Effect of Electronic and Digital Media Use on the Health of Adolescents in Ondo City.

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ABSTRACT

The use of electronic and digital media has been a growing concern worldwide in recent years. It is associated with some health-related problems, among children and young adults. However, few studies have examined this problem in Ondo city. Therefore, this study investigated the effect of electronic and digital media use on the health of adolescents. The study used an explanatory cross-sectional design. The population comprised 174 students who were randomly selected from 6 secondary schools. The schools were randomly selected from all senior secondary schools in Ondo city. The Electronic and Digital Media Questionnaire (EDMQ) was used. Two hypotheses were tested using an independent t-test and binary logistic regression. The result showed that female adolescents have almost 3 fold the male odds of having poor health outcomes after exposure to electronic and digital media (OR: 2.61; $p<0.05$). Whereas those who mostly liked mixed channels had 78 per cent lower odds (OR: 0.22; $p<0.05$) of having poor health outcomes following exposure to electronic and digital media. The study revealed that there is a significant effect of electronic and digital media use on the health of adolescents as well as a significant difference in gender difference regarding the effect of electronic and digital media use on the health of female and male adolescents in Ondo city. The study recommended enlightenment programmes and counselling for secondary school students to address the health-related problems associated with the use the electronic and digital media

Keywords: Adolescents; Digital media; Electronic media; Adolescent health

INTRODUCTION

The Digital Age is marked by the widespread adoption of digital tools, which have been used to facilitate innovation, communication, information sharing, and commerce. There is an unprecedented development, adoption, and proliferation of new technologies such as personal computers, the internet, mobile devices, social media, and cloud computing (Gawer, 2022). These technologies have presented unarguable benefits to the global economy and population such as aiding remote working, enhancing efficient global communication and connectivity, granting access to more information, improving productivity, aiding e-commerce and online service delivery, fostering a culture of innovation and creativity, and aiding personal empowerment (Joseph, 2019).

However, the digital age also brought new challenges and risks, most general and some peculiar to members of certain demography. Some of the most common challenges identified by literature include cybersecurity threats, privacy concerns, data breaches, the proliferation of fake news and disinformation, social isolation, information overload, and addiction (He et.al, 2021; Rocha et.al, 2021). Additionally, the rapid pace of

technological change has led to concerns about job displacement and the impact on employment opportunities for many people.

In today's world, the demographic category that tends to use digital media the most is younger individuals, specifically those in the age range of 18 to 34 years old. This age group is commonly referred to as millennials and Generation Z (Nop, 2020). Members of this demographic category, who are largely adolescents and young adults, grew up with digital technology and, as a result, are more comfortable using digital platforms and devices for various purposes, including social media, entertainment, communication, and information consumption (Haddock et.al, 2022). The rapid advancement and widespread availability of electronic and digital media have revolutionized the way adolescents engage with information, entertainment, and social interactions.

There is no gainsaying that electronic and digital media play a significant role in the lives of adolescents, with many spending a substantial amount of time-consuming digital media content. This can include social media, video games, and streaming services. The ability to access a variety of information and entertainment from around the world is one of the key advantages of electronic and digital media for adolescents (Odgers & Jensen, 2020). Their perspectives may be widened, they may be exposed to various cultures and viewpoints, and they may have chances to learn and develop personally as a result. Adolescents who use digital media excessively could experience side effects, though. Addiction, decreased physical activity, restless nights, and exposure to offensive or hazardous content are a few examples (Dienlin & Johannes, 2020). Furthermore, excessive use of social media and other digital communication tools can result in cyberbullying, social isolation, and other detrimental social and emotional effects.

Despite the growth of literature on the impact of electronic and digital media use on the health of adolescents, adolescents remain exposed to an unprecedented amount of electronic and digital media, as it rapidly becomes an integral part of their daily lives (Draženović et.al, 2023). Given that adolescence is a critical period for mental health development, the impact of media use cannot be overlooked and must be consistently studied. Thus, this study examined the effects of electronic and digital media on the physical, social, and mental health of adolescents in Ondo city, to provide insights into the health status and media consumption patterns of adolescents within the unique cultural, social, and economic context of the city

Electronic and Digital Media Usage

According to Anand et.al (2022), electronic media is the communication or broadcast channel such as radio and television that makes use of electronic or electromechanical modalities for the audience to access the content. Digital media on the other hand is defined by Das (2020) as the media that are encrypted in machine-readable patterns. It includes blogs, websites, social media digital text, audio, images, and video (Das, 2020). In recent decades, there has been unparalleled development in the medium through which information is distributed to people from all walks of life. In the past, most media consist solely of radio, television, and newspapers but with the advent of digital media (Sadagheyani & Tatari, 2020), the analog mass media has to fight for a space in fact to stay relevant and in sight, leveraging the latest technologies. The percentage of the population using the Internet and Social Media keeps increasing at an unmatched range and with the frequent update of these tools, the world can only expect more hands-on mobile and immobile devices.

Currently, Statista (2023) report shows that about 5.16 billion people, representing over 64% of the global population used the internet. Of this number, 4.76 billion people are social media users. Unsurprisingly, internet usage was higher amongst individuals between the ages of 15-24 years across all regions with 98% of this demographic from Europe (Statista, 2023). This development partly owes to the global pandemic of 2020 that shook the globe and forced many including, older adults, to adopt digital media as a way of staying connected to friends and family, staying updated with the news, and "killing" boredom (Halmiton, et.al, 2020). According to Data Reportal (2023), the number of people using a mobile phone grew from 3.2

billion in 2017 to 5.44 billion people in the early months of 2023, representing an almost 70% increase in six years.

Adolescence

Although some conceptual discrepancy exists in the definition of adolescence, the United Nations contends that adolescents include people ages 10-19 years (UNICEF, 2022). According to UNICEF Data, adolescents in the world totals 1.3 billion making up 16% of the world's total population. Adolescence described as the transition period from childhood to adulthood represents a crucial time in the lives of individuals as there is a simultaneous change in their physical, social, psychological, and neurobiological systems (Ciampo & Ciampo, 2020). It is also characterized by changes in hormones which manifest in puberty-a preparation for a productive life of an individual (Vijayakumar et.al, 2018). These changes coupled with hyperactivity, exploration, the desire to meet new people, and the feeling of missing out amongst others make adolescence a vulnerable stage in the lives of individuals (Cheng et.al, 2020).

This transitory period to adulthood is also characterized by the loss of the "children" or "childhood" identity that relies on their parents or guardian to an exploration identity as posited by Dahl et.al (2018). At this stage, adolescents seek increased authority, are less interested in their parents, and are heavily reliant on their peers for information (Prinstein et.al, 2020). Dahl et.al (2018) further explained that there is increased stimulation at this stage, which encourages sexual experimentation, taking high risks, and being innocent of the pieces of advice of their parents or guardian. With the advent of electronic and digital media, there are more tools to explore adolescence and more social media platforms to communicate with peers unsupervised. This can be beneficial to adolescents because of the several opportunities the electronic and digital media avail to everyone regardless of their age or status. On the other side of the spectrum, it can be disastrous to the physical, mental, psychological, and social development of adolescents (Prinstein et.al, 2020).

In the transition to adulthood, adolescents need more nutrients, exercise, and sleep so they can stay healthy, active and prevent mental and physical deficiencies. However, according to Quante et.al (2019), most adolescents do not get the required 8 to 10 hours of sleep for a host of reasons including staying up late at night to use electronic devices, uncontrolled social media usage which leads to poor sleeping patterns, and others. Not getting the required time of sleep which is meant to improve their health including enhanced cognitive performance, social and emotional regulation, attention, and behaviour has consequences (Galvan, 2020). The consequences which can be short-term or long-term according to Orben and Przybylski (2020) are behavioural and neurocognitive problems, attention deficit, fatigue, mood swings, and suppressed opportunity for socialization.

Effects of Electronic and Digital Media on Adolescents' Health

The universally accepted definition of health was given by World Health Organization in 1948 as the state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (Larsen, 2022). Therefore, the effects of electronic and digital media on adolescents' health will encompass their physical, mental, social, and emotional health. Prinstejn, Nasi, and Telzer (2020) gave an extensive commentary on the study of digital media use and adolescent development. They ascertained that adolescents spend more time on digital media, on their smartphones, and behind laptop and computer screens. However, they reported an ambiguity and lack of clarity in the concept of digital media used by adolescents which has positive or negative consequences for them. Several researchers have employed the terms 'digital media' or 'digital technologies' to describe devices like smartphones and specific activities or platforms such as online gaming, texting, and watching YouTube (Odger & Jensen, 2020). Similarly, the term 'screen time' can encompass both traditional (e.g., television) and modern (e.g., phone, tablet) devices, as well as a variety of activities like FaceTime video conferencing, direct messaging, or engaging with

social media (George, 2021). This conceptual vagueness makes it quite difficult to determine the effects of digital media truly, but this study conceptualizes electronic and digital media as computers, laptops, tablets, Television, online radio, social media, and the internet.

Going forward, the effects of electronic and digital media on adolescents like the sides of a coin are mainly two-positive and negative. Due to sentiments and perceived consequences by observation, the negative effects of electronic and digital media are often given credence. However, Anderson and Jiang (2018) reported that digital communication made possible by digital media provides a seamless medium for adolescents to build and sustain social relationships. Prinstein et.al (2020) further argued that some adolescents cannot make friends off electronic and digital media because they come from minority groups, or are stigmatized based on race, ethnic group, gender, or sexual minority groups reportedly have communities online which enhances their social and emotional health. True to the claims of Charmaraman et.al (2020), there abounds several communities on social media platforms, and of social media, some of these communities have podcasts, websites, and vlogs that allow them to be comfortable in their skin as well as provide support for the common members who need them. Social media which is the hub for many electronic and digital media users provides community support that may have not initially existed to adolescents (Stephen and Prabu, 2019).

Nevertheless, electronic and digital media has proved to be more harmful than productive in the development of adolescents. Stiglic and Viner, (2019) argued that over time, literature has suggested that the use of digital media is associated with more negative impacts than positive. Shah et.al (2019) discovered that the use of digital media associated with a sedentary lifestyle causes obesity and poor social interaction. Although social media avails increased social interaction, it does not allow for the proper development of interpersonal skills essential for adolescent development (Kelly et.al, 2018). Sadagheyani and Tatari (2020) in their study reported that the fear of missing out and staying perfect as an online personality contributes to stress and anxiety. Asides from that, in the quest of female adolescents to maintain the body image accepted on Social Media, Rana and Kelleher (2018) contend that they hurt themselves over time mentally and in some cases physically by engaging in harmful health practices. Anand et.al (2022) also found that exposure to digital media and cyber bullying has psychological effects such as depression, low self-esteem, self-injury, and suicide amongst others. Crone and Konijin (2018) ascertained that the constant engagement on digital media with the advantage of anonymity made possible using the latest technologies, and the desire to follow up the unspoken rules amongst peers is associated with increased risk of anxiety, illegal substance abuse, paranoia, suicide attempts, and depressive behaviours.

During the pandemic, the use of digital media intensified, with more adolescents spending the bulk of their time online to stay connected to friends and news updates. In Ellis et.al (2020) study, 48% of their respondents reportedly spend over 5 hours on Social Media daily with decreased physical activity. Although it is known that the bulk of netizens are young people, Ellis et.al found a surge in the use of multiple social media platforms (e.g., TikTok, Snapchat, Instagram). Li et.al (2021) reported that 93% of their respondents worry about what will happen in the future, and 40% displayed clinical symptoms of illness anxiety. There were also increased feelings of loneliness, depression, lower levels of mental well-being, and health anxiety. Dong et.al (2020) discovered that the higher use of electronic devices and digital media platforms caused over 35% of their respondents to be addicted to the Internet. This was confirmed by Hudimova et.al (2021) that contend that young people spent all day online due to obsessive social media patterns and procrastination, and they displayed withdrawal symptoms associated with addiction upon trial to correct the addiction to digital media.

Islam et.al (2021) associated the problematic use of electronic and digital media with irregular physical exercise, poor academic pursuit engagement, depression, poor sleeping patterns, ignorance of earning opportunities and anxiety. Contrary to these negative effects of digital media use during the pandemic,

Taylor (2020) affirmed that digital media intensified the benefit of technology-facilitated conversations for teens. They were able to share how the pandemic is taking a toll on them, give support to them, and connect with peers in their local communities and on a global scale. While the positive effects of the use of digital media on adolescents' health cannot be neglected, numerous studies show that their mental, physical, and social health is more often than not, at risk (Vannucci et al., 2020; George et al., 2020).

STATEMENT OF PROBLEM

The digital age brought new challenges and risks, most general and some peculiar to members of certain demography. Some of the most common challenges identified by literature include cybersecurity threats, privacy concerns, data breaches, the proliferation of fake news and disinformation, social isolation, information overload, and addiction. Despite the growth of literature on the impact of electronic and digital media use on the health of adolescents, adolescents remain exposed to an unprecedented amount of electronic and digital media, as it rapidly becomes an integral part of their daily lives. Given that adolescence is a critical period for mental health development, the impact of media use cannot be overlooked and must be consistently studied. Thus, this study examined the effects of electronic and digital media on the physical, social, and mental health of adolescents in Ondo city, to provide insights into the health status and media consumption patterns of adolescents within the unique cultural, social, and economic context of the city.

Purpose of the Study

To investigate the effect of electronic and digital media use on the health of adolescents in Ondo city.

Limitation

Electronic and Digital Media Use has brought new challenges to the health of Adolescents nationwide. However, this study is only to assess its effects on adolescents in secondary schools in Ondo City, Ondo State, Nigeria. Further work can be conducted on the primary and tertiary institutions in the country.

Research Questions

1. To what extent is there a significant effect of electronic and digital media use on the health of adolescents in Ondo city?
2. To what extent is there a significant gender difference in the effect of electronic media use on the health of female and male adolescents in Ondo city?

Hypotheses

1. There is no significant effect of electronic and digital media use on the health of adolescents in Ondo city
2. There is no gender difference in the effect of electronic and digital media use on the health of female and male adolescents in Ondo city.

METHODOLOGY

The study sampled only 174 adolescents from public and private schools in Ondo city.

The Research design that was adopted for this study was an explanatory cross-sectional design. The population of the study comprised all adolescents in Ondo city. Six secondary schools were used out of

which three were private schools and three were public schools.

The instrument used for the study was a questionnaire tagged "Electronic and Digital Media Use Questionnaire (EDMQ). It was a 21-item questionnaire consisting of Section A consisting of the personal data of the respondents: which also included accessibility to electronic media, the form of electronic media they have access to and the channel they like most. Section B addresses the impact of electronic and digital media on the physical health, social health and mental health of the respondents. The data collected from the respondents were analysed using independent t-test and binary logistic regression.

Table 1: Background characteristics of respondents

Background characteristics	**Frequency**	**Percentage**
Sex		
Male	98	47.8
Female	107	52.2
Age		
10-12 years	61	29.8
13-15 years	125	61
16-19 years	19	9.3
Parental socioeconomic status		
High	90	43.9
Average	101	49.3
Low	14	6.8
I have access to electronic media		
Yes	174	84.9
No	31	15.1
Local TV		
No	187	91.2
Yes	18	8.8
Radio		
No	176	85.9
Yes	29	14.1
Internet		
No	119	58
Yes	86	42
TV and Radio		
No	85	41.5
Yes	120	58.5
What type of channel do you like most?		
Entertainment	117	57.1
News	12	5.9
Sport	25	12.2

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Religious	14	6.8
Mix channel	37	18

Table 2: Distribution of respondents by health outcomes

Health-related statements	**Strongly disagree**	**Disagree**	**Agree**	**Strongly agree**	**Mean (SD)**
I have a headache after being on social media for a while	63(36.2)	81(46.6)	18(10.3)	12(6.9)	1.87931(.8549939)
I develop blurred vision after viewing television for a long time	26(14.9)	56(32.2)	65(37.4)	27(15.5)	2.534483(.9289596)
I experience dizziness after staying on the phone for a long time	26(14.9)	60(34.5)	58(33.3)	30(17.2)	2.528736(.9476357)
Watching films on the phone for a long time gives me neck pain	19(10.9)	34(19.5)	81(46.6)	40(23.0)	2.816092(.9127072)
Being on social media for a long time has made me add weight	67(38.5)	87(50.0)	10(5.7)	10(5.7)	1.787356(.794243)
Being on a phone/TV screen gives me cramps/spasms	75(43.1)	57(32.8)	25(14.4)	17(9.8)	1.908046(.9811187)
Attraction to some TV programs has negatively affected my relationship with my p	36(20.7)	80(46.0)	34(19.5)	24(13.8)	2.264368(.9429969)
I usually have mood swings after watching some movies	28(16.1)	48(27.6)	72(41.4)	26(14.9)	2.551724(.9343616)
Social media has changed my view on sex in a bad way	47(27.0)	51(29.3)	41(23.6)	35(20.1)	2.367816(1.087129)
Due to watching TV, I cannot manage my study time	37(21.3)	44(25.3)	66(37.9)	27(15.5)	2.477011(.9953883)
Electronic media has influenced my desire to become an agent of social change	17(9.8)	40(23.0)	75(43.1)	42(24.1)	2.816092 (.9127072)
Through my exposure to electronic media, I support the promotion of child rights	13(7.5)	17(9.8)	74(42.5)	70(40.2)	3.155172(.8827517)
Electronic media affects my socialization process as an individual	21(12.1)	72(41.4)	51(29.3)	30(17.2)	2.517241(.9169196)
The attraction of some TV programs sometimes compels me to leave my assigned ac	36(20.7)	40(23.0)	76(43.7)	22(12.6)	2.482759(.9600345)

Social media has negatively changed the way I relate to people	33(19.0)	83(47.7)	38(21.8)	20(11.5)	2.258621(.8975306)
Being on social media for a long time makes me eat abnormally	53(30.5)	74(42.5)	20(11.5)	27(15.5)	2.12069(1.015673)
I sometimes feel depressed after watching a film	47(27.0)	53(30.5)	39(22.4)	35(20.1)	2.35632 (1.085661)
I cannot do without opening my phone to browse	25(14.4)	74(42.5)	38(I21.8)	37(21.3)	2.5(.9839757)
I find it hard to think properly or concentrate after watching films	30(17.2)	76(43.7)	34(19.5)	34(19.5)	2.413793(.9918946)
I get moody as a result of watching some movies	35(20.1)	38(21.8)	59(33.9)	42(24.1)	2.62069(1.061588)

Table 3: Distribution of respondents by domains of health outcomes

Physical health	**Frequency**	**Percentage**
Good	74	42.5
Poor	100	57.5
Total	174	100
Psychological health		
Good	77	44.3
Poor	97	55.7
Total	174	100
Social health		
Good	75	43.1
Poor	99	56.9
Total	174	100
Mental health		
Good	76	43.7
Poor	98	56.3
Total	174	100
Health		
Good	83	47.7
Poor	91	52.3
Total	174	100

Table 4: Independent t-test analysis showing gender difference in adolescent health outcomes

Total Health				
Group	Observation	Mean	Std. Deviation	t = -3.077
Male	86	46.9	5.3	df = 172
Female	88	50.5	9.4	p-value = 0.002

Combined	174	48.8	7.8	
Physical health				
Group				
Male	86	13.5	3.0	t = 0.222
Female	88	13.4	3.7	df = 172
Combined	174	13.5	3.4	p-value = 0.825
Psychological health				
Group				
Male	86	9.3	1.4	t = -1.914
Female	88	9.8	2.2	df = 172
Combined	174	9.5	1.8	p-value = 0.057
Social health				
Group				
Male	86	13.1	0.3	t = -3.031
Female	88	14.4	0.3	df = 172
Combined	174	13.8	0.2	p-value = 0.003
Mental health				
Group				
Male	86	11.0	0.3	t = -3.543
Female	88	12.9	0.4	df = 172
Combined	174	12.0	0.3	p-value = 0.001

Table 4 shows a t-test analysis identifying the difference in gender concerning adolescent health outcomes across all domains. While physical and psychological health domains are not statistically significantly affected by adolescent gender, others are shown to have such a relationship. In respect of overall health, male adolescents had an average score of 46.9(5.3) and females recorded 50.5(9.4). A p-value of 0.002 less than 0.05, the significant value, indicates that there is a significant difference in overall health outcomes between male and female adolescents. With regards to social health, while the mean score for males is 13.1(0.3), that for female adolescents is 14.4(0.3). A p-value of 0.003 which is less than the significant value of 0.05 also indicates that there is a significant difference in the social health of male and female adolescents exposed to electronic and digital media. Furthermore, the difference observed in mental health scores by gender is also statistically significant. Similarly, this conclusion resulted from assessing the associated p-value, 0.001, which is less than the significant value of 0.05.

Hypothesis 1: There is no significant effect of electronic and digital media use on the health of adolescents in Ondo city

Table 5: Unadjusted binary logistic regression showing the effect of electronic and digital media use on the health of adolescents in Ondo city

Channel like to use most	Odd Ratio	p-value	95%CI
Entertainment	Ref		
News	0.85	0.789	0.26 – 2.82
Sport	2.18	0.111	0.84 – 5.70
Mix channel	0.24	0.002	0.09 – 0.60

Table 5 shows the unadjusted binary logistic regression analysis of the effect of electronic and digital media use on the health of adolescents in Ondo city. The table revealed that electronic and digital media use had statistically significant effect on adolescents' health. For instance, compared to those who liked to use entertainment channel, adolescents who liked to use mix channel 76 percent lower odds of having poor health outcomes (OR:0.24;p<0.05)- similar to finding from when adjusted as shown in Table 7..

Hypothesis 2: There is no gender difference in the effect of electronic and digital media use on the health of female and male adolescents in Ondo city

Table 6: Unadjusted binary logistic regression showing gender difference effect on health of adolescents in Ondo city

Gender	Odd Ratio	p-value	95%CI
Sex			
Male	Ref		
Female	1.913	0.035	1.05 – 3.49

Similarly, Table 6 shows the unadjusted binary logistic regression analysis of gender difference effect on health of adolescents in Ondo city. It revealed that Female adolescents had statistically significantly 90 percent higher odds of having poor health outcomes compared to their male counterpart – a reduction from when adjusted by other adolescents' background characteristics as shown in Table 7.

Table 7: Adjusted binary logistic regression analysis showing the effect of selected and key study explanatory variables on secondary school adolescents' overall health outcome

Selected variables	Odd Ratio	p-value	95%CI
Gender			
Male	Ref		
Female	2.61	0.009	1.27-5.35
Age			
10-12 years	Ref		
13-15 years	0.73	0.436	0.33-1.62
16-19 years	0.54	0.316	0.16-1.79
Parental socioeconomic status			
High	Ref		
Average	0.96	0.925	0.47-1.99
Low	1.23	0.814	0.21-7.10
What type of channel do you like most			
Entertainment	Ref		
News	0.89	0.865	0.23-3.38
Sport	3.04	0.035	1.08-8.59
Mix channel	0.22	0.003	0.07-0.59

Binary logistic regression analysis was conducted to examine the extent to which selected adolescent background characteristics and entertainment and digital media variable influence the overall adolescent health outcome. As observed in Table 7, both age and parental socioeconomic status did not have significant

relationship with overall health outcomes of adolescents exposed to electronic and digital media. Evidently, female adolescents have almost 3 folds the male odds of having poor health outcomes after exposure to electronic and digital media (OR:2.61;$p<0.05$). Also, compared to adolescents who mostly liked entertainment, secondary school adolescents who mostly liked news had 11 percent lower odds of having poor health outcomes following exposure to electronic and digital media (OR: 0.89; $p>0.05$). Whereas. Compared to secondary school adolescents who mostly liked entertainment, those who mostly liked sports were three times more likely to have poor health outcome (OR:3.04$p<0.05$), those who mostly liked mix channel had 78 percent lower odds (OR:0.22; $p<0.05$) of having poor health outcome following exposure to electronic and digital media.

SUMMARY OF RESULT

Hypothesis 1

Based on the results obtained in Table 5, it is revealed that electronic and digital media use had a statistically significant effect on adolescents' health. For instance, compared to those who liked to use entertainment channels, adolescents who liked to use mixed channels had 76 per cent lower odds of having poor health outcomes. Therefore, the null hypothesis (Ho) was accepted while the alternate was rejected.

Hypothesis 2

Based on the result obtained, Table 4 shows a t-test analysis identifying the difference in gender concerning adolescent health outcomes across all domains. Concerning overall health, male adolescents had an average score of 46.9(5.3) and females recorded 50.5(9.4). A p-value of 0.002 less than 0.05, the significant value, indicates that there is a significant difference in overall health outcomes between male and female adolescents. Hypothesis two which states that there is no gender difference in the effect of electronic and digital media use on the health of female and male adolescents in Ondo city is therefore rejected. The two hypotheses raised in the study were accepted.

In conclusion, the study has demonstrated that digital and electronic media use poses health challenges and risks. This is due to the poor outcomes of digital and electronic media use on the health of both male and female adolescents. In addition, problems such as cybersecurity threats, privacy concerns, data breaches, the proliferation of fake news and disinformation, social isolation, information overload, and addiction harm the health of adolescents. The study agrees with Dong et.al (2020) who discovered that the higher use of electronic devices and digital media platforms caused over 35% of their respondents to be addicted to the Internet. This was confirmed by Hudimova et.al (2021) that contends that young people spent all day online due to obsessive social media patterns and procrastination, and they displayed withdrawal symptoms associated with addiction upon trial to correct the addiction to digital media. Anand et.al (2022) also found that exposure to digital media and cyberbullying has psychological effects such as depression, low self-esteem, self-injury, and suicide amongst others.

REFERENCES

1. Adolescents. (2019October18). UNICEFDATA. https://data.unicef.org/topic/adolescents/overview/
2. Anand, S., Khandekar, J., Rasania, S., & Kataria, D. (2022). Effect of electronic media on adolescents' psychosocial health. Journal of Mental Health and Human Behaviour, 27(2), 100. https://doi.org/10.4103/jmhhb.jmhhb_253_21
3. Anderson, M., & Jiang, J. (2018). Teens' social media habits and experiences. Pew Research Center.
4. Charmaraman, L., Hodes, R., & Richer, A. M. (2021). Young sexual minority adolescent experiences of self-expression and isolation on social media: Cross-sectional survey study. JMIR Mental Health, 8(9), e26207. https://doi.org/10.2196/26207

5. Cheng, H. L., Harris, S. R., Sritharan, M., Behan, M. J., Medlow, S. D., & Steinbeck, K. S. (2020). The tempo of puberty and its relationship to adolescent health and well-being: A systematic review. Acta Paediatrica (Oslo, Norway: 1992), 109(5), 900–913. https://doi.org/10.1111/apa.15092
6. Ciampo, L. A. D., & Ciampo, I. R. L. D. (2020). Physical, emotional and social aspects of vulnerability in adolescence. International Journal of Advanced Community Medicine, 3(1), 183–190. https://doi.org/10.33545/comed.2020.v3.i1c.135
7. Crone, E. A., & Konijn, E. A. (2018). Media use and brain development during adolescence. Nature Communications, 9(1). https://doi.org/10.1038/s41467-018-03126-x
8. Dahl, R. E., Allen, N. B., Wilbrecht, L., & Suleiman, A. B. (2018). Importance of investing in adolescence from a developmental science perspective. Nature, 554(7693), 441–450. https://doi.org/10.1038/nature25770
9. Das, A. (2020). Impact of Digital Media on Society Introduction. 2320-28820.
10. Dienlin, T., & Johannes, N. (2020). The impact of digital technology use on adolescent wellbeing. Dialogues in Clinical Neuroscience, 22(2), 135–142. https://doi.org/10.31887/DCNS.2020.22.2/tdienlin
11. Dong, H., Yang, F., Lu, X., & Hao, W. (2020). Internet addiction and related psychological factors among children and adolescents in China during the Coronavirus disease 2019 (COVID-19) epidemic. Frontiers in Psychiatry, 11, 00751. https://doi.org/10.3389/fpsyt.2020.00751
12. Draženović, M., Vukušić Rukavina, T., & Machala Poplašen, L (2023). Impact of social media useon mental health within adolescent and student populations during COVID-19 pandemic: Review. International Journal of Environmental Research and Public Health, 20(4). https://doi.org/10.3390/ijerph20043392
13. Ellis, W. E., Dumas, T. M., & Forbes, L. M. (2020). Physically isolated but socially connected: Psychological adjustment and stress among adolescents during the initial COVID-19 crisis. Canadian Journal of Behavioural Science. Revue Canadienne Des Sciences Du Comportement, 52(3), 177–187. https://doi.org/10.1037/cbs0000215
14. Gawer, A. (2022). Digital platforms and ecosystems: remarks on the dominant organizational forms of the digital age. Innovation, 24(1), 110-124.
15. Galván, A. (2020). The need for sleep in the adolescent brain. Trends in Cognitive Sciences, 24(1), 79–89. https://doi.org/10.1016/j.tics.2019.11.002
16. George, M. J., Jensen, M. R., Russell, M. A., Gassman-Pines, A., Copeland, W. E., Hoyle, R. H., & Odgers, C. L. (2020). Young adolescents' digital technology use, perceived impairments, and well-being in a representative sample. The Journal of Pediatrics, 219, 180–187. https://doi.org/10.1016/j.jpeds.2019.12.002
17. Haddock, A., Ward, N., Yu, R., & O'Dea, N. (2022). Positive effects of digital technology use by adolescents: A scoping review of the literature. International Journal of Environmental Research and Public Health, 19(21), 14009. https://doi.org/10.3390/ijerph192114009
18. Hamilton, J. L., Nesi, J., & Choukas-Bradley, S. (2020). Teens and social media during the COVID-19 pandemic: Staying socially connected while physically distant. In PsyArXiv. https://doi.org/10.31234/osf.io/5stx4
19. He, Y., Aliyu, A., Evans, M., & Luo, C. (2021). Health care cybersecurity challenges and solutions under the climate of COVID-19: Scoping review. Journal of Medical Internet Research, 23(4), e21747. https://doi.org/10.2196/21747
20. Hudimova, A., Popovych, I., Baidyk, V., Buriak, O., & Kechyk, O. (2021). The impact of social media on young web users' psychological well-being during the COVID-19 pandemic progression. Revista Amazonia Investiga, 10(39), 50–61. https://doi.org/10.34069/ai/2021.39.03.5
21. Islam, M. S., Sujan, M. S. H., Tasnim, R., Mohona, R. A., Ferdous, M. Z., Kamruzzaman, S., Toma, T. Y., Sakib, M. N., Pinky, K. N., Islam, M. R., Siddique, M. A. B., Anter, F. S., Hossain, A., Hossen, I., Sikder, M. T., & Pontes, H. M. (2021). Problematic smartphone and social media use among Bangladeshi college and university students amid COVID-19: The role of psychological well-being and pandemic related factors. Frontiers in Psychiatry, 12, 647386.

https://doi.org/10.3389/fpsyt.2021.647386
22. Internet and social media users in the world 2023. (2023). Statista. Retrieved May 17, 2023, from https://www.statista.com/statistics/617136/digital–population–worldwide/
23. Joseph, B. (2019). The roles of information and communication technologies (ICTs) and E-commerce as agents of Nigeria's economic development: Review of challenges and prospects. Wireless Engineering and Technology, 10(03), 41–54. https://doi.org/10.4236/wet.2019.103004
24. Kelly, Y., Zilanawala, A., Booker, C., & Sacker, A. (2018). Social media use and adolescent mental health: Findings from the UK Millennium Cohort Study. EClinicalMedicine, 6, 59–68. https://doi.org/10.1016/j.eclinm.2018.12.005
25. Larsen, L. T. (2022). Not merely the absence of disease: A genealogy of the WHO's positive health definition. History of the Human Sciences, 35(1), 111–131. https://doi.org/10.1177/0952695121995355
26. Li, Y., Zhao, J., Ma, Z., McReynolds, L. S., Lin, D., Chen, Z., Wang, T., Wang, D., Zhang, Y., Zhang, J., Fan, F., & Liu, X. (2021). Mental health among college students during the COVID-19 pandemic in China: A 2-wave longitudinal survey. Journal of Affective Disorders, 281, 597–604. https://doi.org/10.1016/j.jad.2020.11.109
27. Nikolaidis, A., Paksarian, D., Alexander, L., Derosa, J., Dunn, J., Nielson, D. M., Droney, I., Kang, M., Douka, I., Bromet, E., Milham, M., Stringaris, A., & Merikangas, K. R. (2020). The Coronavirus Health and Impact Survey (CRISIS) reveals reproducible correlates of pandemic-related mood states across the Atlantic. MedRxiv: The Preprint Server for Health Sciences. https://doi.org/10.1101/2020.08.24.20181123
28. Nop, A. (2020). Young people, social media, and impacts on well-being. Clark University.
29. Odgers, C. L., & Jensen, M. R. (2020). Annual Research Review: Adolescent mental health in the digital age: facts, fears, and future directions. Journal of Child Psychology and Psychiatry, and Allied Disciplines, 61(3), 336–348. https://doi.org/10.1111/jcpp.13190
30. Orben, A., & Przybylski, A. K. (2020). Teenage sleep and technology engagement across the week. PeerJ, 8(e8427), e8427. https://doi.org/10.7717/peerj.8427
31. Prinstein, M. J., Nesi, J., & Telzer, E. H. (2020). Commentary: An updated agenda for the study of digital media use and adolescent development – future directions following Odgers &
32. Jensen (2020). Journal of Child Psychology and Psychiatry, and Allied Disciplines, 61(3), 349–352. https://doi.org/10.1111/jcpp.13219
33. Quante, M., Khandpur, N., Kontos, E. Z., Bakker, J. P., & Redline, S. (2019). Let's talk about sleep": a qualitative examination of levers for promoting healthy sleep among sleep-deprived vulnerable adolescents. Sleep Med, 60, 81–88.
34. Rana, S., & Kelleher, M. (2018). The dangers of social media and young dental patients' body image". Dental Update, 45(10), 902–910.
35. Rocha, Y. M., de Moura, G. A., Desidério, G. A., de Oliveira, C. H., Lourenço, F. D., & de Figueiredo Nicolete, L. D. (2021). The impact of fake news on social media and its influence on health during the COVID-19 pandemic: a systematic review. Zeitschrift Für Gesundheitswissenschaften [Journal of Public Health], 1–10. https://doi.org/10.1007/s10389-021-01658-z
36. Sadagheyani, H. E., & Tatari, F. (2020). Investigating the role of social media on mental health. Mental Health and Social Inclusion, 25(1), 41–51. https://doi.org/10.1108/mhsi-06-20200039
37. Shah, J., Das, P., Muthiah, N., & Milanaik, R. (2019). New age technology and social media: adolescent psychosocial implications and the need for protective measures. Current Opinion in Pediatrics, 31(1), 148–156. https://doi.org/10.1097/MOP.0000000000000714
38. Stephen, J. J., & Prabu, P. (2019). Detecting the magnitude of depression in twitter users using sentiment analysis". International Journal of Electrical and Computer Engineering (IJECE), 9(4), 3247–3255.
39. Stiglic, N., & Viner, R. M. (2019). Effects of screentime on the health and well-being of children and adolescents: a systematic review of reviews. BMJ Open, 9(1), e023191.

https://doi.org/10.1136/bmjopen-2018-023191

40. Taylor, D. B. (2020). The social media challenges help keep boredom at bay. New York Times. https://www.nytimes.com/2020/04/22/style/challenges-social-media-html
41. Vannucci, A., Simpson, E. G., Gagnon, S., & Ohannessian, C. M. (2020). Social media use and risky behaviours in adolescents: A meta-analysis. Journal of Adolescence, 79(1), 258–274. https://doi.org/10.1016/j.adolescence.2020.01.014
42. Vijayakumar, N., Op de Macks, Z., Shirtcliff, E. A., & Pfeifer, J. H. (2018). Puberty and the human brain: Insights into adolescent development. Neuroscience and biobehavioural reviews, 92, 417–436. https://doi.org/10.1016/j.neubiorev.2018.06.004