Adolescents' Health in the Digital Era: Exploring Opportunities, Overcoming Challenges, and Implementing Public Health Interventions

Abstract

The digital era has been characterized by quick technological developments, and it has transformed every aspect of human life. Adolescence is a period where significant physical, emotional, and social development happens and, in this phase, only habits and behaviors are formed, thus it becomes vital to take measures for a healthy foundation for adulthood. Moreover, since adolescents are among the highest users of digital platforms, including social media applications, we can leverage these platforms to inculcate healthy behaviors through a combination of digital interactions. The advances in the digital era do come with a set of challenges, which must be acknowledged and appropriately dealt with to effectively and efficiently optimize the benefits. In conclusion, in the digital era, there are ample opportunities available for applications and online platforms to improve the health standards and well-being of adolescents. The need of the hour is to overcome the existing challenges and optimize the use of available digital applications for the betterment and empowerment of adolescents.

Keywords: *Adolescents, digital, health*

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Introduction

The digital era has been characterized by quick technological developments, and it has transformed every aspect of human life, including education, health sector, industries, communication, etc.[1] As the internet and smart devices have started to reach even distant locations, these advancements have ensured that people have rapid access to information and resources.[2] In healthcare delivery, the introduction of health applications and telehealth services has significantly improved accessibility and efficiency.[3] These technological advancements have benefited people of all age groups, with particularly significant advantages for adolescents.[1-3] This presents an opportunity for the health sector to implement targeted interventions aimed at improving adolescent health.[1-3]

Significance of Addressing Adolescent Health in the Digital Era

Adolescence is a critical period for physical, emotional, and social development, during which habits and behaviors are formed that influence long-term health.[4] Adolescents are among the highest users of digital platforms, including social media, which offers a unique opportunity to promote healthy behaviors.[1,5] Further, as these digital tools can connect adolescents across international and geographic boundaries, the platform can be used to share and imbibe best health-related practices and prepare them for future technology-driven shifts.[1] In continuation, the available digital platforms can play a crucial role in meeting underserved adolescents' needs, paving the way for ensuring equitable access to health resources.[6] Engaging adolescents in health-related discussions through digital platforms can empower them to make informed decisions about their well-being.[7]

Digital Era and Adolescent Health: Opportunities

The digital era has opened up multiple opportunities for adolescents to improve their health and well-being and this phase in their lives must be smartly utilized.[5] Digital platforms provide adolescents with access to reliable, up-to-date health information, which can empower them about good nutrition, promoting mental well-being, good reproductive health, and various other topics that carry paramount

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importance for their optimal development.[4,5,7] As a matter of fact, multiple apps and online platforms (viz. Facebook, WhatsApp groups, Coursera, etc.,) are available that can help people perform mindfulness exercises, get connected to peer support networks, and facilitate access to mental health professionals in a timely manner to manage stress and mental health disorders.[8] Digital platforms can offer engaging online courses on various health topics, which are crucial for improving adolescents' health literacy.[9] Further, with the introduction of artificial intelligence, adolescents can get personalized health advice and targeted support depending on their individual needs and behaviors.[10]

With the advent of wearable and fitness applications, adolescents can improve their physical activity, monitor their vital signs, calorie intake, and nutrition, and thereby keep moving forward toward attaining their health goals.[3,11] Social media applications enable adolescents to get connected with their peers, share experiences and be a part of supportive networks that play a defining role in sustaining emotional well-being.[8,12] These online groups provide a platform for adolescents to discuss sensitive health issues (viz. mental health, sexual health, etc.) without worrying about being judged, and in this process eliminate stigma related to these topics.[13] The option of telemedicine has enabled adolescents to seek healthcare even from remote locations and the barrier of distance and accessibility has been neutralized.[14] The combination of all the above factors has equipped adolescents with the desired knowledge and has empowered them to make informed decisions about their health issues.[7-14]

Digital Era and Adolescent Health: Challenges

The advances in the digital era do come with a set of challenges, which must be acknowledged and appropriately dealt with to effectively and efficiently optimize the benefits.[15-19] Prolonged use of digital devices contributes to a sedentary lifestyle, which can lead to lifestyle disorders, musculoskeletal issues, and eye strain.[15] On the mental side, the rising incidence of cyberbullying contributes to mental health issues, including anxiety and depression, which often leave long-term scars on individuals.[16] Many adolescents indulge in the practice of excessive use of online gaming or social media platforms, which not only impacts their academic performance but even disturbs their relationships with family members and peers.[17] More often than not, unregulated content on digital platforms can spread misinformation, leading adolescents to make poor health decisions and indulge in risky behaviors.[18] Finally, there have been concerns about online scams and identity theft due to the availability of sensitive personal information online, which can compromise their safety and promote misuse of their data.[19]

Digital Tools and Improvement in Adolescents' Health: Public Health Interventions

Recognizing both the potential of digital tools and the challenges that could reduce their effectiveness, there is a definite need to implement public health interventions to leverage digital platforms for improving adolescent health.[9,10,15,16] This begins with teaching adolescents about the safe and responsible use of digital platforms, including authentic platforms to access reliable health information and avoid misinformation (digital literacy).[19] For the benefit of the masses, with a special focus on adolescents, tech companies can develop interactive apps with gamified features (such as SmokeFree Teen developed by the National Cancer Institute and ReThink) to educate and empower adolescents on different public health topics, including substance abuse prevention.[12,20] In addition, health awareness campaigns (viz. improving vaccination uptake, addressing mental health stigma, etc.) can be run across social media platforms to motivate them to adopt healthy behaviors.[5,10,12]

Further, these platforms can also be utilized to liaise with peer networks and to offer therapy to adolescents to fight against mental health issues.[13] E-learning modules on critical health topics can be introduced in the school curriculum which can be accessed via different devices and will go a long distance in improving the health of the adolescents. Further, virtual reality simulations can be employed to educate adolescents about first aid (Virtual Reality cardiopulmonary resuscitation training by the American Heart Association), response in emergencies (like Hazard Recognition Training by the Occupational Safety and Health Administration), and the consequences that might result because of the adoption of high-risk behaviors (such as driving at high speed and accidents—like Impact virtual reality, a road safety initiative in the United Kingdom).[21] Finally, artificial intelligence-driven customized health advice and live messages for adolescents exposed to distress or abuse can be initiated to guide them in these testing times.[10]

Conclusion

In conclusion, in the digital era, there are ample opportunities available for applications and online platforms to improve the health standards and well-being of adolescents. The need of the hour is to overcome the existing challenges and optimize the use of available digital applications for the betterment and empowerment of adolescents. Moving forward, healthcare providers, educators, and tech developers must collaborate to create evidence-based digital solutions that promote adolescent health while minimizing risks.

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Conflicts of interest

There are no conflicts of interest.

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