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Metaverse!

Possible Potential Opportunities and Trends in E-Healthcare and Education

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ABSTRACT

This study aimed to synthesize the literature on Metaverse to highlight its current research, opportunities, and applications in e-healthcare and education to reduce inequalities and for delivering fair and equal opportunities and solutions. The authors employed preferred reporting items for systematic reviews and meta-analyses (PRISMA) to rapidly map the field of a metaverse in health and education. Two major application domains emerged in the literature from the 88 research publications, which include (1) Metaverse in healthcare and (2) Metaverse in education. This study will act as a road map to help academics who desire to continue their research work in the Metaverse for various healthcare and educational services. However, its implementation is required in the future to improve mental healthcare and the effectiveness of mental health services, particularly in low and medium-income (LMIC) and conflict-affected areas.

KEYWORDS

E-Education, Education, Healthcare, Mental Health, Metaverse, Training

1. INTRODUCTION

In the transition from physical to virtual check-ups, information systems (ICTs) have consistently encouraged healthcare organizations to tackle healthcare needs with innovative solutions. With state-of-the-art healthcare technologies in place, individuals have begun to feel more comfortable shifting away from conventional person-to-person interactions regarding healthcare, primarily mental health, due to stigma (Wainberg et al., 2017) (Abd-alrazaq et al., 2019). However, despite technological revolution and transformation throughout the globe, there is still a huge digital divide in terms of health (particularly mental health) and educational disparities between high-income countries (HICs) and low-income countries (LICs), which needs to be strengthened (Landry et al., 2021).

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The World Federation for Mental Health theme in 2021 was "Mental Health in an Unequal World," which emphasizes that access to mental health services continues to remain unequal (*WFMH World Mental Health Day*, 2021). While the Sustainable development goals were founded on a pledge to "leave no one behind". Mental health professionals account for approximately 9 per 100,000 people (median), with 72 per 100,000 in countries with high incomes and fewer than 1 per 100,000 in low –middle-income countries (LMICs) (World Health Organization 2017, n.d.) (Batada & Solano, 2019). The key factor hindering the progress of addressing mental health issues lies in the shortage of specialized mental health practitioners, particularly in conflict settings (Roberts & Fuhr, 2019) and is extravagantly complicated further by fewer mental health professionals graduating from institutes (Batada & Solano, 2019). These factors warrant a new approach to rapidly scale up digital mental health and educational solutions to offer quality mental health and educational services. Addressing these gaps will not only assist in resolving the key challenges but will also help in strengthening the mental health systems and reducing the treatment gap which is otherwise looming in LICs and is not much better in HICs(Landry et al., 2021).

In this case, as recently announced by Facebook, CEO Mark Zuckerberg "Metaverse" could be leveraged as an emerging technology in the digital health space. The novel True Names by American mathematician "Professor Vernor Vinge" served as the inspiration for the concept. The author of this 1981 novel ingeniously imagined a virtual world that might be accessed and sensed through a brain-computer interaction. Later, Affluent American writer Neal Stephenson employed the Metaverse in fiction for the first time in his 1992 dystopian novel Snow Crash, wherein the players traverse an online realm linear to the physical realm, employing digital identities for consciousness and engagement (L. Lee et al., 2021). A form of virtual reality where every online contact might immediately influence the actual world (Mann et al., 2018). According to (*Bloomberg Intelligence*, 2021), the global metaverse market opportunity will rise from USD 500 billion in 2020 to USD 800 billion in 2024, with the online gaming industry accounting for half of the global income. Metaverse is the term formed by combining Meta and Universe to describe a virtual reality world called the matrix (*Metaverse - Wikipedia*, n.d.), and as rightly defined by (Alang, 2021) as "the layer between you and reality". However, when Metaverse first debuted, it was a virtual reality gamble by big tech and an add-on function for online gaming. One must first understand the concept of the metaverse in order to understand the validity and value of deploying it in healthcare. Currently, the term "metaverse" refers to a shared virtual 3D environment or even a number of cross-platform worlds that can offer consumers a truly immersive environment featuring interactive and collaborative tasks. In addition, a metaverse is described in literature as an enhanced virtual environment made by integrating physical and virtual space, where users can engage in augmented reality interactions, virtually meet each other, and engage in virtual activities that replicate real-world experiences.

1.1. Familiarity Development and Motivation

In order to access various medical and educational services, the metaverse offers a powerful means to communicate with people all over the world electronically. Anyone, anywhere can use their web browser to log in to a virtual world and interact with others in real-time by equipping a virtual reality headset ((Mubin et al., 2019)). Because of this, it's ideal to conceive of the metaverse as a virtual replica of the real world that developers and users can personalise to their heart's delight in a world that is increasingly spatially fragmented world due to pandemics, natural disasters, and armed conflicts. It symbolises a brand-new manner of interacting with loved ones and close acquaintances.

The metaverse, which is currently the hottest topic and began with the invention of the block chain, is the most recent iteration of the Internet, according to (Duan et al., 2021). Researchers (Joshua, 2017)and (J. Y. Lee, 2021) stated that "the metaverse is a vast 3D virtual environment parallel to our physical world in which people can interact with digital avatars, i.e. virtual reality is the future aspect of technology" (Moneta, 2020). However, according to (Parisi, 2021), the metaverse is a large realm that may contain anything within its parts and layers. Since the metaverse has lately gained popularity,

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