a favorable basis for preventive interventions, although it must be reinforced by concrete actions.

The results call for a multi-level approach that includes parental education, regulating screen access at home, and raising awareness among healthcare professionals about screening and preventing excessive screen exposure.

Conclusion

This study reveals that an alarming proportion (71.6%) of children aged 6 to 59 months in Yaounde are exposed to screens for prolonged periods, with early exposure before the age of 2 in 83.1% of cases. The main associated factors identified are age under 24 months, availability of screens at home, ownership of personal screens, high number of siblings, and lack of parental awareness. These results highlight the urgent need to implement targeted prevention strategies, including parental education programs, to limit excessive screen exposure and promote optimal child development.

Compliance with Ethical Standards
Funding: None
Conflict of Interest: None

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