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Harnessing Utilisation of Digital Technologies for Promoting Health Education for Contemporary Educational Creativity

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Abstract

Following the rapid development of the Internet and information technologies, coupled with a variety of digital media, digital technologies are rapidly being integrated into a wide range of health fields. The digital technology has become a conventional method of health education for the general public and has the potential to influence health behaviours. The aim of this study is to identify the use of digital technologies as a tool for promoting health education for contemporary educational creativity as well as the need for capacity building and digital literacy which will be integral to ensuring that digital health tools are used correctly and competently in practice. This article explores some of the technological advances in the field of health, the rise and application of digital technologies for health education. Digital technologies have contributed significantly to some very significant changes in the configuration of standard health services, community health education and health promotion. The effects of technology on health promotion and our quality of life were reviewed. In addition, some of the barriers to the utilisation of digital technologies for promoting health education as found in the literature are; constantly shifting in their meanings according to the context in which they are used in order to make profit.

Keywords: Digital technologies, Health education, Health promotion, quality of life.

Introduction

The use of digital technologies for health has become a salient field of practice for employing routine and innovative forms of information and communications technology (ICT) to address health needs. Digital health has attracted substantial interest from the medical and public health community, most notably in low and middle-income countries, where mobile communication has opened a new channel for overcoming the geographical inaccessibility of health care. Governments, donors and multilateral institutions have also recognised the potentially transformative role of digital technologies for Health Education and health system strengthening. In 2015, the World Bank Group, United States Agency for International Development (USAID) and the World Health Organization (WHO) advocated the ("use of the digital revolution to scale up health interventions and engage civil society"). It is important to acknowledge that technologies are essential element of knowledge and information in this generation. The information society is bringing us major new technological developments and advances in different occupational realms, and in health education it is impacting people's quality of life.

According to Fumero & Roca (2007), ICT has spread "to all realms of the society and forms part of the basic culture of new generations as a consubstantial part of the Social Network." It provides a way of developing human health promotion and prevention programs. This is due largely to the impressive development of medical technology, which constitutes one of the biggest factors influencing changes in health systems today (Colomer & Álvarez-Dardet, 2001). Digital technology enables information to be processed and transformed and is fast becoming a strategic innovative element for health education, health promotion and education in most developed countries.

The rise of new health education technologies is providing significant support and highly important educational content. Health education is not unaffected by these changes. It has gradually incorporated both the Internet and ICT into health education and

services that benefit health practitioners, people and the society in general. The possibilities of technology are many and highly strategic. They include electronic health records, telemedicine services, health information networks and so on that help improve and promote health by assisting us to detect, diagnose, prevent, monitor and treat diseases, manage our lifestyle and improve our wellness and quality of life.

The Need for Capacity Building and Digital Literacy

Firstly, capacity building and the development of digital literacy will be integral to ensuring that digital health tools are used correctly and competently in practice. Multidimensional approaches must be at the centre of capacity building initiatives; interprofessional and interdisciplinary education can also play a key role to realise this. Indeed, digital health tools will only be effective once a common knowledge base exists amongst different professions and disciplines, allowing them to integrate their respective competencies into a shared understanding which ultimately benefits patients. In this respect, successful implementation of digital health requires end-user buy-in, from healthcare professionals to see the tangible results. To accomplish this, the enthusiasm of youth populations can play a large role in explaining the benefits of digital health interventions to the broader health workforce. Education in digital health will guide current and future health professionals in identifying the most appropriate contexts for digital health uptake. Educational frameworks and curricula should be updated to include modules on digital health and its integration into current practice. In fact, examples of curricula updates in these fields already exist, but they must be adopted in a ubiquitous and geographically broad fashion to facilitate sustainable implementation. Such updates should be done collaboratively and with youth ownership, tailored to local contexts, and applied for healthcare workers ranging from dentists to public health professionals to community health workers. Equally important is the notion that digital health is by no means a panacea or silver bullet for all health problems.

Capacity building for digital health also requires strong governance coordination. Beyond ministries of health, other government ministries also have stakes in digital health; This ranges from the ministries of science and technology to ministries of internal affairs, and ministries of education. Respectively, each ministry plays a key role in building foundational digital infrastructures, establishing safeguards for data security and privacy, and crafting education policy that allows for health professional' capacity building in line with inter-minitry goals. The recent WHO Digital Implementation Investment Guide (DIIG) highlights how different ministries must work together by placing health at the centre of discussions explicitly earmarked for inter-ministry coordination towards achieving health goals (WHO, 2020). In striving for multi-dimensional approaches to capacity building, an emerging concept in the literature and reaffirmed in the DIIG has been 'enterprise architecture', which carefully considers stakeholders' incentive structures across digital health implementations and strives for interoperability. Governments, ministries, and other stakeholders must also create and invest in the necessary infrastructures for educational initiatives to be launched successfully and adopted widely. Sufficient resources must be allocated specifically to implement of health workforce development initiatives. Partnerships between youth stakeholders—such as youth organisations—and government representatives can result in educational initiatives that are more tailored to younger audiences, improving the relevance and uptake of information.

Young health professionals can also function as digital navigators who guide patients, citizens, and other healthcare professionals in developing and utilising digital tools both within and outside of clinical environments (Wisniewski & Torous, 2020). Without ambitious leadership and commitments to health budgets, promises of a highly digitally literate and competent future health workforce will fail to materialise. To accomplish this, the WHO states that the key to implementing multi-dimensional approaches to strengthen

digital health capacity is to "align incentives for health workforce education and healthcare provision with public health goals and population needs" (WHO, 2016).

The Rise and Application of Digital Technologies for Health Education

Key statements are constantly made in the medical and public health literature about the potential for the new digital technologies to 'engage' or 'activate' lay people to manage their own health and learn more about their bodies' functions and activities; or, as termed, to become the ideal 'digitally engaged patient'. In this article, digital technologies for health are positioned as contributing to lay people effectively becoming the 'managers' of their own health and healthcare (Greene & Hibbard, 2012).

The digital technology media include websites, social networking tools, online games and animation, and mobile devices like mobile phones, personal digital assistants (PDAs) and smart phones, patient monitoring devices, and mobile telemedicine devices. Digital media and digital revolution are two sides of the same coin. The revolution is seen in the form of usage of modern technology. Personal computers, smartphones helps anybody to access, modify, store and share digital media. Many electronic devices from digital cameras to drones help in creating, transmitting and viewing digital media content. Combined with the World Wide Web and the Internet, digital media has transformed 21st century society in a way that is frequently compared to the cultural, economic and social impact of the printing press. The change has been so rapid and so widespread that it has launched an economic transition from an industrial economy to an information-based economy, creating a new period in human history known as the Information Age or the revolution. The transition has resulted in uncertainty about definitions where the words like digital media, new media, multimedia and similar terms have a relationship to both the engineering innovations and cultural impact of digital media.

(International Journal of Creative Research Thoughts (IJCRT), 2020).

The world is ready for digital media programs to support self-management. Simple interventions, such as the use of text messaging on mobile devices, have successfully improved the adherence to medication in adults with chronic diseases. Digital technologies introduce novel opportunities to address health system challenges, and thereby offer the potential to enhance the coverage and quality of health practices and services (Mehl & Labrique, 2014). Digital health interventions may be used, for example, to facilitate targeted communications to individuals through reminders and health promotion messaging in order to stimulate demand for services and broaden access to health information. Digital health interventions may also be targeted to health workers to give them more immediate access to clinical protocols through, for example, decision-support mechanisms or telemedicine consultations with other health workers. A digital health intervention is defined here as a discrete functionality of digital technology that is applied to achieve health objectives (WHO, 2018). The range of digital health interventions is broad, and the software and technologies–digital applications–that makes it possible to deliver these digital interventions continue to evolve within the inherently dynamic nature of the field.

In addition, contemporary digital devices such as smartphones, iPods and tablet computers now allows for ubiquitous computing and are increasingly connected to each other as part of the Internet of things (Miorandi, Sicari, De Pellegrini & Chlamtac, 2012). These devices' portability and ability to connect to the Internet almost anywhere and the opportunity to connect them wirelessly to technologies embedded with sensors that can constantly monitor bodily functions and activities, as well as their ability to converge with each other and readily exchange data and for sophisticated algorithms to be used to process and interpret the data that are collected, are all viewed as central dimensions of the digital health phenomenon (Swan 2009, 2012b). Health users of the newer digital

technologies can contribute to or comment on blogs and online news items and upload data to social media sites such as Twitter, Facebook and Instagram. These mobile digital devices and related software platforms to which they connect offer ready access to or provision of medical and health information on the Internet and new ways of monitoring and measuring the human body. They are able to produce detailed biometric data that may be collected by individuals and then easily shared with others.

Thousands of health-related apps for mobile digital devices have been developed to assist users in tracking their bodily functions and activities. Due to the increasing trend of embedding tiny digital sensors and microprocessors into everyday objects that are then able to transmit the data they collect wirelessly to other digital devices, apps and platforms, increasingly greater amounts of data on many aspects of the human body's movements, geographical location and physical function may be collected and analysed (Swan 2012b). There is a range of digital products currently on the market that can be worn upon the body for self-tracking biometric data. Such body functions and indicators as blood glucose, body temperature, breathing rate, blood chemistry readings and even brain activity can all be monitored using portable wearable and internal sensors that have been embedded into devices that can be worn upon the body, woven into clothing or laminated onto ultrathin skin interfaces. Wearable devices currently available include a rubber wristband, the Jawbone Up, which is fitted with tiny motion sensors that can track how much the user is walking and sleeping, working with an iPhone app to upload the data collected. Together with other technologies, the Up app can keep a record of meals eaten (using photographs of the food), calories burned and hours slept as well as physical activities completed, and the latter data can be graphed and compared with other users of the app for those who are competitive. The bracelet can be programmed to buzz silently at various periods throughout the day to remind its wearer to move. The developers of the device note that it uses algorithms to 'discover hidden connections and patterns in your

day-to-day activities' that will 'deliver insights that keep you moving forward' (Up by Jawbone 2013). Sports watches can be purchased, which are worn during walking or running to record heart rate, time, distance, pace and calories burned, which data can then be uploaded to a computer. Many of these apps and devices are used voluntarily by people as part of self-tracking their health, exercise and consumption habits (Lupton, 2013). However, as part of digitised health promotion, digital health technologies are increasingly championed in the health promotion and preventive medicine literature as offering unprecedented opportunities to reach target groups with tailored messages, to encourage members of these groups to engage in self-monitoring of their health-related behaviours and to both track individuals and collect mass data on these behaviours for use in monitoring populations. In the notion of 'personalised preventive medicine' the concepts of medicine and health promotion meet. The 'personalised' aspect of this approach focuses on collecting as much data as possible about individuals and their health states, everyday habits and the social and geographical environment in which they live: their 'personal health informatics' (Swan 2012a).

The Advantages of Digital Technology in Community Health Education

i. Improve Work Efficiency and Effectiveness

With the help of digital technology, the community health education workers can obtain the information from residents accurately. Typically, this is also used in registration, query, sorting, and statistics of large numbers of community population information, which can reduce the workload of community health education workers and accomplish information sharing. Floating population management has been a big problem in Nigeria and other underdeveloped or developing countries. In some regions, in the absence of information technology, doctors cannot obtain the patients' information in paper, and they cannot evaluate the patients' health status; However, all of these can be solved by the

Internet in the digital technology age. The doctor's fully use of the residents' record and to provide personal healthcare services. After analysing the data of the community, the managers can determine community health problems and main risk factors, which will provide the scientific basis for making community health plan and implementing effective and efficient management.

ii. Promote the Quality of Health Education

Health education information is easier to understand by community residents when using digital technology in health education lectures, campaigns, sensitisation programs and so on. Health educators uses different kinds of animation which is suitable for a variety of needs of different people, to help the community residents understand and study easier. One research of 170 residents from Shenzhen, Qingdao, Shenyang, Daqing showed that 98.2% of them prefer health education lectures in animation rather than text, 88.2% are able to spread the health knowledge after learning that. 99.4% of them think that using this form of communication materials makes health knowledge persuasive and imaginative, but also makes it interesting and appealing. Seventy percent of the residents think that illustrated, intuitive images will be more helpful in the process of lecture (Sun, al., 2007).

The traditional media such as newspapers, books, radio, television, and movie have the advantages of wide coverage, fast transmission, a large amount of information, and low cost, but they are unable to satisfy the different demands of each person. While digital technology has important features of being real-time, interactive, and audience-centred; it can also make text, graphics, sound, dynamic, and static images. Together, they can create realistic art effects and make education abundant in content.

iii. Improve Residents' Healthcare Consciousness

Digital technology has helped to improve individuals' health care consciousness in the society through all kinds of health education activities. The health workers discovered that the community

residents lack the health knowledge of mental health, drugs, and disease prevention. Some of them cling to their old ideas and have unhealthy life styles before, but now after the telephone consultation and searching on the internet, they learned how to control risk factors and how to prevent diseases. Internet access empowers residents to take control of their health and enables them to participate in special lectures and educational programs.

Effects of Technology on Health Promotion and Our Quality of Life

Technological progress offers great potential in the acquisition of health information, care and services. It forges technologies into increasingly powerful tools with expanding possibilities for the development of health education and prevention programs. According to Cordón (2007), the Internet has become an integral part of the modern concept of health. It provides support for not only health institutions and practitioners, but also for the population at large. In addition, technologies foster efficiency and open up possibilities for new treatments and wellness. The contributions new technologies have made have changed some of the paradigms that are used in public health promotion (among other things, the biomedical and the biopsychosocial). They have also changed the mission of education in this area by helping to improve quality of life and facilitate shared information and communication among health practitioners and between health practitioners and their patients.

ICT usage provides greater flexibility and the capacity for stronger and more refined control, evaluation and management of health and personal wellness. In addition, ICT enables a greater quantity of information to be gathered and processed. It facilitates use of the necessary resources in disease treatment to minimise possible side effects, thus making disease treatment safer. Nevertheless, although many technological advances contribute to health and make daily life easier, unbridled use of technology in the daily environment can negatively affect the human body. In addition, how technologies can change the practitioner/patient relationship

and the caregiver/practitioner relationship are topics in which there should be further research. The same may be said of organisational aspects, such as the degree of patient and practitioner engagement in the process, with process use, acceptance and continuity.

Limitations and Drawbacks of Technology Use in Health Promotion

Although nobody doubts that health education finds in technologies and social networks an ally and a good tool for accessing health content, people have to be made aware of the need to view content critically and learn to discriminate about information quality. Sometimes the information people find can have negative consequences. There is the example of the teen obsession with physical appearance, which can be associated with unhealthy behaviour.

Another limitations of the use of technologies to promote health stems from the fact that the real impact of health technologies is analysed in partial studies only. Health practitioners are aware of this. In addition, this article reveals some specific barriers of digital technology in health education, which are as follows:

i. Inaccurate and Misleading Information

The aim of digital technology in community health education was to improve residents' ability to find and use evidence-based health information on the internet. However, digital technologies are dynamic and heterogeneous, constantly shifting in their meanings according to the context in which they are used. In fact, much of the health information was inaccurate and misleading on the internet and some websites are run for profit.

ii. Lack of Investment

Support and guarantee should be given in such aspects as personnel, material, and finance. The community should assign special workers to provide health education (Wen & Guo, 2007). There are no real health education workers in most communities now. Usually, the workers are doctors or nurses in other department and they do not

have enough time to carry out educational activities or think about how these technologies could be most effectively used as tools in their efforts to help people. Few people are using digital technology to get information, communicate with health personnel, or make online medical purchases. Furthermore, less well-educated, lower-income individuals living in rural areas tend to use the healthcare Internet less than others. Several policy measures like increasing input need to be undertaken to accelerate the appropriate use of digital technology by healthcare consumers of all kinds. These include improving education and technological literacy and providing access to low-cost digital technology (Kind, Huang, Farr & Pomerantz, 2005).

iii. The Privacy and Safety

Although, the internet offers great promise for health education and promotion, there are also potential risks. These risks may include, but are not limited to, misappropriation of limited resources and violations of privacy and confidentiality. The discourse in health promotion represents people as willing to take on responsibility for promoting their health using these latest technologies. They are happy to receive regular messages on their mobile phone or to have their health habits and behaviours continuously monitored and assessed. They may also feel invaded by the sheer overload of data that may be generated by the membership of social networking sites and the difficulty of switching off mobile devices and taking time out from using them (Boyd, 2008). Also, viruses may lead to loss of health records, and we have a series of health education follow-up that the help of the health records shall conduct. If data go missing after files or programs are destroyed, the quality of health education will be affected.

Conclusion

In short, digital technology has the greatest potential to promote health and prevent disease for individuals and communities throughout the world. Addressing inaccurate and misleading

information, lack of investment, the wide gap, and security and privacy issues in digital technology have also been proven challenging. Extensive research will be required to maximise positive health effects of digital technology while minimising potential dangerous side effects. Technologies have caused some highly significant changes in the configuration of health services. Technologies are an extraordinarily effective tool that will improve our quality of life and usher in a trend of development via fair resource use. In addition, as an element of our daily life and work, technologies ensure progress and stimulate creativity and innovation for the benefit of individuals and society. Educating people to use technologies in today's society and apply technologies to health, always bearing in mind the recommendations of professional ethics for tools of this type, will undeniably help promote healthy lifestyles, prevent and palliate disease, aid with rehabilitation and facilitate care for possible after-effects.

The current move towards the use of digital technologies brings significant implications for the practice of health promotion. Where once health promotion was a relatively low-tech endeavour, the new digital health technologies have introduced a diverse number of tools and devices that have significant implications for health promotion professionals and the 'at risk' groups which they identify as requiring their interventions (Lupton, 2013). Digital health technologies offer interesting possibilities for health promotion practice.

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