

THE ROLE OF ICT IN HEALTH PROMOTION (HP): A PERSPECTIVE ON PHYSICAL ACTIVITY (PA) AND WELLNESS INFORMATION

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Abstract

The integration of physical activity (PA) and wellness information into daily living practices is essential for fostering health-promoting behaviours that support individual welfare and happiness. These habits are particularly effective in the prevention and management of non-communicable diseases (NCDs) across various age groups. This study explores the impact of wellness information and physical activity on health promotion, emphasizing the use of Information and Communication Technology (ICT) to advance understanding and adoption of these health practices. Additionally, it highlights how ICT tools contribute to promoting a health-conscious lifestyle, supporting both physical and emotional wellness at the individual and community levels. Findings underscore that ICT applications can play a significant role in enhancing wellness information dissemination, encouraging health-promoting behaviours, and reducing the prevalence of NCDs. Ultimately, the study advocates for broader use of ICT in facilitating wellness information and physical activity as part of a holistic approach to public health.

Introduction

Health for All (HFA) by the year 2000 was a goal set by the World Health Organization (WHO, 1978) to improve the health of all people by the year 2000. It is almost five decades since that goal was first articulated; still humanity continues to grapple with the heavy burden of disease and infirmity. Over the years, man had pondered on the mystery of life and death, and had made every effort to mitigate the deleterious effects of ill health and its aftermath consequences. The concept of health has evolved over many years in order for it to arrive at its current meaning and context. The Ancient Greek had several concepts or words that point to the meaning of health. Nevertheless, the most popular reference to health by the Greek is 'hygieia'; from where the English people derived the word 'hygiene'. However, over the years the word 'health' emanated from the old English word 'hale' which means wholeness, being sound, fit or capable (Oleibe, Ukwedeh, Bruiston, Gomaa, Sonderup, Cook et al 2018). Being sound, fit or able to cope with life endless demands would require a whole lot of factors ranging from physical, emotional, social or even spiritual according to

the World Health Assembly conceptualization of the definition of health. It is also worth mentioning here that health in its full context is embedded in a matrix that is at once historical, social, political, economic and cultural according to the saying of a wise sage. Physical health and wellness cannot be overemphasized in the life of the individual, be it an athlete, a desk officer or cashier who sits at the counter to receive and attend to customers. Physical health otherwise known as physical fitness has been described from the premise of the ability to execute a task with optimal performance, endurance, strength while being able to cope with the burden of disease, stress, fatigue and sedentary behaviour (Newman, 2023). Physical fitness can mainly be derived from participation in physical activities and exercise. The widely publicized article by the trio of Caspersen, Powell and Christenson (1985) on the relevance of the tripod of physical activity, exercise and physical fitness on public health is noteworthy. The authors critically analyzed and contextualized physical activity and exercise, which study further describes the importance of calories in nutrition, sports and exercise physiology and sports medicine. Wellness could be described as a broad concept that include physical, emotional, social, intellectual, spiritual as well as occupational wellness. It has been widely described by Pfizer (2024) as a broad and holistic concept that embraces various aspects of an individual's overall well-being, and not just the absence of infirmity. It also involves a proactive approach to enhancing and maintaining a person's all round fitness and well-being.

Wilfrid Laurier University (2024) stated that physical dimension of wellness encompasses positive behaviour that promote exercise and physical activity, healthy sleep and proper diet in addition to sexual health and substance use, all of which culminates in living happier and longer life. The promotion of health and physical activity in the global community would not have been feasible, if not for the great leap in the advancement of information communication technology in the last century.

Health promotion is a social science that draws from a range of disciplines; including biology, psychology, and medicine. It is a modern ideology that aims to reorient public health away from focusing on individual risk factors and behaviours, and instead target the determinants of health promotion and advocacy for health would not be possible without the presence of information communication and technology (ICT). The invention of the printing press in 1455 in Germany by Johannes Gutenberg, followed by other media and ICT related products like the telegraph, radio, television, computers and the internet have significant and endearing influence on the promotion of physical activity, exercise science and its health related components. Therefore, this paper examines how the Knowledge of Health Promotion (HP) and Information Communication and Technology (ICT) have helped to propel the concept of physical activity and wellness in the study of physical education (PE) and exercise science. The concept of physical activity and wellness education. Physical Activity (PA) could be defined as all movement of the body produced by the contraction of skeletal muscles that increases energy expenditure above resting metabolic rate, by its modality, frequency, intensity, duration, and practice. This definition suggests the description of the principle of training and it is very easy to confuse physical activity with exercise. Physiopedia (2024) opined that physical activity refers to the contraction of skeletal muscle that produces bodily movement and requires energy, while exercise is

physical activity that is planned and is performed with the goal of attaining or maintaining physical fitness, whereas physical fitness is that quality that enables a person to carry out all manner of physical activities and exercises. Physical activity according to Zeng, Bian, Cui, Yang, Wang and Yu (2020) includes four dimensions: intensity, frequency, duration and mode and is now popularly referred to as Frequency, Intensity, Time and Tedium (FITT) principle of training.

Physical activity and exercise have been known to offer numerous benefits according to literature and the benefits range from lower risks of type 2 diabetes (T2DM) and other chronic diseases. Regular physical activity and exercises is believed to be of great benefits to the elderly. In addition, the attributes of physically active people includes: lower or reduced risk of developing the non-communicable diseases NCDs; ability to maintain a healthy weight (ie<BMI and %MW); have mental health/wellness; and show better cognitive and physical function. According to a recent World Health Organization (WHO, 2024) report, the global target set to reduce levels of physical inactivity in adults and adolescents, is a 10% relative reduction by 2025, and 15% by 2030. From the 2010 baseline reports. Pranatik (2024) submitted that the results revealed that nearly a third of adults were insufficiently physically active in 2022, with a global prevalence of 31.3%. The highest prevalence was in high income Asia Pacific and South Asia, while the lowest was in Oceania and Sub-Sahara Africa. Females had a prevalence (33.8%) than males, with significant country specific and regional variations. Insufficient levels of physical activity were also most prevalent among older age groups". A well-developed programme of physical activity and exercise leads to the enhancement of physical fitness. Physical activity can be performed in many different forms like walking, cycling, all forms of sports and games, recreational activities like yoga and dance, as well as gardening and house chores.

According to Arasur (2020), regular exercises and physical activities will maintain the performance of the lungs and heart to most efficiently burn off excess calories and keep the weight under control. Physical activity will also improve muscle strength, increase joint flexibility and improve endurance, which are the key aspects of health related physical fitness.

Kohl, Craig and Lambert et al (2012) refers to physical fitness as the physiologic state of well-being that allows one to meet the demands of daily living or that provides the basis for sports performance. The sports or skill-related components of physical fitness are more associated with performance than good health. They include speed, power, agility and reaction time amongst others. The first Global status report on physical activity (2018) also "shows that progress towards the Global action plan on physical activity target of a 15% relative reduction in physical inactivity (pi) by 2030 is slow and unequal; that is why it is important to implement evidence-based, effective policies, as outlined in WHO's Global Action Plan on Physical Activity (GAPPA). The policies are geared towards encouraging walking and cycling to mitigate the adverse effects of climate change (CC), as well as increased participation in sport can help bring communication together in order to build valuable life skills. Kohl, et al (2012) reiterate that physical activity surveillance should provide information for policies and interventions that reside in many sectors namely health, education, recreation, transportation, and land use planning. As stated in the preceding

paragraph, the health-related measures or components of physical fitness is directed on meeting physical activity recommendations and domain-specific measures like walking and bicycling for transport, occupational physical activity (Opa), attendance of physical education classes at school, physical demands of chores and participation in physically active recreation and sports. Furthermore, to inform the many levels and sectors needed for intervention, ecological frameworks spanning determinants and correlates at the individual, social physical environment and societal levels are needed to organize vast array of factors affecting physical activity. "Health is a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity" (1948). Making reference to health as a state of well-being is where the term wellness originates. Onuzurike (2007) describes wellness as a sub-health level ranging from low level to high level wellness. Low level wellness is characterized by ill-health, disease conditions, infections, low immunity, and total disability. Also, Moronkola (2020) conceptualized wellness as a daily actions one take continuously to make one enjoy good health in all areas as against mere survival. One's wellness relates to a good sleep, adequate nutrition and regular exercise connectedness which impacts the individual physical and mental health.

Pfizer (2024) in their documentary on wellness defined this construct as a broad and holistic concept that encompasses various aspects of an individual's overall well-being. It goes beyond just the absence of illness and involves a proactive approach to maintaining and enhancing one's physical, emotional, mental and social health. Wellness as opposed to illness is sometimes described as the positive component of good health (Arasur, 2020). The connection between climate change, mental health (a key factor in wellness education) among information professionals was recently documented by Emeahara and Emeahara (2024). Interestingly, Baxter and Friedl (2023) saw climate change as part of environmental health, which is an aspect of public health that deals with the factors in the environment that impact heavily on the well-being of mankind. The recent environmental hazards, especially flooding and extreme weather conditions ranging all over the world have impacted negatively on the well-being of the individual mental wellness have a way of demoralizing a people if not well catered for, after any environmental hazards or catastrophe has occurred. Environmental wellness is just one out of the several wellness dimensions known to us. Before we itemize other wellness dimensions, let us first of all describe wellness. In the opinion of Murphy (2022) the concept of wellness is a very old one, and is related to the 'Ayurveda', an oral tradition dating back to more than three millennia. 'Ayurveda was a holistic system which aimed to create harmony between body, mind and spirit and were tailored to individual constitution (their nutritional, exercise, social interaction and hygiene needs), with the goal of maintaining a balance that prevent illness; yoga and meditation are critical to this tradition'. Over the years, the word wellness has been used interchangeably with 'well-being', 'happiness, or even 'health'. However, the Global Wellness Institute (2024) defines wellness as "the active pursuit of activities, choices and lifestyles that leads to a state of holistic health". The importance of wellness is very vital to the health industry because of the values of quality of life, self-stewardship, professional responsibility and physical fitness.

Wellness encompasses eight mutually interdependent dimensions as physical, intellectual, emotional, social, spiritual, vocational, and environmental. See Figure II below for the illustration of the wellness wheel. Banaszak and Lewis (2023) observed that a health continuum is a visual tool, also known as an illness-wellness continuum that would enable the individual make healthy choices. The continuum ranges from premature death to signs, awareness and finally, to a high-level of wellness.

Concept of health promotion (HP)

The concept of health promotion (HP) is not so farfetched from the meaning of wellness. Eriksson and Haugan (2021) postulated that “from the salutogenic point of view, health is a movement on a continuum between ease and disease. In this approach, no one is categorized as healthy or diseased; we are all somewhere between the imaginary poles of total wellness and total illness”. The salutogenic model is a theory that explains the relationship between health, stress, and coping. It was developed by Aaron Antonovsky, a medical sociology professor, after studying holocaust survivors who were able to thrive despite the tragedy. The salutogenic model’s main idea is that health and illness are not separate, but rather a continuous variable. These key concepts of salutogenic model are coherence, holistic approaches and health promotion.

As a model for health promotion, the salutogenic model according to Gesund (2007) encourages people to develop a strong sense of coherence (SOC) through life experiences, such as participating in socially accepted activities and having adequate resources. The University of Georgia College of Public Health (nd) defines health promotion as a behavioral social science course that derives its curricular from the biological, environmental, psychological, physical and medical sciences to promote health and prevent diseases. The WHO 1986 at the first international conference on health promotion in Ottawa, Canada defined health promotion as the process of enabling people to increase control over, and to improve their”. The conference was primarily a response to growing expectations for a new public health movement around the world. It was built on the progress made through the Declaration of Primary Health Care (PHC) at Alma-Ata USSR. The Alma-Ata Declaration (1978) was the first result jointly covered by the WHO and UNICEF. The Ottawa Charter clearly stated that a major aim of health promotion is to achieve equity in health by enabling all people to achieve their fullest health potential. To achieve this goal, five core strategies for health promotion action were identified: build a healthy public policy, create supportive environment, strengthen community action, develop personal skills and re-orient health services. These principles have stood the test of time, and the first four actions are still developing well. However, the principle of ‘re-orienting health services’ has until recently been given less attention. Health promotion can also be described as the art and science of helping people change their lifestyle to move toward a state of optimal health (see fig. III below). The Ottawa Charter also identifies three basic strategies for health promotion. There are advocacy for health to create the essential conditions for health; enabling all people to achieve their full health potential; and mediating between the different interests in society in the pursuit of health (Tulchinaky and Varavikova, 2014). Furthermore, Mittelmark (2000) identified from interrelated technologies related to the field of health promotion ; Health

promotion (HP) includes a technology by which all public policies (see Table 1 below) and programmes from national to local, can be systematically and rigorously evaluated;

HP includes a technology to strengthen communities' ability to take effective actions at local level e.g transformation of neighbourhoods and key institutions such as homes, schools, hospitals and work places into H-P environments.

HP includes a technology to improve the ability of health care system to practice primary prevention, provide health education, and improve the quality of informal care provided by family members; and

HP includes a technology to assist citizens to take control over and improve their own health through behaviour and lifestyle changes, and also to learn how to be wiser consumers of health care and preventive services.

Health promotion programmes are designed to transcend the full spectrum of the health continuum as represented below

The development of health policy and health promotion in the developing world especially Nigeria sadly is a mixed bag of very few successes and abysmal failures and gloom. Akinkugbe (2003) observed that planning for the development of health services in Nigeria has been visited with the levity brush from 1946 to 1986, health was subsumed within successive National Development Plans as one of the many forms of socialized services. The first National Plans (1946-56) was, for example, a digest of government department activities and did not even pretend to concern itself with definitive goals and strategies for meeting specific targets in health. According to the Federal Ministry of Health (FOE, 2019) the revised policy identifies the relevant human resource necessary to implement health promotion activities effectively and efficiently by expanding the skills-base of Health Promoters to include persons with the minimum required qualifications and skills in line with global best practice. It aims to ensure that health promotion steps out of its less successful past. That way, it can become a formidable contributor to the achievement of the health related Sustainable Development Goals (UN, 2016), as well as the Universal Health Coverage (WHO, 2023); thereby improving the health and well-being of the Nigerian populace.

Health promotion (HP) and information and communication technology (ICT)

WHO (1986) notes that health promotion is not the responsibility of the health care professionals only, the policy makers must also be stakeholders as well. According to Nahuta, Sabitu and Ibrahim (2024) "national health policy guide the attainment of good health and well-being, National policy denotes a country's plans, initiatives, guides actions, and / or efforts taken towards the provision of healthcare services delivery".

The general objective of every health policy is to provide protective, preventive and rehabilitative health care to every person in the nation. Nigeria has witnessed nine health developmental plans beginning from the first colonial development plan in 1945 to the third National Health Policy (NHP) of 2016 (see table 1 below)

Table 1: History of health development plan and policies in Nigeria (1945-2016)

Name of the policy	Period	Interval
First colonial development plan	1945-1955	10 years
Second colonial development plan	1956-1962	6 years
The first National Health Development Plan	1962-1968	6 years
The Second National Health Development Plan	1970-1975	5 years
The Third National Health Development Plan	1975-1980	5 years
The Fourth National Health Development Plan	1981-1985	4 years
National Health Policy (first)	1988-2003	16 years
Revised National Health Policy (Second)	2004-2014	12 years
National Health Policy (Third) Current	2016 to date	Not yet Revised

Culled from: Nahuta et al (2024): Health Policy Compendium A progression of Nigeria's National Health Policy

In analyzing the policy content and context of the National development agenda, Nahuta et al (2024) states that the NHP, and its strategy to achieve Health for all Nigeria was developed at critical stages in the evolution of the nation's health system, and had far-reaching impact in improving the performance of the system throughout their life time. Eriksson and Haugan (2021) stated that in the special supplement of Health Promotion International entitled, "The Ottawa Charter for Health Promotion 25 years on", a panel of diverse communities reviewed progress and opportunities. Authors agreed that there had been slow progress in making health promotion a core business for health services, and there was a need to Reframe, Reposition and Review efforts. One proposal was to focus on re-orienting the system itself-not just the delivery of services- by health promotion leaders engaging more actively in system development.

In defining health promotion, WHO (1978) states that "health promotion is the process of enabling people to increase control over, and to improve their health. To reach a state of complete, physical, mental and social well-being, an individual or group must be able to identify and to realize aspiration, to satisfy needs, and to change or cope with the environment. Health is a positive concept emphasizing social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond life styles to well-being".

Over the past three decades, ICT has greatly altered the way we live our lives. For some it has been success all along, but for others, it has badly affected their lives and well-beings. "Information and Communication Technology (ICT) is the use of computing and telecommunication technologies, systems, and tools to facilitate the way information is created, collected, processed, transmitted, and stored. It includes computing technologies like servers, laptop computers, and software applications as well as their wired and wireless communication technologies that support telephones, the Internet of things (IOT), and the metaverse. The goal if ICT is to improve access to information and make human-to-human, human-to-machine, and machine-to-machine (M2M) communication easier and more efficient" (Rouse, 2024).

ICT has changed drastically how people work, communicate, learn and live. It continues to revolutionize all parts of the human experience as first computers and now robots do many tasks humans once handled (Awati and Pratt, 2024).

The use of ICT in health promotion (HP) has transformed how individuals access, engage with and act upon health information. ICT encompasses a range of tools, including mobile health (mHealth) applications, wearable fitness trackers, telemedicine, and social media, all of which play a role in disseminating health information and supporting behaviour change (Brown et al, 2003). Digital health solution makes health promotion information readily accessible, especially for populations that may lack access to traditional health care resources. Moreover, ICT has revolutionized the way health promotion information is delivered, making health education more accessible, personalized and interactive. From mHealth applications to telemedicine platforms, ICT has enabled a rapid and efficient dissemination of health information, which is especially of a great importance in today's information technology (IT) age (Brown et al, 2023).

Information communication and technology (ICT) physical activity (PA) and wellness

We are all stakeholders in this omnibus concept called 'health'. Singh and Singh (2004) stated that the role of health experts or doctors is the same as that of a gardener faced with insects, moulds and weeds. The work is never done". This careful observation could be viewed and analysed from numerous angles and perspectives. We all know that the field of medical science is a plethora of numerous academic fields and disciplines, all geared toward promoting health and wellness. There is no gainsay the fact that information communication and technology (ICT) is now a major player in this array of disciplines. Studies show that individuals who understand the long-term benefits of physical activity (PA) are more likely to integrate it into their daily routines (Reiner et al 2023), e.g a fairly recent study carried out by McLaughlin et al (2023) discovered that the benefits of exercise would most likely increase physical activity levels in the general population. Also wellness information fosters long-term adherence to health behaviours, as individuals who understand the benefits of regular activity are more likely to continue their habits in the long run (Gibson et al, 2022).

The integration of ICT in health promotion has revolutionized the way wellness information is disseminated, especially in reaching broader demographics and promoting health equity. As digital access increases globally, ICT tools like mHealth App, telemedicine services and social media platforms offer new avenues for delivering lively, personalized health information to diverse populations. This new development is particularly useful in expanding the reach of health promotion initiatives, enhancing healthy literacy, and enabling preventive care on an unprecedented scale. Moreover, ICT-based health promotion initiatives significantly improve healthy health literacy by providing people with essential knowledge about their health in an easy to use mode. Digital platform like health-focused websites, educational mobile Apps, and social media channels offer information on such topics as physical activity, nutrition, mental wellness and disease prevention (Nutbeam et al 2022). These platforms often use interactive and engaging formats, such as videos, infographic, and quizzes, to make complex health information more understandable. Digital health campaigns focusing on health-related information have a good influence on a

person's health literacy which in turn improves health outcome. The global rise in non-communicable diseases (NCDs) like cancers, heart diseases and the metabolic syndromes (Mets) have necessitated a shift towards health-promoting behaviours like physical activity in order to counteract the risk factors of NCDs. Wellness information accessible through ICT, empowers individuals to make informed decisions about their health, adopt preventive practices and foster a culture of well-being. Recognizing the potential of wellness information and ICT in promoting healthier lifestyles is very important in developing compressive public health strategies to mitigate the growing burden of NCDs.

Mobile health application (mHealth) has become widely used tool for health promoting information. These applications provide interactive platforms where users can set goals, track physical activity, monitor dietary intake, and receive personalized feedback (Liarg et al 2022). mHealth application s significantly improve users engagement with physical activity by offering tailored content and motivational remedies, e.g fitness applications that track steps, calorie intake, and exercise progress makes it easier for users to visualize their achievements, thus encouraging health promoting behaviours according to Naraujo et al (2023). There are numerous wellness applications that have enormous benefits in encouraging fitness and health. They include telemedicine and remote health services, wearable devices amd real-time feedback, social media as well as wellness information platforms amongst so many others. All these applications have implications for health literacy and public health. Telemedicine has extended the reach of wellness information by connecting individuals with health care professionals regardless of geographical location. During the Covid-19 pandemic, telemedicine proved essential in delivering wellness and medical consultants, especially for those in remote or underserved areas (Rahman et al, 2023). Telemedicine not only improve access to care but also provided patients with 8information on lifestyle modification to manage chronic conditions effectively. Wearabgle technology such as fitness trackers and smart-watches has further advanced the dissemination of wellness information by offering real-time insights. These devices allow users to monitor their daily steps, heart rate, sleep patterns, and other health metrics, enhancing their awareness of health behaviours (Bickmore et al, 2022). Research indicates that wearable devices have a positive impact on physical activity, as real-time feedback promotes accountability and self-regulation in users. Also, advanced wearable coupled with AI technology provide personalized wellness recommendations helping users adopt healthier lifestyle. Finally social media platforms are increasingly utilized to share wellness information, with health influencers, public health organizations, and fitness communities reaching millions of users daily (Vaterlaus, et al, 2023). Studies suggest that social media can positively influence health behaviours by creating supportive communities, offering peer-to-peer support, and sharing educational content on fitness, nutrition, and mental health (Cavazos-Relig et al, 2023). It has been discovered that individuals following health-focused social media accounts reported higher motivation to engage in physical activity and adopt healthier eating habits, underscoring the potential of social media as a wellness tool.

Conclusion

It is an undeniable fact that the health of a nation is paramount to the economic, social, and environmental well-being of a nation. Despite the giant stride in the advancement of health technology, especially in the Western world, and the BRIC nations, Nigeria is continually lagging behind in the global ranking of health indices. In all Nigeria have had not less than eight national health development plans/ NHP, non of these had made any significant difference in our health outcomes.

We also noted that for the health metrics of any nation to blossom, efforts must be undertaken to incorporate ICT and physical activities into our health systems. In line with the above conclusions, the following recommendations are made:

1. Our national Health Policy (NHP) should be overhauled to take into cognizance the current global realities as far as health is concerned.
2. Our governments at all level must be ready to invest heavily in both the health, education and welfare of her citizen.
3. All stakeholders in the field of health promotion, medicine, education, biological and environmental science ought to be effectively and efficiently mobilized to chart a new way forward, considering the devastating effects of the last Covid-19 pandemic.
4. Last but not the least; the government must be ready to invest heavily in ICT technology in order to have a high speed internet facilities both in the rural and urban areas of the nation.

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