LETTERS TO THE EDITOR

Metaverse in diagnosis of skin diseases

Dear Editor,

The metaverse is the upcoming frontier in human connectivity. It is a post-reality cosmos that combines the physical world with digital virtuality in a continuous and enduring multiuser environment. The metaverse is an augmented reality (AR)/virtual reality (VR) interface where users may interact with other users in a digitally enhanced reality while being fully immersed in visual, aural, and haptic senses. Artificial intelligence (AI), AR, and VR are three important technical advances that have come together to create the metaverse, which opens up entirely new channels for providing healthcare, including disease diagnosis.[1] The scope of metaverse is expected to be more widespread, especially in the field of science. It is predicted to have implications on both the healthcare as well as financial sector. We are all aware that the current healthcare system is unsustainable due to the pressures of chronic disease, population explosion, a shortage of qualified healthcare professionals, constrained resources, and other factors. One of the most important aspects in the transformation of health care over the coming years will be the introduction of digital services including metaverse. The most important part of health care is disease diagnosis. Dermatology is a primarily visual science where most disorders are diagnosed by visual inspection of the skin. On various occasions, the cutaneous diseases can be missed due to inadequate examination. The use of this cutting-edge technology of metaverse can improve diagnostic accuracy of dermatological ailments. Using its application, the treating dermatologist can analyze a skin lesion and project its size, depth, progression, and other characteristics which cannot be evaluated with naked eye.[2,3] For many years, dermatology has successfully used AI, notably for the early diagnosis of skin cancer. In metaverse, the haptic feedback might be quite useful while using AR/VR as well. This relates to sensory data in dermatology, such as skin temperature, roughness, or stiffness, which may offer useful extra data to enhance diagnostic assessment. When determining the difference between epidermal conditions like psoriasis and atopic dermatitis or when determining the depth, induration, and edema of a leg ulcer, examining the skin's surface texture can be helpful. Another model creates virtual 3-dimensional (3D) pictures that may be felt with a haptic device from 2-dimensional (2D) images obtained from conventional full-body optical imaging systems. With this technique, the user may simultaneously visualize and touch the skin's surface. Currently, a specialized portable imager that provides 3D imaging of skin lesions is available, enabling dermatologists to see the texture and elevation of individual lesions when examining clinical images. To monitor pigmented lesions or other skin conditions, full-body 3D mapping of the skin's surface is also possible.[4,5] Metaverse can aid in radiological diagnostics by enabling new radiologic skills by real-time image viewing and manipulation; the ability to see dynamic images with greater information for improved disease/injury diagnosis; and the facilitation of close physician cooperation on 3D medical imaging.[4] The use of virtual reality and augmented reality in education and practice has the potential to enhance and transform dermatological practice by examining the skin lesions in real-time. To become pioneers in these technologies and implement them into their practices, dermatologists should try to capitalize on the metaverse revolution. Although numerous researches are needed to implement metaverse factor in dermatology clinics to enhance patient outcomes and boost practice efficiency.

AUTHOR CONTRIBUTIONS

Jyoti Kumari wrote and revised the manuscript. **Kinnor Das** reviewed and revised the manuscript. **Mohamad Goldust** conceptualized, wrote, reviewed, and revised the manuscript.

CONFLICT OF INTEREST

None.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

ETHICS STATEMENT

Authors declare human ethics approval was not needed for this study.

DISCLAIMER

We confirm that the manuscript has been read and approved by all the authors, that the requirements for authorship as stated earlier in this document have been met and that each author believes that the manuscript represents honest work.

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REFERENCES

1. Shin D. The actualization of meta affordances: conceptualizing affordance actualization in the metaverse games. *Comput Hum Behav*. 2022;1(133):107292.
2. Thomason J. MetaHealth – how will the Metaverse change health care? *J Metaverse*. 2021;1(1):13-16.
3. Obagi ZA, Rundle CW, Dellavalle RP. Widening the scope of virtual reality and augmented reality in dermatology. *Dermatol Online J*. 2020;26(1). https://escholarship.org/uc/item/6mz1s20x Accessed August 11, 2022.
4. Bonmarin M, Läuchli S, Navarini A. Augmented and virtual reality in dermatology—where do we stand and what comes next? *Dermato*. 2022;2(1):1-7.
5. Prado G, Kovarik C. Cutting edge technology in dermatology: virtual reality and artificial intelligence. *Cutis*. 2018;101(4):236-237.