



CHILD WELL-BEING IN A DIGITAL AGE: TRENDS AND OUTCOMES

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**CHILD WELL-BEING IN A DIGITAL AGE:
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**EXECUTIVE
SUMMARY**

As digital technology becomes more prominent in the lives of children around the globe, the risks and harms that digital technology may pose to children's well-being is receiving considerable attention. The rapid increase in screen time has been a major concern, including the consequences this might have on children's social lives as well as their physical and mental health. With the increased reliance on digital technology, particularly during the COVID-19 pandemic, these concerns have only intensified.

In the Middle East and North Africa (MENA), studies have shown a vast increase in digital connectivity in the region even before COVID-19. It is plausible that younger segments of the population, particularly children who grew up with digital technology, are even more immersed in the digital world than adults. Yet, evidence generation on how this connectivity is influencing children and young people's well-being in MENA remains scarce.

This paper takes stock of existing evidence around children's use of digital technology in relation to three well-being outcomes: social relationships, mental health, and physical health. It considers both the benefits and risks that may be present in children's digital experiences, whilst also recognizing that online risks do not automatically turn into harm. It also considers the latest evidence on gaming disorder, which has been highlighted as a particular area of concern by the World Health Organization.

Although evidence on the relationship between digital technology and aspects of child well-being remain inconclusive, there are a few areas – such as the impact on social relationships – where fairly strong evidence suggests that the internet can be a facilitator of positive outcomes for children. However, much of this evidence centers on communities in North America and Europe. It is difficult to draw conclusions around children's digital use in the Middle East without a stronger evidence base, and a deeper understanding of children's unique experiences with digital technology in the MENA region.

The evidence base on gaming disorder is currently weak and requires strengthening before this research can underpin policy and practice development; it is the hope that the new definition from the WHO will support such a positive development.

Ensuring that digital technologies are used productively to benefit children is a multi-sectoral effort, and as such recommendations are presented in this paper targeting various key stakeholders.

General public:

- **Parents and teachers should ensure that they are equipped with adequate digital skills** and understanding of the digital space, in order to support children's digital use.
- **Schools should integrate digital tools and a focus on digital literacy in curricula.** Research suggests that younger children may benefit from a greater curricular focus on digital skills development, including operational and transferable skills.

Policy makers:

- **Children's voices should be central in research and policy debate around their internet use.** Adult-centric assumptions often guide our understanding of whether internet use is positive or negative for children's well-being. Generating evidence directly with children is key to effective policy development in this area of work.

Researchers and donors:

- **Further research and baseline evidence on children's internet use in the MENA context is needed.** An important next step to inform the development of policy and practice in the MENA region is to gather high-quality comparable data on children's online experiences.
- **The new WHO definition of gaming disorder could be a starting point for improved research on this topic.** This will support researchers in developing a better, more nuanced understanding of the potential for problematic internet use among young people.

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1. INTRODUCTION AND SETTING THE SCENE

1. Introduction and Setting the Scene

Childhood is a critical period for physical, cognitive, emotional and social development that can influence the trajectory of health and wellbeing during adulthood. A child's external environment has a large influence on their development and wellbeing (Kessler, Berglund, Demler Jin, Merikangas & Walters, 2005), which in today's digital age inevitably includes the time children spend online and use digital technologies.

Over the past decade, the internet has become fundamental to the daily lives of millions around the world. The central role of digital technology is arguably more pronounced for children and young people who continue to go online at a younger age and spend more time online (Livingstone et al., 2011). Data collected between 2017 and 2019 with children in 19 European nations showed that in most countries, time spent online has almost doubled since 2010 (Smahel et al., 2020). The rapid increase in screen time has been a major concern by adults around the world; concerns over how children's internet use is affecting their social relationships and their mental and physical health are often at the forefront of discourse around children's digital engagement.

While studies from North America and Europe point to similar trends in children's internet access and use over time, research from the Middle East and North Africa (MENA) remains limited. Existing data on adult internet users in seven Arab countries indicates that the region is becoming increasingly connected; internet penetration rates are increasing among Arab youth (18 to 25 years), rates of smartphone adoption are on par with those of the United States especially in Gulf nations, and screen time continues to increase each year (Dennis, Martin & Hassan, 2019). It is therefore plausible that younger children in MENA who grew up with digital technology fully integrated in their lives are even more immersed in the digital world than those aged 18 and above.

In this paper, we review existing evidence around children's digital use and well-being. We pay particular attention to the literature around risks that children might encounter online. However, it is worth noting that engaging in risky online activities does not automatically result in harm for children (Livingstone, Kardefelt-Winther, & Saeed, 2019; Smahel et al., 2019). It is therefore important to gain a better understanding of which behaviors or activities can result in harmful outcomes and why some children are more likely to be harmed than others.

But while the negative aspects of the digital world are important to address, there remains a disproportionate focus on online risks compared to the benefits that the internet offers children. The internet can be an important tool in realizing several of children's rights – as laid out in the United Nations Convention on the Rights of the Child (UNCRC) and the new General Comment on children's rights in relation to the digital environment. The ongoing COVID-19 pandemic and our increased reliance on technology for education has further highlighted the benefits that the internet can afford those children who have access, while also exacerbating existing concerns over children's screen time and their future well-being.

This paper provides a balanced representation of research on children's internet use from a wide range of recent studies conducted around the world, considering the possible risks and opportunities that young people might experience online. We provide recommendations for how to best support children in mitigating harm from online risks and how to take advantage of opportunities. Given the limited research with children from the MENA region, we conclude that national comparative baseline studies are needed to provide evidence for policies and interventions.

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2. CHILDREN'S ACCESS TO DIGITAL TECHNOLOGY: WHAT THE EVIDENCE SAYS

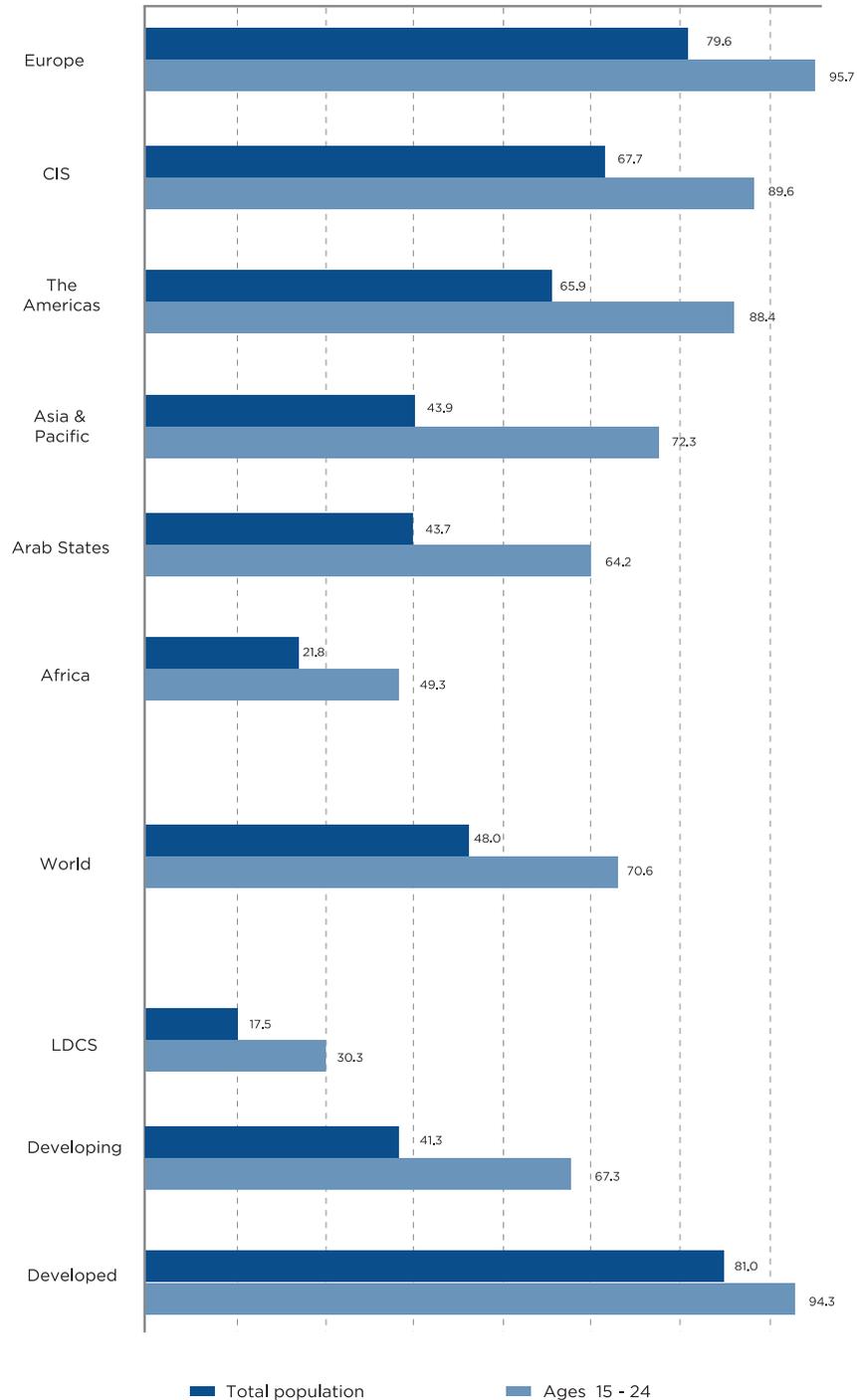
2. Children's Access to Digital Technology: What the evidence says

Available evidence indicates that children under the age of 18 account for an estimated one in three internet users around the world, with 15 to 24 year-olds being the most digitally connected group (Livingstone, Carr & Byrne, 2016). Around 71 percent of young people worldwide are internet-users compared to 48 percent of the world's population. The highest reported percentage of internet users in this age group is in Europe where 97 percent of 15 to 24 year-olds are internet users --much higher than the 80 percent global average. In Arab states, data from 2017 indicates that about 64 percent of youth aged 15 to 24 (comprising 44 percent of the total population) are online (see Figure 1) (International Telecommunication Union, 2017). However, given the rapid acceleration in infrastructure development and improved access, this figure may be considerably higher today. Indeed, digital technology is becoming ever more present in the lives of young people in the MENA region, with nine out of 10 young Arabs using at least one major social media channel daily. This number can vary significantly within the MENA region, with Gulf nations having much higher internet use rates compared to North Africa and the Levant (Radcliffe & Abuhmaid, 2020).



Figure 1.

Proportion (%) of individuals using the internet, by age group, 2017



Source: ITU. Note : * Estimates CIS refers to the Commonwealth of Independent States . Proportions in this chart refer to the number of people using the Internet , as a percentage of the total population , and the number of people aged 15-24 using the Internet , as a percentage of the total population aged 15-24, respectively.

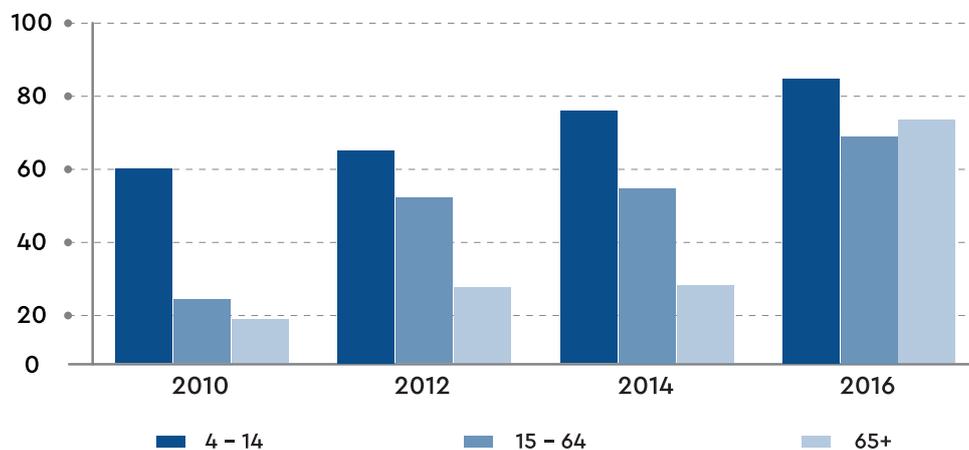
In Qatar, 1.8 million people (aged four and above) were active internet users in 2016 (out of a population of approximately 2,6 million in 2016); the proportion of the population using internet in the youngest age cohort (four to 14) was 85 percent (Figure 2, Qatar Ministry of Development Planning and Statistics, 2017). A survey by Qatar’s Ministry of Transport and Communications showed that the majority of youth in Qatar own their own digital devices; 80 percent owned a smartphone; 72 percent a laptop; 69 percent a tablet (Ministry of Transport and Communications, 2017). As in other parts of the world (see Kardefelt-Winther, Livingstone, & Saeed, 2019) children in Qatar are most likely to use the internet from their homes.

The same study also indicated that 100 percent of Qatari youth (age 12 to 17) have access to the internet, and that the majority of Qatari youth use their mobile phones for entertainment activities such as streaming videos and socializing on social media, similar to how young people in other countries around the world use the internet (Kardefelt-Winther, Livingstone & Saeed, 2019; Smahel et al., 2019; Mascheroni & Olafsson, 2016).

Due to the widespread use of the digital technology in Qatar and almost universal access, it is understandable that parents and government are concerned about online risks to children, as well as opportunities. However, given the limited evidence around children’s internet use in Qatar and the MENA region more broadly, the extent to which the online environment poses risks and provides opportunities for children in the region is difficult to assess.

Figure 2.

Percentage of population in Qatar using internet by age group (2010 - 2016)

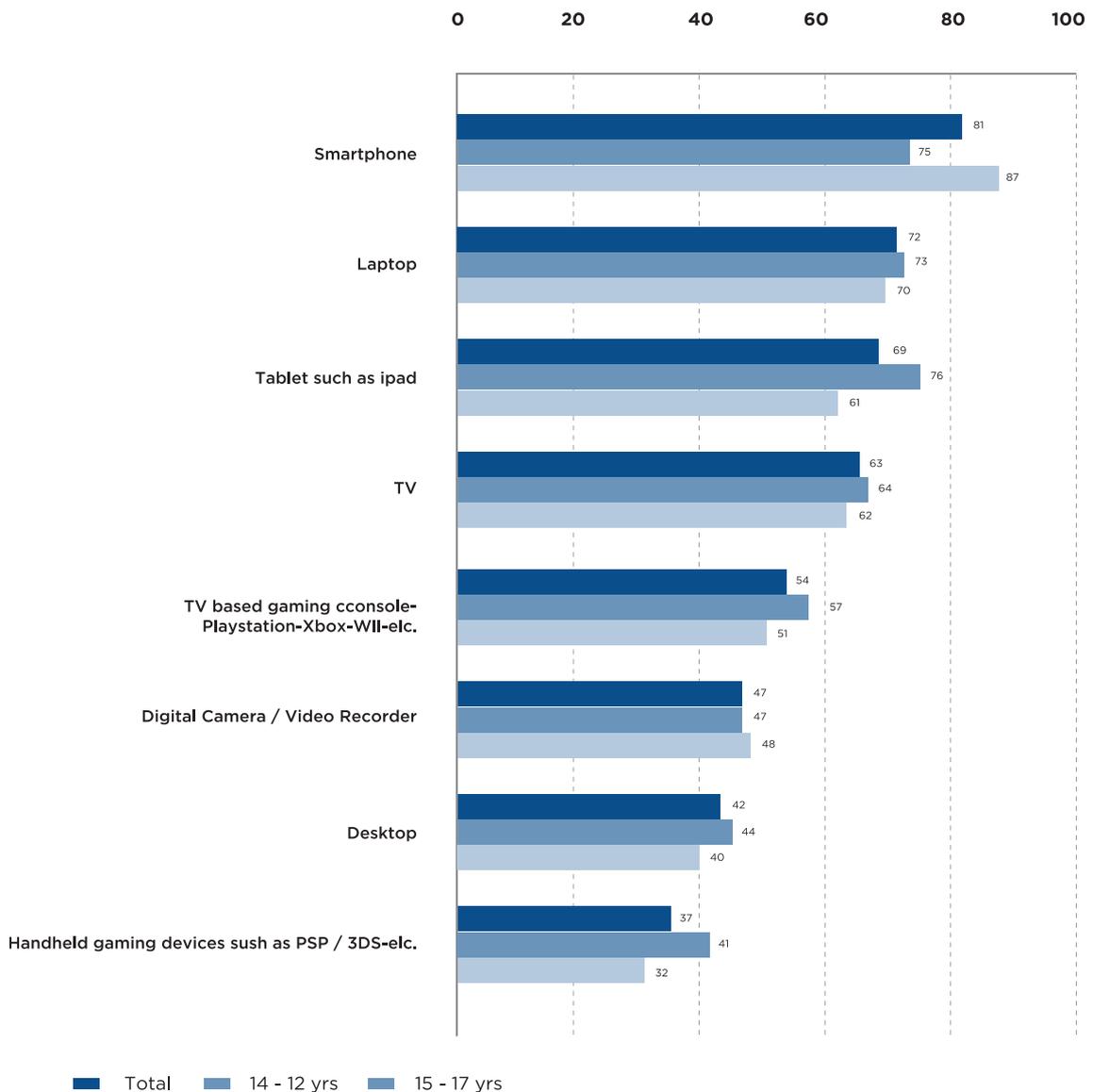


Source: Qatar Ministry of Development Planning and Statistics (2017), Qatar Social Statistics 2007-2016

In Qatar, smartphones are the most popular device among youth aged 12 to 17, who spend twice as much time on their smartphone than on any other device (Figure 3). In fact, smartphone ownership among young people in Qatar (81 percent) is higher than in the United States (73 percent) and in the United Kingdom (69 percent). Young Qataris also access a wide variety of social networking sites, with Facebook being more popular among boys, and Twitter among girls (Qatar Ministry of Transport and Communication, 2017).

Figure 3.

Percentage of children who own digital devices in Qatar



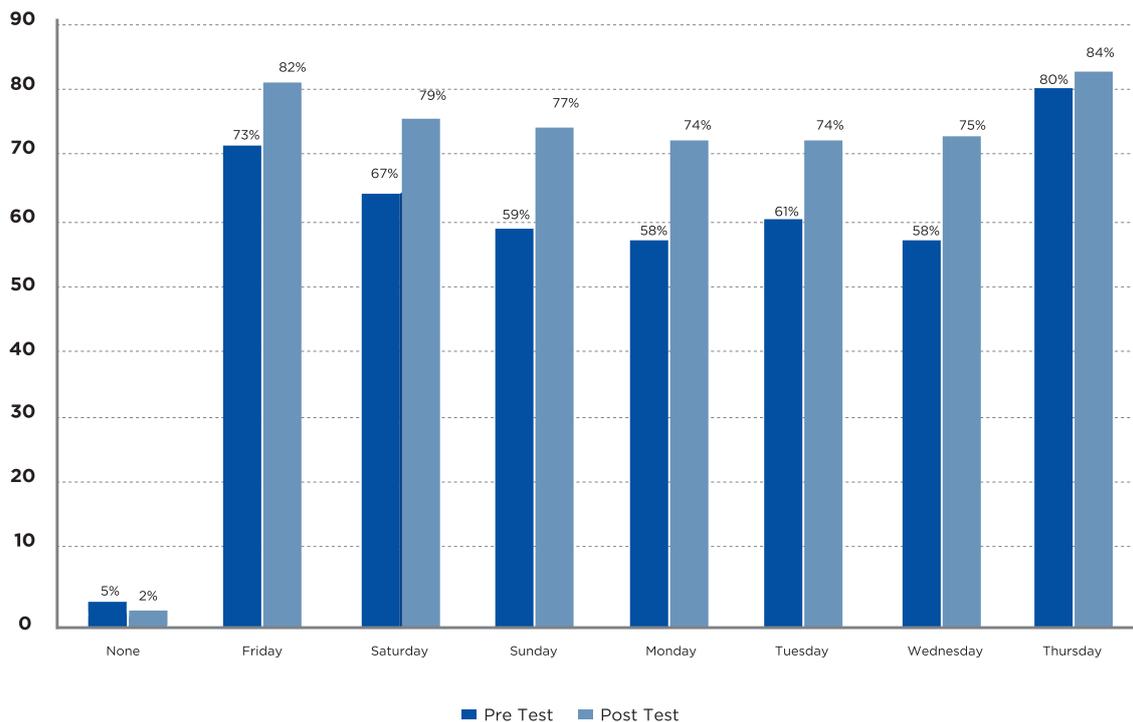
Source: Qatar Ministry of Transport and Communication (2017), *Qatar's Digital Natives: A deeper look into the every days use of technology by youth in Qatar.*

Children’s increasing access to digital technologies over the past few decades has been accompanied by an increase in children’s screen time (Kardefelt-Winther, 2019). Research from OECD countries in 2015 showed that on average, children spent more than two hours online on weekdays, and more than three hours on weekends, which seems to be the case for children in Europe also in 2019 (see Smahel et al., 2020).

In the MENA region, only a handful of studies have documented the nature of children’s internet access or their screen time. Available findings suggest similar trends to other regions of the world. Saquib (2020) and Al-Hazzaa et al. (2014) found that 84 percent of boys and 91 percent of girls in Saudi Arabia spent more than two hours online per day. A recent study investigating the effects of internet use on the health of Saudi and Egyptian teenagers found that more than two-thirds of Saudi and Egyptian students (87 and 70 percent respectively) use the internet daily. Forty-three percent of Saudi students spend three hours or more online, almost double that of Egyptian students (17 percent). In Qatar, young people aged 12 to 17 spend an average of 3.1 hours on their smartphones per day (Qatar Ministry of Transport & Communications, 2017).

Figure 4.

Percentage of children who use the internet, by day, in Qatar (before and during the COVID-19 lockdown)



Source: Doha International Family Institute, Qatar Foundation, 2020

Due to the COVID-19 pandemic, there has been a rise in our reliance on digital technology in order to keep children learning, entertained, and connected to the outside world. A recent study on adolescent wellbeing in Qatar before and during the COVID-19 pandemic found that the proportion of adolescent who used the internet daily for social activities increased from 67 percent to 74 percent during the pandemic, (Doha International Family Institute, forthcoming). The study also shows a decrease in the percentage of adolescents who did not engage in social activities online (from eight percent to six percent during the pandemic, respectively) suggesting that some adolescents who had not used the internet for social activities before, started doing so during the COVID-19 pandemic. There was also a decrease of three percent in adolescents who “always” preferred to use the internet over spending time with others, whereas the percentage of adolescents who “mostly” and “rarely” preferred to spend time on the internet rather than with others increased slightly from 38 percent to 41 percent before and during the pandemic. Thus, there was an increase in young people’s usage of digital technology in Qatar during the pandemic especially for social activities, in line with findings in Europe (see Vuorikari et al., 2020).

It is important to note that research on children’s online use has not kept pace with the rapid spread of digital technology and developments in children’s online experiences. This makes it more difficult to develop dynamic policies capable of mitigating online risks and capitalizing on opportunities within the digital space. Gaps in our understanding about how children feel about their experience of connectivity – including their perceptions of risks – have been identified as a further limitation to our ability to protect and support them (UNICEF, 2017b).

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3. CHILDREN'S USE OF DIGITAL TECHNOLOGY AND WELL-BEING OUTCOMES

3. Children's use of Digital Technology and Well-being Outcomes.

Discourse around children's internet use has historically been polarized and centered on the negative impact of digital use on children's well-being. It has not always accounted for online activities and resources that might benefit children. This includes providing access to health information, support networks, and the ability to stay connected with friends and family. In the wake of the COVID-19 pandemic, understanding the relationship between children's internet use and well-being is even more crucial. This section will discuss the positive and negative effects that internet use might have on children's well-being based on the latest evidence, including insights from two literature reviews conducted by the UNICEF Office of Research – Innocenti (Kardefelt-Winther, 2017) and the London School of Economics and Political Science (Stoilova, Livingstone, & Khazbak, 2021). Where possible, findings from the Middle East and North Africa (MENA), and from Qatar specifically, will be highlighted.

Terminology and assumptions: There is no universally accepted definition of well-being, but it is often considered a multi-dimensional concept. We will focus on the following common dimensions of well-being and their relationship to digital use and screen time: social relationships, mental health, and physical health. This section also uses a broad definition of digital technology that encompasses various digital devices and an array of activities from playing video games, to using social media or searching for information online.

3.1. Digital use and social relationships

The way we view the role of the internet in our daily lives has evolved over the past two decades, especially when we consider the internet's role in creating and maintaining social relationships. Early research suggested that the time children spend on one (digital) activity sacrifices time that can be spent on other important activities like socializing or exercising (see Neuman, 1988). This 'displacement hypothesis' proposed that speaking to people online might replace an adolescent's existing in-person relationships with weaker social connections forged online (Nie et al., 2002; Kraut et al., 2002). However, with the continuous evolution in the way we use digital technologies, researchers now propose that children use the internet not to abandon their existing social relationships, but rather to enhance and fortify them (Valkenburg & Peter, 2007a; Bryant et al., 2006).

Recent studies have found that children's social relations can benefit from digital communications (Davis, 2013, 2012; Subrahmanyam & Smahel, 2011; Valkenburg & Peter, 2011; Vossen & Valkenburg, 2016). A survey of eight to 18 year-olds in the United States found that children spend more than 40 percent of their time online communicating with others (Rideout et al., 2010). Adolescents have varying motivations and psychological characteristics –like extraversion or introversion– which indirectly affect online friendship formation through other factors like time spent socializing online and self-disclosure (sharing one's personal information or experiences with others, often seen as an important part of forming friendships) (Peter et al., 2005). This might be because children who already enjoy strong social skills are well-positioned to further strengthen these relationships via their digital and social media use (the rich-get-richer theory) (Lee, 2009), or that children who are isolated and have weaker social skills are more likely to use the internet to develop friendships in a safer environment (the social compensation hypothesis) (Bonetti et al., 2010; Schneider & Amichai-Hamburger, 2009).

A longitudinal study of 14 to 17 year-olds in Germany suggests that use of social media can impact self-esteem and well-being as it plays a role in peer acceptance and interpersonal feedback on the self, and because it allows a degree of control of one's environment. The authors found that initiating relationships online had a direct positive impact on making friends offline and suggested that social media could act as a "training ground" for relationship building, as online interactions could be perceived as safer than face-to-face interactions (Metzler & Scheithauer, 2017, p. 10). Similarly, another study from Belgium found that online self-disclosure was associated with higher emotional support from friends (Vanden Abeele et al., 2017).

Some evidence suggests that online socializing is linked to learning opportunities, especially in countries where this is facilitated by the education system. Children can use social media to manage or engage with homework activities (Blair et al., 2017), a practice that may have increased due to COVID-19. Several studies have found that when time spent on social media is used for studying, it is associated with better school performance overall (Sampasa-Kanyinga et al., 2019; Kim et al., 2017; Badri et al., 2017). Importantly, one of these studies found that social media use is negatively related to school performance if it is not used for study-related activities (Sampasa-Kanyinga et al., 2019).

Although digitally-facilitated friendships might seem foreign to older generations, this is one of the few areas around children's digital use and well-being where there is fairly strong evidence –albeit predominantly from North America and Europe– that the internet can be a facilitator of positive online interactions among children. The literature around Arab adolescents' digital use and how this influences social relationships and friendship formation remains scarce. There is a myriad of motivations, individual characteristics, and cultural factors that make it difficult to generalize about Arab children's social well-being based on the existing literature. Further research from the MENA region could usefully focus on how internet use affects children's social relationships and the factors that enable positive engagement.

3.2. Digital use and mental health

New media adopted by children and adolescents has been criticized for potentially affecting mental health negatively. Although children's internet use has not escaped such criticism, research on digital use and children's mental health remains inconclusive with mixed findings. Some studies show a positive relationship between internet use and depressive symptoms (Ikeda & Nakamura, 2014; Bezinovic et al., 2015) or that mental health is negatively affected by sleep loss or withdrawal due to high levels of digital use (Hokby et al., 2016; van der Schuur et al., 2019). Others argue that the internet may exacerbate self-harm tendencies among children with a history of self-harm, due to easily accessible images and online communities that normalize and encourage these behaviors (Jacob et al., 2017; Patchin & Hinduja, 2017).

A study by Vannucci and McCauley Ohannessian (2019) found that children who frequently used social media were more likely to experience mental health problems (see also Odgers & Jensen, 2020). Others found that well-being outcomes differed depending on whether children engaged in 'active' (e.g. interacting with friends) or 'passive' (e.g. monitoring others' profiles) Facebook use. The authors found that adolescents engaging in passive Facebook use were more likely to report depressed moods while those who used Facebook actively were more likely to view their online social support mechanisms positively, and were less likely to report depressed moods.

There is also evidence of a positive relationship between digital use and mental well-being through accessing online mental health resources or support networks (Stoilova, Livingstone, & Khazbak, 2021; Nikolaou, 2017; Hinduja & Patchin, 2019). Although there are many gaps in our understanding of Qatari adolescents' use of digital technologies, one study found that mental health apps were the most popular type of health-related app among Qatari teens, with one in three respondents using them (Schoenbach et al., 2017). More research is needed to understand why children decide to use these apps in the first place, the nature of these behavioral changes, and whether the changes were long-term or only temporary.

One of the most robust studies on this topic, from the UK, found that a moderate amount of internet use can have a positive impact on mental well-being, while too much internet use or none at all can have negative effects on mental well-being (Przybylski & Weinstein, 2017). In this study, children who spent between one to two hours online per day reported the highest positive mental well-being outcomes. Even if they spent more time online, the negative impact on mental well-being was minor. The authors also note that the nature of this relationship changes based on the type of activity or devices used. For example, mental well-being outcomes began to drop among children who spent more than four hours watching TV or using a computer. In contrast, the cut-off for mobile phone use was closer to two hours (*ibid*; see also Przybylski et al., 2020). Given the various individual characteristics that impact the relationship between time spent online and well-being, it is not possible to prescribe a certain number of hours that definitively delineates moderate or excessive digital use for all children.

Studies that account for factors like friendship quality found no association between online use and feelings of depression among children who reported having medium or high-quality friendships. The opposite was true for children with low-quality friendships. In line with the social compensation hypothesis, when children with low-quality friendships interact with others online, they seem less likely to report feelings of depression. Others find that digital self-harm might be associated with offline factors like experiences of bullying, drug use and delinquency, rather than internet-related experiences per se (Stoilova, Livingstone, & Khazbak, 2021).

This echoes arguments that the internet is not inherently good or bad for children's well-being and that screen time is only one small part of the equation. Rather, what is more important to understand is how children use the internet and why (Verduyn et al., 2017). For example, understanding why some children with lower psychological well-being choose to use the internet to facilitate harmful behaviors while others use it to seek help could shed light on how we can use the internet as a positive tool to support children with certain vulnerabilities in the future (Odgers, 2018).

Overall, the existing literature around the nature of the relationship between screen time and mental well-being remains inconclusive, likely due to recurring conceptual and methodological limitations (see subsection 4.5.). It is important to highlight again that the discussion above is largely based on evidence from Europe and North America, with some evidence from Asia. Children from other regions, particularly the MENA region, remain largely unheard. The evidence base around general internet use patterns among Arab youth (aged 18+) continues to grow (see Northwestern University in Qatar, 2019; ASDA' A BCW, 2020). However, studies around children's internet use in the region and its impact on mental well-being are scarce. More often than not, research tends to focus on addictive/disordered use and its impact on mental health without focusing on regular internet use enjoyed by a vast majority of children (see section 5).

3.3. Digital use and physical health

There are often concerns around internet use leading children to become more sedentary and to neglect their physical health. At least two studies have found that time spent online was associated with reduced physical activity (LeBlanc et al., 2015; Iannotti et al., 2009). However, both studies found that the effect sizes were small, suggesting that other factors in children's lives might play a greater role in physical health. While some studies find a positive association between digital use and sedentary behavior, other studies suggest that this is not a direct relationship. It is difficult to determine cause and effect, given that these studies are cross-sectional in nature, making it unclear whether children who are already inactive spend more time online or vice versa.

As highlighted previously, several of the studies on physical health use a one-dimensional measure of internet use: time spent online. These studies don't differentiate between the types of devices used, or the online activities children engage in --a weakness that several researchers have highlighted (Straker et al., 2013; Sisson et al., 2010; Kautiainen et al., 2005). A study in Finland by Straker et al. (2013) confirms that these factors, in the context of using devices and online viewing, could have impacts on physical health. Their research shows that while watching television had a weak positive association with being overweight among girls, gaming had no such effect. Other studies demonstrate that the impact of screen time on physical activity varies depending on gender, age and nationality (Melkevik et al., 2010). Of the limited longitudinal data in this field, one study of 11 to 13 year olds suggests that reducing the time children spend online or with screens does not automatically lead to an increase in physical activity (Gebremariam et al., 2013). In other words, internet use does not displace time spent exercising. Instead, other factors like a lack of interest or motivation to exercise may be more relevant. The authors therefore suggest that encouraging children to be physically active and adopt healthy diets --independently of how long they spend online-- could be a more effective approach.

Recent WHO guidelines (2019) on physical activity, sedentary behavior, and sleep for children under five years of age reported results from a systematic review on the relationship between screen time and adiposity (being severely overweight), cognitive or motor development, and psychosocial health. The review found negative or null relationships between screen time and these indicators and concluded that evidence quality was moderate to very low. Even so, the guidelines recommend reduced sedentary screen time for children under five years of age, ideally no more than one hour per day. Replacing additional sedentary screen time with moderate-to-vigorous physical activity is likely improve health indicators in children.

COVID-19, the internet, and Well-being

Given our increased reliance on the internet during the COVID-19 pandemic and lockdowns, there is concern over the impact of increased screen time, particularly on children. A recent online survey of children and parents in 11 European countries found that children are spending a significant portion of their day online –between 5.8 and 7.6 hours in a typical weekday (Vuorikari et al., 2020). This change is understandable, especially as more than half of children surveyed reported a greater workload at school compared to before the lockdown. This would explain why, in all 11 study countries, children spent almost half of their time online on school activities.

The drastic increase in screen-time is understandably alarming. Limiting children’s internet use outside of remote learning may seem necessary. However, during lockdowns, the additional time that children spend online outside of remote learning might be their only opportunity to access pursue normal and familiar aspects of their daily lives, like socializing with friends, exercising, or playing games --all activities that could benefit their well-being.

We should recognize the value that digital technologies could have in mitigating the harms of social and physical isolation. Instead of reducing children’s time online, it could be more beneficial to encourage children to be active indoors or (if possible) outdoors. As the lockdown period has demonstrated, the internet could be a tool to keep children active through virtual exercise classes. The internet can also be a vital connection to the outside world. A study examining social isolation and adolescent wellbeing in the context of national lockdowns argues that digital technologies might mitigate some of the risks of social isolation, which can be especially damaging during adolescence when there is an increased need for peer-interaction (Orben et al., 2020).



4. EXCESSIVE USE AND GAMING DISORDER

4. Excessive use and Gaming Disorder

The increase in digital technology use across the globe has raised concerns over excessive use and its negative impact on health and well-being. Such behavior applied to digital technology or digital activities has been given different labels, such as 'excessive use', 'addictive use', 'pathological use', 'compulsive use', or 'disordered use' (Kardefelt-Winther, 2017). There is still no consensus on how to define excessive use or how to measure it, partly because how much is 'too much' varies by age, culture and life circumstances (Griffiths et al., 2016). Some researchers believe that 'addiction' or 'disorder' is a useful term to describe excessive use of digital technology (Saunders et al., 2017), while others have cautioned against using medical concepts to describe such concerns (Van Rooij et al., 2018; UNICEF, 2017).

A range of studies show that people can use the internet or play games intensely for long periods of time without suffering from addictive or disordered use (Charlton, 2002; Przybylski, Weinstein, & Murayama, 2016; Hygen, Skalická, et al., 2020; Billieux, et al., 2013; Király Tóth, Urbán, Demetrovics, & Maraz, 2017).

UNICEF (2017) has suggested that labelling excessive use as an addiction may simply be a way to express a more general concern around the impact that disagreements around screen time are having on family dynamics. In this respect, the tension around screen time may be the latest iteration of generational tension. This proposition has some support in research but would benefit from further exploration with family studies (Nielsen, Favez & Rigter, 2020).

The World Health Organization (WHO) recently included a diagnosis for 'Gaming Disorder' in its International Classification of Diseases (World Health Organization, 2018), to help countries systematically assess and monitor data on unhealthy use of videogames. The WHO suggests that in order for gaming to be 'disordered', it should be characterized by impaired control over gaming, increasing priority given to gaming over other activities to the extent that gaming takes precedence over other interests and daily activities, and continuation or escalation of gaming despite the negative consequences. The behavior pattern must be of sufficient severity to result in significant impairment in personal, family, social, educational, occupational or other important areas of functioning, and would normally have been evident for at least 12 months.

While no consensus exists on the causal factors for addiction/disordered use, there is broad agreement that it is not directly caused by a substance or an activity. Rather, it seems to be a consequence of multiple interacting individual and environmental factors. This suggests that the claim that time spent on digital technology alone could cause children to become addicted is likely to be incorrect, and an over-simplification of multiple complex processes.

A rapid review, conducted by the UNICEF Office of Research, assessed peer-reviewed articles on gaming disorder published between 2013 and 2019. The results covering 90 articles on gaming disorder, will be briefly summarized here together with additional recent literature provided via expert consultations.

4.1. Prevalence of gaming disorder

A recent systematic review and meta-analysis of prevalence estimates, from 53 studies conducted between 2009 and 2019 across 17 countries, found that the prevalence of gaming disorder was 3.05 percent. However, studies used a wide range of assessment scales and the choice of the scale heavily influenced the prevalence estimate (Stevens, Dorstyn, Delfabbro, & King, 2020). The authors noted significant measurement and sampling issues in these studies, which makes the estimate unreliable.

Considering some individual studies, prevalence estimates vary, ranging from 1.16 percent of German adolescents (Rehbein, Kliem, Baier, Mößle, & Petry, 2015), to 2.5 percent in Slovenians aged 12 to 16 (Pontes, Macur, & Griffiths, 2016), to 7.7 percent in 11-18 year-olds in Spain, and 14.6 percent of 11 to 18 year-olds in Great Britain (Lopez-Fernandez, et al., 2014). While not focused on adolescents, a large-scale pre-registered cross-national study found the disorder to be present in 2.6 percent of 18 to 24 year olds from the United States, United Kingdom, Canada, and Germany (Przybylski, Weinstein, & Murayama, 2016). This variation is consistent with the results of another systematic review of 50 studies which found the global prevalence to vary between 0.7 percent to 27.5 percent of the population (Mihara & Higuchi, 2017). Another review of 27 articles found that estimates varied between 0.7 percent and 15.6 percent, with an average of 4.7 percent (Feng, Ramo, Chan, & Bourgeois, 2017). A study on problematic internet use in Qatar from 2013 suggested the overall prevalence to be 17.6 percent (Bener & Bhugra, 2013), but this estimate should be considered with caution.

As suggested in the recent meta-analysis by Stevens and colleagues from 2020, the wide variation in prevalence estimates may be a consequence of researchers' use of different scales to measure gaming disorder. A systematic review from 2020 of screening and assessment tools for gaming disorder showed that at least two new scales have been published annually since 2013, finding a total of 32 different gaming disorder assessment scales used across 320 articles (King et al., 2020). A gold standard assessment scale should be developed using the WHO definition before conducting further population-level research.

4.2. Symptoms of gaming disorder

Most articles that have explored the symptoms of gaming disorder have relied on the proposed classification of 'Internet Gaming Disorder' in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) from 2013. The symptoms proposed in DSM-5 are significantly different from those proposed by the WHO (see Table 1), and were met with a mixed response by the research community.

Table 1.

Symptoms for Internet Gaming Disorder/Gaming Disorder in DSM-5 and ICD-11
(Wang, Ren, Long, Liu, & Liu, 2019)

DSM-5 Internet Gaming Disorder (2013)	ICD-11 Gaming Disorder (2019)
Being completely focused on the game	Impaired control over gaming
When stopping the game, symptoms such as anxiety and irritability appear	Increased priority given to gaming over other activities to the extent that gaming takes precedence over other interests and daily activities
The time spent playing games gradually increases	Continuation or escalation of gaming despite the occurrence of negative consequences
Unable to reduce the amount of time spent playing the game	Significant impairment in important areas of functioning, normally have been evident for at least 12 months.
Loss of interest in other activities and hobbies	
Unable to stop playing despite understanding that gaming has a negative impact on life	
The person will hide the amount of playing time from family members or important others	
Gaming is used to escape negative emotions or life problems	
Loss of functioning in work, studies or social life due to the gaming	

Several DSM-5 symptoms were excluded from the WHO definition of gaming disorder due to their limited clinical validity, clinical utility, and prognosis value. One persistent challenge is the difficulty in identifying symptoms that adequately distinguish high involvement (e.g., as a hobby or passion) from pathological involvement (gaming disorder), which is particularly important when the potential problem behavior is a popular hobby like gaming (Billieux, Flayelle, Rumpf, & Stein, 2019).

A large number of studies have explored how symptoms might present in individuals, which symptoms are most common amongst gamers, and how they correlate with functional impairment or psychological difficulties. The majority of studies exploring symptoms of 'Internet Gaming Disorder' have been survey-based and cross-sectional. Unfortunately, studies have used different measurements or different study populations which makes generalizable conclusions problematic.

While many cross-sectional studies have shown associations between gaming disorder and negative health outcomes, a recent longitudinal study from Norway found that an increase in gaming disorder symptoms over time did not predict an increase in symptoms of other psychiatric disorders (Hygen et al., 2020). The study concluded that heavy involvement in gaming during childhood, even to the extent of acquiring proposed symptoms of gaming disorder, does not seem to result in increased mental health problems over time, which mirrors findings from two other studies on the topic (Thege et al., 2015; Przybylski, Weinstein, & Murayama, 2016).

4.3. Treatment and outcomes of gaming disorder

A high-quality international systematic review focused on gaming disorder treatment (King et al., 2017), found that treatment studies are few, that there are inconsistencies in the definition, diagnosis, and measurement of gaming disorder, and that studies lack randomization, blinding and control groups. These studies also provide insufficient information on recruitment dates and sample characteristics. The systematic review notes that study design quality for treatment studies has not improved over the last decade, indicating a need for greater consistency and standardization in this area of research. This is clearly an area that is in need of more research.

There are a few examples of parent-based programmes that have been developed to treat gaming disorder (e.g. Li et al., 2019; Krossbakken et al., 2018). While the focus on parenting seems like a good point of intervention, the studies found mixed results. The first (and smaller) study by Li and colleagues (2019) found that the intervention had some general positive impact, while results from the second more robust study by Krossbakken and colleagues (2018) showed the opposite –that families who participated in the intervention reported worsened outcomes.

This brief review finds limited global understanding of gaming disorder, including prevalence, measurement, neurobiological correlates, symptoms, correlates and effective treatment options. The existing evidence base, while considerable in scope, has major limitations that undermine the reliability of findings. Challenges with existing research notwithstanding, symptoms of gaming disorder have been observed in a small minority of people. However, video games provide considerable value in the lives of young people, and most can engage intensely without experiencing any negative consequences. In cases where significant problems occur, these should be taken seriously and referred to appropriate professional support.



5. RISK FACTORS AND OPPORTUNITIES

5. Risk Factors and Opportunities

The internet can be a benefit to children, as well as exposing them to risk of harm, depending on the context of their usage and wider life circumstances. While online risks often seize the spotlight in media and general discourse, the greater reality is that the internet offers children a mixed bag of opportunities, skills and risks.

Entertainment activities such as watching videos and playing online games are the most popular among children, particularly the youngest. A comparative report of 11 countries (Kardefelt-Winther, Livingstone, & Saeed, 2019; Livingstone, Kardefelt-Winther, & Saeed, 2019) found that entertainment activities are associated with positive skills development and are thus a crucial first step for young children in the digital space.

Digital competencies can differ quite drastically from one country to the next, but not in all regions of the world (Livingstone, Kardefelt-Winther, & Saeed, 2019; Smahel et al., 2020). While the countries in the Global Kids Online project, predominantly situated outside of Europe, showed a clear pattern in which older children had stronger skills than younger children, age differences were much less pronounced in Europe. The latest EU Kids Online report (Smahel et al., 2020) shows only marginal age differences in overall digital skills across most countries. However, there was a consistent age gap when it came to assessing the reliability of online information both in countries within and outside Europe, which indicates a need for earlier media literacy training.

While digital platforms can provide a space for a variety of information and knowledge-seeking, social, and entertainment activities, concerns have been raised about the adverse effects of digital use on children (OECD, 2018). Available research has documented several risks associated with children's use of digital technology and are classified as content, contact and conduct risks (see Table 1). It should be noted that risks below relate to regular internet use rather than excessive use, which is addressed in greater detail in section four of this report.

Content risks: Where children and young people are exposed to inappropriate content.

Contact: Where children and young people take part in risky communication or behaviors online.

Conduct: Where children and young people act in a way that contributes to risky content or contact.

Table 2.

Typology and examples of ICT-Related Harms

	Content Child as a recipient	Contact Child as participant in the adult-initiated activity	Conduct Child as a victim / actor
Aggression and violence	<ul style="list-style-type: none"> • Self-Abuse and self-harm • Suicidal content • Discrimination • Exposure to extremist/violent/gory content 	<ul style="list-style-type: none"> • Radicalization • Ideological persuasion • Hate speech 	<ul style="list-style-type: none"> • Cyberbullying, stalking and harassment • Hostile and violent peer activity
Sexual abuse	<ul style="list-style-type: none"> • Unwanted/harmful exposure to pornographic content 	<ul style="list-style-type: none"> • Sexual harassment • Sexual solicitation • Sexual grooming 	<ul style="list-style-type: none"> • Child sexual abuse • Production and consumption of child abuse material • Child-produced indecent images
Commercial exploitation	<ul style="list-style-type: none"> • Embedded marketing • Online gambling 	<ul style="list-style-type: none"> • Violation and misuse of personal data • Hacking • Fraud and theft • Sexual extortion 	<ul style="list-style-type: none"> • Live streaming of child sexual abuse • Sexual exploitation of children • Trafficking for the purpose of sexual exploitation. • Sexual exploitation of children in travel and tourism

Source: Burton, Patrick, Brian O’Neil and Monica Bulger, *A Global Review of Evidence of What Works in Preventing ICT-related Violence, abuse and Exploitation of Children and in Promoting Digital Citizenship*. In UNICEF. (2017b). *The state of the world’s children 2017: Children in a digital world*. UNICEF. ISBN: 978-92-806-4930-7.

Other risks might include invasion of privacy in which children sharing their private information, photographs and communications could lead to potential abuse and inappropriate contact. A more recently discussed risk relates to a range of contracts that children may sign or agree to as part of their online activities (UNICEF, 2019; OECD, 2017 & 2020; Livingstone et al., 2011; Livingstone, 2020).

While it is important to identify and manage these risks, it is also helpful to remember that risk does not always result in harm. Some risky behaviors can even lead to positive outcomes for children. For example, research from Global Kids Online and EU Kids Online across 30 different countries demonstrates that between 80 and 95 percent of children who met someone new online and later went to meet that person face-to-face, reported their encounter as a neutral or happy experience (Livingstone, Kardefelt-Winther, & Saeed, 2019; Smahel et al., 2020).

This distinction is not intended to downplay the potential severity of some online risks, but it allows for a more balanced response that focuses on the most common and harmful risks. The challenge for policy makers and parents is to minimize harm for children, especially the youngest, while allowing them to benefit from the online environment. Research from many countries has demonstrated that children who engage in a wider range of online activities are indeed exposed to more risk, but also have stronger digital skills (Kardefelt-Winther, Livingstone & Saeed, 2019). This means that placing blanket restrictions on children's internet use in order to protect them could result in reduced digital skills development. This could place them at increased risk of harm later, or impair their ability to take advantage of opportunities.

Policies and practices aimed at the protection, inclusion, support and development of digital skills, and those seeking to foster digital literacy and resilience are essential, and must be developed and implemented (Gottschalk, 2019). This includes considering social and cultural dynamics at the country level, as well as children's own vulnerabilities and experiences, which vary among children and families. National evidence generation is therefore necessary to ensure that governments and other stakeholders have access to the right information when developing their policies.



6. CONCLUSION AND RECOMMENDATIONS

6. Conclusion and Recommendations

Growing up around digital technology has inevitably affected the ways in which children socialize, play, seek out information, and learn. Despite the growing body of international research in this field, there is much to be learned about children's internet use, particularly around motivations that underlie children's risky behavior online.

To better guide research efforts, we have highlighted the most common knowledge and methodological gaps in this field, including the underrepresentation of regions other than North America and Europe. It is difficult to generalize findings from these regions to Arab youth, especially as research increasingly indicates that children's online experiences and well-being outcomes are mediated by cultural and social context. Throughout this paper, we have aimed to include Middle Eastern and Qatari voices wherever possible, while noting that research is broadly lacking in the region.

The Global Kids Online and EU Kids Online networks have developed a comparable methodology to conduct research directly with children and their families about their online experiences. The shared methodology has been used to generate nationally representative data on children's internet use from over 30 countries within and outside Europe. A comparable methodology has also been used in the recent Disrupting Harm project conducted by UNICEF, ECPAT International and INTERPOL, in 13 countries in eastern and southern Africa, and southeast Asia. This represents an important step towards generating evidence, including children's perspectives and experiences, to inform national and global policy and interventions.

It would be valuable to conduct baseline studies on children's use of digital technology across the MENA region, using a comparable framework like the Global Kids Online methodology.

Based on the findings presented in this paper, we suggest below several recommendations and next steps.

General public:

- **To support children's internet use, parents and teachers should ensure that they are equipped with adequate digital skills and understanding of the digital space.** As the internet evolves, and young people spend more time online –especially in the context of the COVID-19 pandemic– they require guidance on how to stay safe and make the most of their time online. To effectively guide children's internet use, adults must be adequately skilled and knowledgeable in the use of digital technology, understanding both its risks and opportunities.
- **Schools should integrate digital tools and a focus on digital literacy in curricula.** Research suggests that particularly younger children may benefit from a greater curricular focus on digital skills development, from operational skills such as conducting a Google search to transferable skills like verifying the truth, reliability and quality of information. Evidence indicates that online socializing is linked to learning opportunities, especially in countries where this is facilitated by the education system (Blair et al., 2017). Other evidence shows that when time spent on social media is used for studying, it is associated with better school performance overall (Sampasa-Kanyinga et al., 2019; Kim et al., 2017; Badri et al., 2017).

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- **Parents should limit extended sedentary screen time for children under five years.** Recent WHO guidelines (2019) for children under five years of age recommend ideally no more than one hour per day of sedentary behavior, including online use. Moderate-to-vigorous physical activity is likely improve health indicators in children. As children grow older, they can increase the amount of time they spend on screens.

Policy makers:

- **Children’s voices should be central in research and policy debate around their internet use.** Adult assumptions often guide our understanding of whether internet use is positive or negative for children’s well-being. To gain a nuanced and accurate understanding of online risks, we need to leave assumptions behind, and consult quality data generated directly through the experiences of young people themselves.
- **Children’s life contexts should be taken into account when developing policies intended to minimize online risk and maximize opportunity.** While findings in this field are not always conclusive, the importance of contextualizing children’s internet use is a recurring trend in the research. In order to be effective and relevant, policies and practices must be developed and implemented that take into account cultural differences, social dynamics, family relationships and support networks. The related, accelerated change during the COVID-19 pandemic have amplified this need.

Researchers and donors:

- **Further research on children’s internet use in the MENA context is needed.** An important next step to inform the development of policy and practice in the MENA region is to gather high-quality comparable data on children’s online experiences. This is necessary to better understand the unique online experiences of Arab youth, and how to best support them and their families in navigating the digital space. This baseline research needs to be holistic in scope, and focus broadly on questions of children’s access, skills, risks and opportunities, and the ability of parents and teachers to engage and support. The Global Kids Online or Disrupting Harm methodologies would provide such an option.
- **The new WHO definition of gaming disorder should be a starting point** for qualitative clinical assessment of problem users. This evolving definition will support researchers in developing a better, more nuanced understanding of internet use among young people. Without deeper understanding, there is a risk of conflating healthy positive use --becoming more common for children of all age groups-- with harmful use, such as resulting from gaming disorder.

**CHILD WELL-BEING IN A DIGITAL AGE:
TRENDS AND OUTCOMES**



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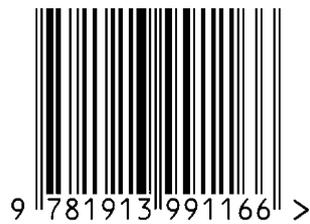
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