

# The Evaluation of Digital Health: paediatric assessment for exposition to Digital Media

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## Abstract

Recent studies have shown the possible negative effects of children's early exposure to digital content with particular reference to screen time. In fact, excessive use of Digital Media (DM) can have important repercussions on development, learning and the quality of family life. In addition, Internet-connected devices represent the key to accessing digital subculture, the content of which can have a negative impact on children's psychological and physical development. Given the impact of DM and in particular of "digital subculture" on children, pre-adolescents and adolescents, we propose to broaden the concept of health by including not only the biological, psychological and social dimensions but also the digital dimension and thus the relationship with digital devices. In this work, we introduce the concept of "Digital Health" (DH), which refers to the well-being of all individuals, in particular of subjects of developmental age, exposed to digital devices, and we provide paediatricians with a new health procedure, called "Evaluation of Digital Health" (EDH). The EDH, aimed at assessing the digital habits, screen time and digital content viewed by the child, is carried out during periodic check-ups. In fact, we believe that paediatricians have a fundamental role in the protection of all-round health, including DH. The EDH would

enable paediatricians, who follow growth from birth to adolescence, to prevent and/or promptly pick up on the signs of any risky digital behaviour displayed by parents and their children. From this perspective, the paediatrician may lead to the manifestation of appropriate digital behaviours, thus representing the first DH promotion service and fostering the development of digital awareness in the family.

### Keywords

Digital Health, screen time, Digital Media, development, digital subculture, media exposure.

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### Introduction

The training courses of the *Istituto di Formazione Sardo* (IFOS), aimed since 2014 at the operators of the family advice centres of Nuoro (Italy) – ASL Nuoro, have favoured the development of new procedures to prevent family distress. Specifically, guidelines have been drawn up to help paediatricians, gynaecologists, psychologists and social workers to collect information on the digital life of patients (digital anamnesis), given that the various components of the family system spend a good part of their lives in the virtual world. In order to prevent the early exposure of infants, children, pre-adolescents and adolescents to the use and abuse of Digital Media (DM) – e.g. ultrasound scans of foetuses posted on social networks or the use/abuse of tablets and smartphones before the recommended age and/or for many hours a day – specific protocols have been identified to safeguard the well-being of patients in the virtual world. Finally, as part of the study and research activities developed by IFOS in collaboration with the Italian Federation of Paediatricians (*Federazione Italiana Medici Pediatri* – FIMP), a specific procedure, the “Evaluation of Digital Health” (EDH), has been designed in 2021 to safeguard the health of subjects of developmental age who approach DM.

### Digital Health

With the recent explosion of DM – not even WhatsApp existed until 2009 – and the ability to be always connected, children, pre-teens and adolescents were exposed to a new world of digital stimuli at an early age. Smartphones and tablets have thus become the preferred “toys” from the earliest stages of development, with major repercussions on health, particularly sleep, vision, hearing, metabolic functions, parent-child relationships and emotional development [1-11].

Moreover, devices have become the main key to accessing digital culture, whose contents, values and worldviews are promoted by social networks, YouTubers, streamers, video games, TV series, rap, trap and reggaeton music. At times, these contents can promote the manifestation of transgressive behaviour (especially alcohol and drug abuse, and the use of physical and verbal violence), also emphasising degradation, disregard for emotions, gender discrimination and misogyny. In these cases where legality and justice are negatively represented because transgressions and violence are considered the norm, the “digital subculture” emerges [12], a trait of modernity [13], often unknown to parents, which minors are part of and which tends to objectify thoughts and behaviours, often dissolving one’s own individuality.

Given the impact of DM and in particular the digital subculture on the lives of children, pre-teens and adolescents, it is proposed that the concept of health be broadened to include the digital dimension (the relationship with DM) alongside the biological, psychological and social dimensions. With the term “Digital Health” (DH) we can then indicate a specific form of health that indicates the wellbeing or malaise of all individuals, particularly those of a developmental age, who come into contact with electronic devices connected to the Internet. This is also the direction taken by the work of Bozzola and colleagues [14], who suggest that paediatricians discuss with parents the consequences of the use and misuse of DM on children’s health. But also the American Academy of Paediatrics [15] recommends that paediatricians ask children and their parents questions about their digital habits in order to stimulate the family to build an educational plan to protect their children. In fact, the Australian Guidelines [16] note that digital activity not infrequently replaces sporting activity, with the risk of serious consequences for the health of

children and adolescents (cardiovascular disorders, diabetes, osteoporosis, obesity, etc.). From this point of view, paediatricians have a fundamental role in health protection, assessing the impact of sedentary activities (watching TV, playing video games, listening to YouTubers and TV series) on the lives of their patients.

### Routine checkups and the Evaluation of Digital Health

In order to promote DH, a new medical procedure is proposed to paediatricians aimed at assessing whether the technological tools used, the exposure time and the digital content viewed are compatible with the age and psychological and physical characteristics of the child. This specific assessment, to be carried out during periodic check-ups, could be called EDH. The process of physical and psycho-affective growth, which characterises childhood and adolescence, requires effective evaluative interventions to prevent acute or chronic events capable of hindering their physiological evolution. The EDH would therefore allow the paediatrician, who follows growth from birth to adolescence, to prevent and/or promptly pick up on the signs of any risky digital behaviour displayed by parents and their children.

As well as having an assessing value, the EDH could also have a proactive function as it encourages the development of digital awareness in families which “should not be understood as the final goal of a formative-informative process which concerns only children, but rather as the expression of an authentic and responsible way to think digitally and be present in their virtual world, which concerns all members of the family. It is in the circularity of interactions between parents and children that meanings and procedures handling new technologies are co-constructed” [17].

The paediatrician, by participating in the circularity of family dynamics, can guide the appropriate digital behaviour in parents and their children, and thus represent the first DH promotion service encountered by families. In fact, it must be considered that psychologists, educators, social workers and child neuropsychiatrists usually act when the problem has already become concrete (addiction, cyberbullying, sexting, etc.), because their work is mainly oriented towards the management and removal of pathological digital

behaviour. The primary care paediatrician, on the other hand, has the possibility of promoting health by assessing at an early stage the more or less adequate care that children receive from their parents with regard to the use and abuse of DM.

### Digital remedies and the pathology of providing remedies

The international scientific literature provides that the classification of child abuse includes, in addition to sexual abuse, maltreatment (physical and psychological), witnessing violence and pathology of care provision, which in turn is divided into three frameworks: lack or absence of care, care present but inadequate to the developmental stage and pathological and excessive care.

With regard to care inappropriate for age, there are three sub-categories: anachronism of care, imposition of early acquisition rhythms and irrational expectations. Here we have looked at dyscrasia because it is the clinical picture that most frequently comes to the attention of the paediatrician. These are often parents who are unaware of the educational errors they are making and who, on the contrary, thinking they are acting for the good of their children, may unwittingly cause greater damage. In order to update the characteristics of inappropriate care to age, which in its original version of the 1980s could not foresee the exposure of children to DM, it is proposed to also consider “digital remedies”. The paediatrician could then investigate the digital habits in the family in order to detect whether the care provided is anachronistic, precocious or irrational. In **Tables 1-3**, we propose three illustrative schemes of distorted digital care (elaborated with the contribution of Master’s students in Clinical Criminology and Legal Psychology IFOS, Class of 2021), in order to make explicit the different forms of care inappropriate to age in relation to the use of DM. The paediatrician could therefore assess, during the periodic check-ups, the digital care system provided by parents to their children, in order to help the family develop an adequate digital awareness. To carry out the DH assessment, the paediatrician can investigate the areas presented in **Tab. 4**.

Finally, the results of the survey can be cross-referenced with other data already collected by the paediatrician: check-ups, health reports (ordinary and digital), school performance, further information reported by parents.

**Table 1.** Anachronism of remedies.

(In its classic form, it indicates a parental attitude that is not correct in relation to the developmental stage reached by the child: e.g. school-age children whose mother only feeds them milk or smoothies)

- Absolute prohibition, after 12 years old, of using smartphone.
- Absolute prohibition, after 13 years old, of using social network.
- Absolute prohibition, after 6 years old, of playing videogames even if PEGI is adequate for age.
- Imposing to a 6- to 10-year-old child to play with videogames only when parents are directly present.
- Absolute prohibition, after 6 years old, to watch TV series adequate for the age.
- Absolute prohibition, after 10 years old, to follow YouTubers and streamers.
- Checking and supervising on a daily basis, also by means of a parental control app, the digital content (social networks, chats, etc.) of a child who does not show individual, family, social and school problems.

**Table 2.** Imposition of early acquisition rhythms.

(In its classic form, it represents an attempt to adapt the child's rhythms to those of adults: e.g. expecting an infant to have an adequate sleep-wake cycle or to acquire sphincter control)

- Parents expect their child to be fully capable and able to understand the risks that can arise from improper use of mobile phones and tablets.
- Parents expect their child to be able to choose and discriminate between age-appropriate content such as TV series, YouTubers, video games, anime, manga, rap, trap and reggaeton music.
- Parents expect their child to fully understand what reality and virtual identity are.
- Parents who do not supervise their child's online activities because they expect them to be aware of the content they post on the web, thus exposing them to the risks of cyberbullying, online grooming, sexting, revenge porn.
- Parents allow their child to self-manage the time they spend using new technologies, smartphones, tablets, video games, without urging them to balance sports, social, school and sedentary activities.
- Parents allow their child to use their smartphone or tablet in their room at night.
- Parents do not supervise their child when in the company of relatives who may introduce risky digital behaviour.

**Table 3.** Unreasonable expectations.

(In its typical form, it manifests itself when parents demand performance from their children that is above the norm or beyond their capabilities)

- Parents expect their child, particularly gifted in a specific videogame, to become a pro-player.
- Parents expect that, since their child is more technologically literate, he or she will have developed an awareness that will allow them to advise adults on what to watch: for example, a certain type of TV series.
- Parents expect their child to become a YouTuber or influencer after having opened a profile/channel.
- Parents expect their child to solve the problem of addiction to new technologies, social withdrawal and hikikomori, without specialist help.

**Table 4.** Thematic areas to be investigated.

1. Understanding virtual reality and identity
2. Cyberbullying
3. Online grooming
4. Sexting
5. Internet addiction
6. Social withdrawal and hikikomori
7. Smartphone, tablet, computer
8. Social networks and apps
9. Video games
10. YouTubers/streamers
11. Animated series and anime
12. Comics and manga
13. TV series
14. Rap/trap/reggaeton music
15. Time devoted to sports and sedentary activity
16. Presence of brothers/sisters, uncles, cousins or other family members who may introduce risky digital behaviours in the family

## The Evaluation of Digital Health software

In order to ease the work of the paediatrician, IFOS *Educare al Digitale* has developed an EDH software, which allows the assessment to be carried out through an automated system.

Parents (and from 7 years old also their children) will be able to answer, via computer or smartphone, a list of questions around the topics indicated in **Tab. 4** and the answers will be processed in real time by the software that will provide the necessary information on the outcome of the DH assessment.

Specifically, the paediatrician, by accessing the software, will generate the link that will forward to parents to access the computerized questionnaire.

The results will then be discussed with parents and, when possible, with their children, in order to evaluate the possibility of sending the family to a specialized psychological service.

## Conclusion

The EDH is a theoretical and practical tool, a work in progress, which needs to be perfected and updated based on the results of the experiments conducted by paediatricians and subsequent research. It is a tool under construction that will have to consider the evolution of DM and the contents coming from digital culture and subculture.

## Declaration of interest

The Authors declare that there is no conflict of interest.

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