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Original Research Article

Impact of metaverse in health care: a study from the care giver's perspective

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ABSTRACT

Background: Metaverse means a world in which virtual and reality interact and coevolve, and social, economic, and cultural activities are carried out in it to create value. The application of metaverse in the field of healthcare can help improving access to healthcare services by overcoming the physical barriers between hospitals and patients, thereby enhancing overall patient satisfaction, particularly in small towns and cities. Objective was to assess the perceptions of doctor interns on the impact of metaverse in the health care field.
Methods: This cross-sectional study was conducted among medical graduates doing internship in Pathanamthitta district, central Kerala. A semi structured pilot-tested structured questionnaire was shared among the study participants via a chain-referral procedure. The quantitative data collected was analysed using the software statistical package for social sciences. The responses on participants' perceptions collected were analysed using the inductive approach of thematic analysis and classified into themes and subthemes.
Results: Out of the study participants, 37.6% (150) considered metaverse to be the future of internet. Augmented reality and its applications in real life were the factors that excited a vast majority of the study population. Study participants expressed concerned about data privacy, cyber risks and vulnerabilities.
Conclusions: The introduction of metaverse is also not without early challenges.

Keywords: Doctors, Kerala, Metaverse, Perceptions

INTRODUCTION

Metaverse is the hot topic of the hour. Metaverse means a world in which virtual and reality interact and coevolve, and social, economic, and cultural activities are carried out in it to create value. A 3D-based virtual reality in which daily activities and economic life are conducted through avatars representing the real themselves.[1] It is believed to be future of Internet which will, by the use of artificial intelligence (AI), augmented reality (AR), virtual reality (VR), create an experiential and interactive learning environment. The metaverse has multiple applications in varied fields including social media and education.[2]

The application of metaverse in the field of healthcare can help improving access to healthcare services by overcoming the physical barriers between hospitals and patients, thereby enhancing overall patient satisfaction, particularly in small towns and cities. Metaverse provides new opportunities for healthcare providers to interact with patients in more intimate ways, such as walking through a three-dimensional model of the human body with patients, discussing diagnoses and treatments. This would allow providers to simulate the effect of a proposed treatment on the patient's body before it is applied, creating a more personal and informative experience compared to what is currently possible with two-dimensional images on a screen.[3]

Metaverse comprises the conjunction of three major technologies, which have the potential to revolutionize the health care field by lowering the treatment costs and improve patient outcomes. These are telepresence

(allowing people to be together virtually, even while we're apart physically), digital twinning, and block chain (and its ability to let us create a distributed internet). The convergence of these core technologies in online environments called the metaverse would enable swift peer discussions among clinicians, unhindered treatment effective tracking of patient progress thereby improving the quality of care. Although much attention has been given on research on the potential of metaverse in revolutionizing gaming, entertainment, socializing, work and commerce, not much has been explored on the impact of metaverse in the health care field especially the caregiver's perspective.

METHODS

This cross-sectional study was conducted among medical graduates doing internship in Pathanamthitta district, central Kerala from February to June 2022. The sample size was calculated using the formula $N=(1.96)^2$ PQ/L^2 and rounded off to 400 using the prevalence from a similar study.[4] Study participants were recruited for the study using respondent-driven sampling.[5] The study participants were approached for consent to participate in the study. After obtaining consent, the Google survey form was shared with the study participant. A semi structured pilot-tested structured questionnaire was shared among the study participants via a chain-referral procedure. Among the acquaintances of the investigators, individuals with more contacts in the target population were recruited. The sampling proceeded with members of the current sample recruiting the next wave of sample members, and so on until the desired sample size was reached. The data collected was analysed using the software statistical package for social sciences version 20. The results are presented as proportions. Out of the collected data, 1 incomplete response was discarded. The quantitative data collected was analysed using the software statistical package for social sciences version 20. The responses on participants' perceptions collected were analyzed using the Inductive approach of thematic analysis and the common themes that emerged from the data were pooled together.[6]

RESULTS

Out of the 400 study participants, majority (69.4%) belonged to the age group between 23 and 27 years. 73.2% (292) of the study participants were males. All the study participants had heard about Metaverse and considered metaverse to be an immersive, embodied, successor to mobile internet with multiple applications for augmented and virtual reality technologies.

Metaverse as the future of internet

Out of the study participants, 37.6% (150) considered metaverse to be the future of internet. 10% (40) of the study population felt that- it is a short-lived fad, since it's still aspirational while majority of the study participants (209- 52.4%) opined that it is too early to predict its success.

Significance of metaverse in the health care sector

Majority of the study subjects (163-49%) opined that is a major opportunity for the healthcare industry. 155 out of 399 study participants felt that metaverse is not very important now but the importance will increase progressively. A small percentage of study participants (81- 20.3%) were not sure about the applicability of metaverse in the health care field. The perceptions regarding the usefulness of metaverse in health care sector is given in Figure 1.

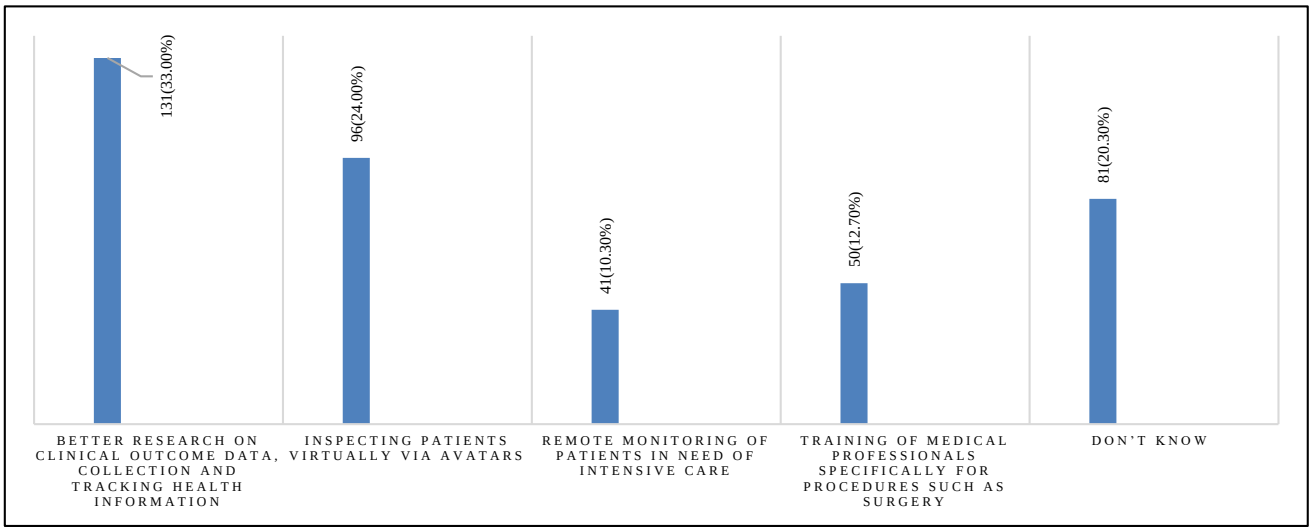

Figure 1: Barchart showing the perceptions regarding the usefulness of metaverse in health care sector among the study participants.

Other applications

The study participants were interviewed regarding what excites them about metaverse in addition to the applications in the health care sector. Augmented reality and its applications in real life were the factors that excited a vast majority of the study population (293-73.4%). Some of the study participants were also excited about the applications of virtual reality including virtual games (106- 26.6%).

Concerns about metaverse

The study participants were surveyed about their concerns regarding metaverse. 119 out 399 of the study participants expressed concern about data privacy (29.8%). 129 study participants (32.3%) were concerned about the lack of actual physical and social interaction. 123 study participants (30.8%) were worried about other cyber risks and cyber vulnerabilities. A few of the study participants (28- 7%) also expressed concern about the lack of clear laws and regulations in case of cybercrimes.

DISCUSSION

The present study was done to assess the perceptions of doctors doing internship regarding Metaverse. Out of the study participants, 37.6% (150) considered metaverse to be the future of internet. Comparable prevalence (41.9%) was observed from a similar study done in US.[4] Previous research has shown that intelligent processing can be performed through sensors to assist clinical diagnosis and treatment in the internet of things in medicine, after monitoring the pathophysiological parameters of the disease.[7] 49% of the study participants felt that metaverse would have a great impact on health care sector. An article on the application of metaverse in medicine revealed that application of a cloud plus terminal platform could enable interaction between virtual and real cloud experts and terminal doctors, in order to realize medical education, science popularization, consultation, graded diagnosis and treatment, clinical research, and even comprehensive healthcare in the metaverse.[8] According to the present study, many of the study participants felt that metaverse would improve the quality of data storage and management including training of medical professionals. The metaverse in medicine may also be applied to improve the efficiency of education and training, since it can address the issues that the cloud experts are not available to participate in science popularization and professional lectures, or to provide guidance for the terminal doctors on diagnosis and treatment as if they were present at all times and in all settings.[8]

Majority of study participants expressed concerned about data privacy, cyber risks and vulnerabilities. Data privacy concern is a growing issue for every entity that handles user personal information. Even though most privacy laws require mandatory privacy notices be displayed on websites and interfaces where customer private information is collected, most end users do not read these notices, and even if they do, given the esoteric nature of the Policy statement, they do not fully comprehend the content.[9] Similar studies on cybersecurity challenges has proposed methods like inclusion of cybersecurity reporting in Sarbanes-Oxley act, WFH cyber-attack mitigation framework with eight simple but effective steps to mitigate and prevent these cyber-attacks.[10,11] Application of these may be considered to alleviate the data privacy and cyber vulnerability concerns regarding metaverse.

CONCLUSION

Just like the introduction of anything new, the introduction of metaverse is also not without early challenges. Metaverse is an opportunity to move beyond the traditional concept of medicine into a collaborative world with no physical or geographic barriers. However, it is important not to lose focus of what matters the most-the patient in the real world. A strong foundation must be built to protect the interest of the patient and care giver before the metaverse vision is implemented.

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REFERENCES

1. Kye B, Han N, Kim E, Park Y, Jo S. Educational applications of metaverse: possibilities and limitations. J Educ Eval Health Prof. 2021;18.
2. Jeon J, Jung SK. Exploring the educational applicability of Metaverse-based platforms. Korean Soc Inform Educ Proceed Conf. 2021;8(a):361-8.
3. Vishal Gondal in Voices, India. Benefits of metaverse in the healthcare industry. Times of India; 2022. Available from: https://timesofindia.indiatimes.com/blogs/voices/benefits-of-metaverse-in-the-healthcare-industry/. Accessed on 20 August 2022.
4. Sebastian G. A Study on Metaverse Awareness, Cyber Risks, and Steps for Increased Adoption. Int J Secur Priv Pervas Comput. 2022;14(1):1-11.
5. Heckathorn DD. Respondent-driven sampling: a new approach to the study of hidden populations. Soc Prob. 1997;44:174-99.
6. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77-101.
7. Zheng B, Yang D, Zhu Y, Liu Y, Hu J, Bai C. 3D gray density coding feature for benign-malignant pulmonary nodule classification on chest CT. Med Phys. 2021;48(12):7826-36.
8. Yang D, Zhou J, Chen R, Song Y, Song Z, Zhang X, et al. Expert consensus on the metaverse in medicine. Clin eHealth. 2022;5:1-9.

9. Sebastian G. A cross-sectional study on improving privacy policy read rate and comprehension via Better UX/UI Design. IBIMA. 2021;2021.
10. Sebastian G. (2021). A descriptive study on cybersecurity challenges of working from home during COVID-19 pandemic and a proposed 8 step WFH cyber-attack mitigation plan. IBIMA. 2021; 1-7.
11. Sebastian G. Could incorporating cybersecurity reporting into SOX have prevented most data breaches at US publicly traded companies? An exploratory study. Int Cybersecur Law Rev. 2022: 1-17.

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