



Future Medical Care in the Post-COVID-19 Era

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Discussions on strategies for the post-coronavirus disease 2019 (COVID-19) era will soon begin in earnest. Now is probably the best time to create a smart medical system in the local community. In the future, changes should be made to the medical service system to enable the provision of healthcare based on continuous monitoring of information such as electrocardiograms, blood pressure, and blood glucose levels. Furniture, equipment, and devices we use at home can become smart health devices that can perform health monitoring. For instance, smart mirrors have the ability to spot changes in health, monitor changes in disease, and see responses to treatment. A smart mirror would be a tool capable of revolutionizing the home as a place that produces healthcare data. As an example, a smart mirror could monitor one's mood and mental health through facial expressions or speech and notify the doctor in charge of health care service to the patient. A mirror can track one's pulse by evaluating body surface blood vessels, as well as body temperature, and it will even be possible to monitor the retinal blood vessels in the eye to monitor the progress of arteriosclerosis, hypertension, or diabetes.

The development of smart toilets would transform the bathroom into a de facto medical facility. This is because most people use the bathroom at home regularly, so they can obtain biological samples (e.g., urine or feces) that provide valuable information on their health status. Installing a device with the ability to analyze DNA, microorganisms, or human metabolites in urine or feces in the toilet bowl would

make it possible to analyze these samples regularly and transmit the results to a medical platform to monitor health.

The bed can also be a very important tool for managing one's health. Elderly individuals and hospitalized patients spend most of their time in bed, which is also a place where important health and safety information is generated. For example, a smart bed could monitor sleep and analyze movement to prevent falls. In addition, it could also be equipped with an image analysis function and language recognition ability to quickly notify medical staff or caregivers about emergency situations. With the rapid progress of population aging, the need for smart beds will grow.

In addition to devices installed in the home, biosensors are applied in a variety of ways in real life. Information such as how much people walk and exercise per day, how many calories they consume, and their blood pressure and heart rate throughout the day can be obtained by smartphones, smartwatches, or biosensors installed in the living space at home. Furthermore, a small device that measures blood sugar or metabolites can be placed inside the skin of the body to enable continuous monitoring of one's health status. The personal information obtained in this way is automatically transmitted to a medical platform for analysis, and when an abnormal signal occurs in the body, the information is immediately provided to health personnel and the doctor in charge so that appropriate medical measures can be taken.

In the future, as medical services are provided using various types of health information, platform-based medical services will become the center of medical services. Through mobile communication devices such as wireless patient monitoring devices, smartphones, personal digital assistants, and tablet computers, the patient's medical data measured in various ways in the environment (e.g., at home or work) is transmitted to the platform. An artificial intelligence (AI)-

based clinical decision support system (CDSS) analyzes the data and sends a recommendation message for appropriate behavioral improvement or treatment by a health professional. The use of medical platforms for monitoring will enable people to receive healthcare, prevent disease recurrence or aggravation, and even predict future disease development.

The basic direction of future medical services is to provide a consumer-centered, reliable, and customized health management system based on the interconnection of the patient's medical history, test results, medication information, and other health-related monitoring information. These medical services will include bio-phenomena detection technology through genetic information and lifestyle analysis, abnormal signal measurement, chronic disease monitoring, and disease prediction services. Doctors can provide treatment either face-to-face or online, and technologies that help provide high-quality services (e.g., such as AI-based analyses) will be incorporated into future healthcare services.

Therefore, health services such as evidence-based disease prevention measures and health checkups can be provided safely and appropriately. Based on this, customized health-supporting services are provided to help people manage their own health using their health-related information, while AI is used to analyze a wide range of health-related information to provide the most suitable health management for each individual.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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