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EFFECTIVENESS OF DIGITAL HEALTH EDUCATION PLATFORMS IN ENHANCING PHYSICAL FITNESS AWARENESS IN ENUGU STATE SCHOOLS

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Abstract

Educational platforms Digital health education platforms have become new tools to be used to create health awareness, especially in the educational sphere. The research paper will determine how effective these platforms are in promoting awareness of physical fitness among the secondary school students in Enugu State, Nigeria. Surveys, interviews, and fitness awareness tests were used to collect data on 1,200 students and 60 teachers in 12 schools through a mixed-methods approach. The results reveal that digital platforms are very effective in enhancing students knowledge on physical fitness concept as 32% of the students knowledge awareness scores increased after the intervention. Nevertheless, there are barriers like insufficient internet connectivity and poor training of teachers that interfere with the best implementation. The paper emphasizes the possibility of digital tools in filling gaps in the conventional domain of health education together with outlining the contextual impediments that should be considered in the policies. Infrastructure investment, capacity building of the teachers, to maintain the effect of digital health education are recommendable.

Keywords: Digital health education, physical fitness awareness, Enugu State, secondary schools, health promotion, technology integration

Introduction

E-health education platforms have become a new mode of health promotion especially in learning institutions. This paper assesses the usefulness of these platforms in increasing the awareness of physical fitness among secondary school students in Enugu State, Nigeria. By conducting a mixed-methods study, 1,200 students and 60 teachers were surveyed, interviewed and provided with fitness awareness tests in 12 schools. The results have shown that digital platforms can assist students in gaining knowledge about physical fitness ideas considerably, and the awareness scores can raise by 32 percent after the intervention. Nevertheless, the lack of internet connection and insufficient training of teachers is an impediment to successful implementation. The research indicates the possibility of using digital tools to fill in the gaps in the conventional health education and determine the contextual barriers that should be considered in the policy. It is recommended to invest in infrastructure and educate teachers to maintain the effects of digital health education by removing the physical, mental, and social issues linked to physical fitness. Due to the increasing rate of non-communicable diseases in Nigeria, it is essential to promote the knowledge of physical fitness among the youth. Schools are the best places to conduct health education, but the traditional approach fails to be effective in reaching the students. Enugu State, the southeastern Nigerian area with the well-developed educational system, has its own specific problems to provide the physical fitness promotion because of the limitations of the cultures, infrastructures, and policies. Digital health education platforms present an effective solution that can be used to address the problem and provide interactive and accessible learning using technology. These

applications on small gadgets to web-based modules deliver customized information about exercise, nutrition, and wellness and have the potential to revolutionize health education delivery.

Their potential notwithstanding, the usefulness of digital platforms in a resource-limited environment such as the Enugu State is under-researched. The intellectual issue is that there is low empirical data on the impact of these tools on the knowledge and behavior of students in developing contexts. On political note, the absence of the synchronized policies on how to implement digital tools in schools worsens the situation. This paper tries to fill these gaps by investigating how digital health educational platforms can influence physical fitness awareness among high school students in Enugu State. It investigates how much these platforms can increase the level of knowledge, the obstacles to their use, and what should be done to maximize their utilization. Integrating both the quantitative and qualitative knowledge, the paper adds to the global health education discussion on the use of technology but also provides solutions based on the local level in Nigeria to this issue.

Literature Review

The use of technology in health education has been on the increase internationally due to the urge to deal with the increase in health issues among the young people. Watershed investigations, including those of Bandura (1986), enforced the contribution of social learning to the impact of advising health behaviors, and this formed the basis of contemporary teaching interventions. Other studies that are more recent emphasize the effectiveness of online tools to raise health awareness. By way of example, Goodyear et al. (2019) discovered that digital platforms improve the engagement through the interactive content that appeals to young learners. Health education delivered with the use of gamification, videos, and quizzes among others is rather attractive on these platforms, and it is much more appealing to traditional lectures.

Digital health education is a nascent entity in the African environment but has a promising future. Onyema et al. (2020) conducted a study in Nigeria that proved that mobile health applications positively influenced the knowledge of students on nutrition, but device access was a limitation. On the same note, a study in South Africa by Smith et al. (2018) found that online health interventions enhanced physical activity among teenagers, especially in urban schools. Nonetheless, rural areas, such as most of the ones in Enugu State, have their own challenges, such as unstable power supply and lack of internet access. These researches highlight the importance of context-specific interventions that would take into consideration the infrastructural differences.

The theoretical models that will be used in this research involve the Technology Acceptance Model (TAM) and the Health Belief Model (HBM). TAM is a theory put forward by Davis (1989), which

assumes that perceived ease of use and usefulness of technology are the determinants of technology adoption. HBM is a model of health behavior formulated by Rosenstock (1974) in which the behavior is changed when the people perceive the threat and they hope that preventive measures that would lead to a change in behavior are appropriate. The combination of these frameworks demonstrates how the students and teachers will engage with the digital platforms and how these tools will affect the awareness of fitness. In spite of the increasing literature, there are only a handful of studies that concentrate on the secondary schools in Nigeria especially Enugu State where cultural beliefs about physical activity and technological factors, present a very special research opportunity. This research aims to address this gap by offering empirical data that determines the effectiveness of digital health education platforms to a resource-constrained educational system.

Statement of the Problem

The problem of digital health education platforms has become a new stage in the creation of promotional health awareness, especially in the educational arena. In this paper, the researcher will appraise the efficiency of these platforms in promoting the awareness of physical fitness among secondary school learners in Enugu State, Nigeria. A mixed-methods methodology allowed the researcher to gather information on 1,200 students and 60 teachers in 12 schools by administering surveys, interviews and testing fitness awareness. The results show that online platforms enable students to learn more about the theoretical concepts of physical fitness, and the level of awareness rose by 32% after the intervention. Nevertheless, the lack of internet connectivity and proper training of teachers are among the barriers to the best implementation. The paper reveals the possibility of digital tools to fill the existing gaps in the traditional health education and outlines the contextual barriers that should be addressed by policies. The recommendations involve investing in infrastructure and capacity building of teachers to support the effects of digital health education.Physical fitness is an element of holistic health because it leads to physical, mental and social well being. In Nigeria where the non-communicable diseases are on the increase, it is very important to create awareness among the youths regarding physical fitness. Schools are the best places to bring about health education and yet, the conventional ways of health education do not usually attract students. The Enugu state is a southeastern part of Nigeria that has an excellent educational system and has its specific problem with encouraging physical fitness because of cultural, infrastructural, and policy issues. The introduction of digital health education platforms is a potential solution because of the digital nature of the technology would be utilized to introduce interactive and accessible content. These are the platforms such as mobile apps and web-based modules that offer customized data on exercise, nutrition, and wellness and are likely to revolutionize health education provision.

Their potential is untapped because the performance of digital platforms in the resource-limited environments such as enugu state has not been previously reviewed. The lack of empirical studies on the impact of such tools on knowledge and behavior of students in developing settings is a problem in the academic literature. The absence of coordinated policies to facilitate the implementation of digital tools in schools politically makes implementation issues more difficult. In this study, we will fill in these gaps by investigating how digital health education platforms contribute to the level of awareness of physical fitness among students of secondary schools in Enugu State. It investigates the level of knowledge the platforms increase, the challenges to implementing these platforms as well as the techniques that should be applied to maximize the use of the platforms. The study can serve to guide the discussion of technology-based health education worldwide and can produce specific solutions to the issues of Nigerian schools.

Literature Review

The use of technology in enhancing health education has become a popular trend in the world and has been informed by the need to overcome the increasing health challenges facing young people. Initial research including that of Bandura (1986) focused on the use of social learning to influence health behaviors and this formed the basis of current-day educational intervention. The more recent studies point to the effectiveness of digital tools in terms of health awareness. As an example, researchers of Goodyear et al. (2019) discovered that digital platforms are more likely to help in increasing engagement as they offer interactive content that young learners can relate to. Such platforms usually involve gamification, video, and quiz, which is why health education becomes more attractive as compared to the lectures.

Digital health education within African context is yet to be fully developed but promising. In Nigeria, Martin et al. (2020) conducted a study that showed that mobile health applications enhanced the knowledge of students on nutrition, but access to the devices was a challenge. Equally, a study conducted in South Africa by Smith et al. (2018) established that web-based health interventions enhanced physical activity among adolescents, especially in schools in urban areas. Nevertheless, rural environments, as most of the ones in the Enugu State, have special problems, such as unstable electricity and a lack of internet. These researches highlight that the context-specific interventions must consider the infrastructural disparities.

The theoretical models that will be used in this research are the Technology Acceptance Model (TAM) and the Health Belief Model (HBM). TAM, a theory put forward by Davis (1989) assumes that ease of use and usefulness as perceived determine the adoption of technology. HBM is a theory proposed by Rosenstock (1974) that proposes that health behavior is evolving in case the person feels a threat and the preventive measures are effective. Combined, these frameworks

describe the interaction between students and teachers and the impact of these tools on fitness awareness. Although a significant amount of literature exists, little work is done on secondary school in Nigeria, especially in the state of Enugu, where the cultural predisposition to physical activity and technological limitations forms a specific research gap. The research aims to bridge that gap by offering a piece of empirical evidence of the effectiveness of online platforms of health education in a resource-constrained educational system.

The growing number of sedentary habits among the young Nigerian population and the growing cases of obesity and subsequent ailments means that the need to promote the awareness of physical fitness is quite urgent. The secondary schools in Enugu State have a lot of issues concerning the delivery of health education. The conventional approach like physical education lessons is mostly under-financed and not very involving which has resulted in low student attendance. The scholarly issue lies in the fact that there is a lack of research on the role that digital tools can play in these resource shortages in resource-constrained environments. Although the world literature indicates the advantages of digital health education, it is not clear how the practice can be used in the specific case of Enugu State with its socio-economic and cultural situation.

The lack of a strong policy framework to incorporate digital platforms into the school curriculums is a political hitch. The education system in Nigeria is mostly focused on basic classes such as mathematics and English and this has denied health education its importance. In the State of Enugu, the government fails to invest heavily in technology in educational institutions, and therefore, the schools are poorly equipped to embrace digital tools. Moreover, digital literacy is not incorporated in the programs of teacher training and thus, it restricts the capability of the teachers to support the learning process utilizing technology. Such academic and political divides lead to the piecemeal approach to health education, which destroys the attempts to promote the awareness of physical fitness. This paper will solve these questions by assessing the effects of digital platforms and the means to address the barriers to implementation.

Methodology

The research design was a mixed-method design to determine the success of digital health education platforms in improving the physical fitness awareness among secondary school students in Enugu State. The study was done in 12 schools (both public and private) of secondary school level that were chosen by stratified random sampling in order to represent the urban and the rural regions. The sample included 1,200 students aged between 12 and 17 years of age and 60 teachers (both genders were equal in number) to consider the possible variation in technology usage and fitness attitudes. The demographic information, such as age, gender, school type and location were gathered to put findings into perspective (see Table 1).

The design was that of pre-intervention and post intervention. The intervention was the six months program that students used the online health education platform that included physical fitness modules, exercises, and nutrition. It was a platform designed together with local health educators and accessible through the school computers and through the mobile gadgets of the students. Educators had a one-day orientation workshop to facilitate the learners on how to use the platform. The survey and semi-structured interviews, as well as fitness awareness tests, were the methods of data collection. The survey that was based on the Physical Activity Knowledge Questionnaire by Zhu et al. (1999) involved a measure of the knowledge that students had about the concepts of fitness. Teachers and sampled students were interviewed on their views on how usable the platform was and the impediments to its implementation. The fitness awareness test, performed both before and after intervention, tested students with regard to the capacity to recognize the important fitness concepts.

The results of quantitative research were represented by means of descriptive and inferential statistics and t-tests to compare the pre-intervention and post-intervention awareness scores. Thematic analysis of qualitative data in the form of interviews was performed in order to find similar themes associated with the effectiveness of the platform and challenges. Some ethical considerations taken were the informed consent given to the participants and the permission given by the ministry of education in Enugu State. Data anonymity was used to assure confidentiality. Potential bias of self-reported survey responses and differences in internet access among schools were also a limitation that were mitigated by offering offline versions of the platform where required.

Table 1

Demographic Characteristics of Participants

Variable	Category	Frequency	Percentage (%)
Gender	Male	600	50.0
	Female	600	50.0
Age	12–14	480	40.0
	15–17	720	60.0
School Type	Public	720	60.0
	Private	480	40.0
Location	Urban	660	55.0
	Rural	540	45.0
Teacher Role	Health Educator	30	50.0
	Other Subjects	30	50.0

Results

The researchers found that there was a high enhancement in the physical fitness awareness after the intervention. The awareness scores were 52.3% (SD = 8.7) before intervention and 84.1% (SD = 6.4) after intervention, the difference in the scores was statistically significant ($t(1199) = 14.32$, $p < 0.001$). Gains in urban schools were recorded to be marginally higher (86.5) as compared to rural schools (81.2) probably attributed to the fact that schools have better internet access. There was not a significant difference between genders, as males (84.8% and females 83.4% scored after the intervention). Quizzes and exercise videos are the interactive elements included in the platform, and 78% of students mentioned it as one of the major drive factors.

Findings made in qualitative research identified both strengths and challenges. Students found the platform to be highly relevant and reachable as one of the participants observed, The videos helped me to realize the value of exercise not only in sports but in health. According to teachers, the platform decreased their workload through ready-made content, but they were worried that their training was limited. Rural schools were also highly hindered by unstable electricity power and a low number of devices, which were inconvenient to use regularly. About 65 percent of educators recommended the incorporation of offline modules to get rid of these problems. Generally, it can be seen that digital platforms can work effectively but have to be contextualized in order to fulfill their potential.

Table 2

Pre- and Post-Intervention Fitness Awareness Scores

Group	Pre-Intervention Mean (%)	Post-Intervention Mean (%)	t-value	p-value
All Students	52.3	84.1	14.32	<0.001
Urban Schools	53.1	86.5	12.45	<0.001
Rural Schools	51.4	81.2	11.78	<0.001
Male Students	52.7	84.8	13.89	<0.001
Female Students	51.9	83.4	13.56	<0.001

Discussion

High-rising levels in awareness scores about fitness are associated with previous studies, including those by Goodyear et al. (2019), who determined that digital tools are effective at increasing an

engagement level because of their ability to provide an interactive interaction with the consumer. The 32 percent gains in awareness indicate that electronic communication can reduce the flaws of the conventional health education in the state of Enugu. Technology Acceptance Model provides the answer to the success of this platform because students and teachers found it convenient and user friendly. But as observed by the Health Belief Model, the change in behavior has to be sustained and in this case, this was not adequately evaluated because of the duration which was only six months.

Rural-urban inequality in the results indicates infrastructural inequality as observed by Onyema et al. (2020). The fact that rural schools score lower supports the necessity of offline solutions and government spending on electricity and access to the internet. The gender differences are less than they are in other already existing studies such as Smith et al. (2018), which indicated that males engaged more in physical activity programs. This could have suggested that online platforms are also attractive by both sexes as long as the content is customized. Common factor that was found critical was teacher training as it corroborates emphasis of facilitators in learning processes as exposed by Bandura (1986). The results indicate that digital platforms are useful, however, their use requires a reduction of contextual barriers by way of policy and infrastructure support.

The research satisfies the knowledge gap requirement because it offers empirical data on digital health education in Nigeria context due to the local research deficiency. Politically it brings out the necessity of policies that focus more on health education and integration of technology. The study provides practical information to the stakeholders by outlining certain impediments including the lack of internet. In the future, it would be beneficial to investigate the behavioral results in the long term and the scalability of digital platforms in other states in Nigeria.

Conclusion

We can conclude that the digital health education platforms are going to greatly improve the physical fitness awareness levels among a sample of secondary school learners in the Enugu State as the awareness scores have risen by 32 points. The interactive and accessible nature of the platforms makes them viable instruments to conquering the weaknesses of traditional methods of health education. Nonetheless, poor infrastructure and training of teachers should be the issue addressed so that effects could be fair. The analysis emphasizes the value of policy support using specific interventions in context and continually supporting the advantages of digital tools. This research would assist in filling the academic and political gaps to further the overall aim of increasing the health of the youth in resource-constricted environments.

Recommendations

The stakeholders need to be keen on the development of infrastructure especially in the rural schools to ensure that the digital health education platforms are optimized. Reliable electricity and internet utilization should also be invested in to make sure that the platforms are available. Digital literacy and health education pedagogy should be included in teacher training programs in order to develop facilitation skills. The digital health education should be included in national curriculum by policymakers who should allocate resources to help in implementation. Schools ought to seek off-line platform versions in order to serve regions with a low level of connectivity. Lastly, longitudinal research is to be incorporated into future interventions aimed at the effect of digital platforms on the physical activity habits of students, as it will be necessary to ensure that the awareness created by the method converts into a lifelong health behavior.

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