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Digital Health Applications to Establish a Remote Pre-Diagnosis Through Intelligent Wearable Devices: Enhancing Healthcare Accessibility in China

Pan Yangyang, Liu Yanchi, Pan Dai, Liu Yu, and Yuting Chen

School of Design, The Hong Kong Polytechnic University, HK 999077, China

ABSTRACT

The study explores the potential applications of intelligent wearable devices in digital health, specifically focusing on remote pre-diagnosis in the context of medical tourism. Through a thorough analysis of current practices and applications of medical services and the identification of existing research gaps, the study can provide valuable insights into the potential of intelligent wearable devices in the field of medical care. While there is existing literature that covers the technical aspects of wearable devices and their general applications in managing physical data or chronic diseases, there is still a noticeable gap in terms of in-depth analysis of the medical care-seeking process and comprehensive exploration of their potential in remote diagnosis, especially in the pre-diagnosis phase. This research gap underscores the need for further exploration of the role of intelligent wearable devices in facilitating remote diagnosis and optimizing the healthcare-seeking experience. Such devices have the potential to bridge the gap between healthcare professionals and patients. Through comprehensive case studies that identify the values and limitations of intelligent wearable devices, this study aims to propose feasible directions for their application in remote pre-diagnosis. The significance of this study extends to addressing pressing social issues, such as the strain on healthcare resources due to medical tourism and the unequal distribution of medical resources in China. It also emphasized the relevance of technology and design practices in creating a medical care experience that is both effective and meaningful. By delving deeply into wearable technologies, this study contributes to optimizing conventional medical treatment processes and enhancing access to care through the integration of technology-driven solutions and future mobility. Shedding light on the potential of these devices, the study has the capability to drive innovation and shape the future of healthcare by leveraging technology to enhance patient care and well-being.

Keywords: Medical tourism, Digital health, Intelligent wearable devices, Remote pre-diagnosis

INTRODUCTION

The study holds significant promise for advancing the field of digital health by exploring the wide range of applications of intelligent wearable devices, particularly in the context of pre-remote diagnosis, offering valuable insights to augment the existing body of knowledge.

Digital Health and Intelligent Wearable Devices

Digital health, as defined by the World Health Organization, encompasses various technologies and emerging areas such as eHealth, big data, genomics, and artificial intelligence (Anon, 2019). The FDA (US Food and Drug Administration, 2020) has a similar definition, the broad scope of Digital Health includes categories such as mobile health, health information technology, wearable devices, telemedicine, and personalized medicine. The advent of technology and advancements in data analytics, coupled with enhancements in healthcare delivery mechanisms, has inaugurated a new era in digital health. This digital health revolution, driven in a large part by a growing ecosystem of medical wearable technologies, will affect all aspects of medicine with transformative benefits, both planned and unplanned, to our global community (Xu et al., 2022).

Digital tools are giving providers a more holistic view of patient health through access to data. Digital health offers real opportunities to improve medical outcomes and enhance efficiency. These technologies can empower consumers to make better-informed decisions about their health. Providers and other stakeholders are using digital health technologies in their efforts to reduce inefficiencies, improve access, reduce costs, increase quality, and make medicine more personalized for patients.

Wearable devices, originally marketed directly to consumers as fitness gadgets, are now evolving to function like medical devices by delivering accurate, multimodal capabilities to monitor and diagnose disease, continuously and with the potential to engage broad classes of patients that would be otherwise difficult to reach (Xu et al., 2022). Intelligent wearable systems are one of the technical means to realize digital health. These technologies are rapidly emerging as one of the most concerning aspects of the future digital health space. Broader public health interest in wearables (non-invasive, body-worn sensors) for population-level monitoring is also accelerating. As Xu (2022) said, advanced sensor technologies and data analytics will ideally produce devices that operate seamlessly and in a burden-free manner at any relevant anatomical location of the body, tailored to address specific patient needs and conditions, minimizing the risks of abandonment and skin irritation.

Necessities of Remote Diagnosis

Medical tourism is a global phenomenon, which indicates individuals leaving their cities, and traveling to another area for medical treatments, often driven by factors like access to specialized procedures. Some incitants, including budget air travel, favorable currency exchange rates, and the emergence of the Internet, all promote increased movement of patients across borders (Turner, 2013).

The phenomenon is similar in China. According to <National Health Service and Quality Safety Report 2020>, in 2019, a total of 5.99 million patients were treated in tertiary hospitals outside their provinces. It was recorded that 780,000 outlanders went to Shanghai for medical treatments (Wang, 2022). Some developed cities, like Shanghai, Beijing, and Guangzhou, have been the most popular destinations for long-distance medical care.

Due to the unbalanced distribution of medical resources and an increasing demand for enhanced healthcare, this is a growing trend that more and more Chinese people are seeking better medical treatments in developed cities.

The COVID-19 accelerated the process of medical models from traditional face-to-face to remote diagnosis through digital platforms, such as smartphones, websites, or text messaging, which can provide efficient, cost-effective, safe, and scalable interventions. After the pandemic, telehealth has become an integral part of supporting patient's clinical care and will be in the future for both primary and secondary care (Iyengar et al., 2020). Additionally, according to the PwC report (2022), the COVID-19 pandemic has brought a fundamental change in both the technology infrastructure as well as the mindset of healthcare stakeholders. These evidence shows that digital health will play a substantial and critical role in the future healthcare system.

Correspondingly, medical tourism strains the medical system in developed cities. Additionally, these patients have poor medical experiences. In a survey addressing issues encountered by them, 86% of respondents reported "long waiting times for hospital admission"; 66% indicated "long distances, difficulty obtaining appointments with specialists"; and 64.5% mentioned "lengthy follow-up periods, encountering situations where the attending physician is unavailable, leading to delays in timely follow-up" (Liao et al., 2020).

Current Practices and Applications

Previous studies have underscored the importance of monitoring physiological data through digital health applications. Involving digital health applications for daily monitoring and adjuvant treatment of chronic diseases and various diagnoses, these cases demonstrate the effectiveness of innovative healthcare solutions. One intelligent wearable system designed for people with Parkinson's disease can detect abnormal gait, thus providing personalized medical diagnosis services and timely cueing for patients (Yang et al., 2022). Wearable bioelectronic technologies have made significant signs of progress in personalized health management through non-invasive monitoring of health indicators. The integrated wearable system that integrates sweat-based sensing and vital-sign monitoring can estimate pre-/post-exercise glucose levels, which offers a novel comprehensive personalized health management strategy through combined analysis of key metabolic and physiological health indicators (Hong et al., 2018). Other technologies like 5G and artificial intelligence are also gradually being used in the establishment of doctor-to-doctor remote medical diagnosis in Japan. This remote diagnosis through 5G offers patients the benefit of receiving advanced medical care without having to travel long distances. Artificial intelligence synthesizes these large datasets to guide personalized clinical decision-making, with potential for predictive value. The provision of a remote diagnosis will provide elderly patients in rural areas with an earlier diagnosis without burdening patients in Japan where the aging population and the uneven distribution of doctors are increasing (Karako et al., 2020).

Research Gap

Many individuals seek better medical treatment by traveling to developed cities in mainland China. This trend burdens medical resources in these developed cities and exacerbates existing imbalances. Digital health emerges as a potential solution to address this phenomenon in the context of future mobility.

With digital health being a newly emerging and rapidly growing industry in recent years, the majority of related studies have primarily focused on technical aspects or remained theoretical during the initial stages. However, there is little published papers and mature applications concerning intelligent wearable devices that specifically address the healthcare-seeking journey.

The intersection between healthcare and mobility requires more discussion. In the present and near future, as the trend of seeking better healthcare through transportation becomes more prevalent in China, the usage of wearable devices is expected to broaden, extending beyond mere monitoring of users' physical data.

AIM AND OBJECTIVE

By filling research gaps in digital health, this study contributes to the understanding of the multifaceted applications and values of intelligent wearable devices. The study evaluates their potential in healthcare and offers insights to optimize traditional medical treatment processes. Furthermore, it discusses opportunities for remote pre-diagnosis in the context of future mobility. The study underscores the significance of addressing pressing social issues, such as the strain on healthcare resources resulting from medical tourism.

The findings of this study have the potential to improve healthcare access and empower individuals to make informed decisions about their health. The findings will also help healthcare professionals in optimizing the use of wearable devices for better patient outcomes and the development of meaningful and effective medical-related products in the future.

METHODOLOGY

To uncover the complexity of pre-diagnosis in telemedicine, we employ the Whole View model (Whitney & Nogueira, 2020) to conduct medical-related case studies from multidimensional perspectives, aiming to explore multiple possibilities for applying intelligent wearable devices.

Study Directions

Through in-depth case studies, some aspects are covered, including users' problems, key functions and features of current applications, applicable scenarios, and values for different stakeholders. These questions are discussed:

1. What are users' aspirations and problems? (Who is it for?)
2. What are the features, functions, and interactions of medical services of digital health? (What do they make as offerings and how will people experience it?)
3. What are the values of wearable technologies for each stakeholder in medical care? (Why does it create values?)

Whole View Analytical Model: User Terrain, POEMS, Value Web

The Whole View model is applied to conduct case studies. It is a conceptual model of connected frameworks and related methods that show the relationships among the various forces influencing the purpose for making change, which are User Terrains, POEMS, Value Web, Organizational Territory, Levels of Innovation, Strategy Pyramid, and Competency Flow (Whitney & Nogueira, 2020). Each framework supports a different viewpoint towards a central purpose for making change. By integrating viewpoints of strategy, value, operations, offerings, and users, the whole view can help start exploratory initiatives with a broader understanding of the context, problems, and opportunities in a fraction of the time than traditional management processes. It can describe the current state of an offering or prescribe changes.

The three study directions are users, offerings, and values. Therefore, this study will use the three corresponding frameworks of the Whole View model to analyze them. The first is User Terrain, which describes the user groups in the context of their aspirations and related problems. User Terrain is a way of understanding what motivates people. The second is POEMS. Its name is an acronym for the types of offerings generated by design projects (People, Objects, Environments, Messages, Services). It reminds researchers to think of offerings from these five aspects and describes the journey that users construct while using the offerings during five stages (Explore, Enter, Engage, Exit, Extend). The third is Value Web, which is a network diagram that reveals the relationships between a set of selected stakeholders. It shows how each stakeholder gives and receives value in a certain organizational arrangement and reveals resources such as money, brands, technology, and market access that can support stakeholder participation. This study applied qualitative methods like focus groups to gain insights from users and experts, and analyze them through these frameworks.

The Selection of Cases

The selection of cases will be based on specific criteria that ensure relevance and representativeness. There are currently two directions in wearable devices. One direction focuses on personalized health management through non-invasive monitoring of health indicators (Hong et al., 2018). The other direction utilizes 5G technology, enabling patients to receive advanced medical care without the need for long-distance travel. The cases will choose two applications, focusing on their use in medical care (Karako et al., 2020). Therefore, the following two cases are selected.

Case 1: HUAWEI Watch D

One case is the HUAWEI Watch D, which is a smart health watch with a series of health monitoring functions and can allow users to manage their health status. Its functions include blood pressure measurement, ECG analysis, arteriosclerosis and arrhythmia risk screening, SpO2/sleep/stress/skin temperature monitoring, and healthy living planning.

Who is it for?

The user group for HUAWEI Watch D can be identified as health-conscious individuals who lead active lifestyles and seek to monitor and improve their overall well-being. This user group can be named "Active Health Seekers." They are typically individuals who engage in regular exercise, such as fitness enthusiasts, athletes. In addition, those people who need to keep conscious of their physical condition are also the target such as the elderly, chronic patients.

Active Health Seekers aspire to optimize their physical fitness and overall well-being. They aim to achieve specific health goals, such as weight loss, cardiovascular endurance, muscle strength, or stress reduction. They seek to track and improve their performance in various activities such as running, cycling, swimming. They also desire a professional and comprehensive solution that integrates their health data, provides actionable insights, and helps them make informed decisions about their fitness and lifestyle choices.

Active Health Seekers often encounter challenges in time constraints. They feel hard to balance their busy schedules with their fitness goals and find efficient ways to manage their health activities. Ensuring accurate and reliable measurement of their health and fitness is essential for them, as they rely on this data for goal setting and performance monitoring. Additionally, lack of holistic health management is another problem, as it is hard to manage multiple aspects of their well-being, including sleep quality, stress levels.

What do they make as offerings and how will people experience it?

Explore the system of the offering that can help people overcome their problems, meet their aspirations and consider when people will interact with each one of these components throughout their journey (Table 1).

Table 1. POEMS framework of HUAWEI watch D.

User	Explore	Enter	Engage	Exit	Extend
People	Sales staff, friends and family, other users	Customer representatives	Community users, after-sale staff	Staff	Sales representatives, friends
Objects	Phone, PC, brochure, posters, videos, website, social media, virtual display	Phone, Watch, APP	Phone, Watch, APP, other compatible devices	Phone	Phone and additional objects such as fitness bands, wireless headphones that are compatible with the Watch D
Environmrnts	Physical or online retail store, shopping malls, online environments	Physical or online retail stores	HUAWEI ecosystem integrated with other devices, IoT environment, product user community	HUAWEI ecosystem integrated with other devices	The wider HUAWEI ecosystem, including other devices, apps, services

Table 1. Continued

User	Explore	Enter	Engage	Exit	Extend
Messages	Advertisement, Product specification, functions,precautions, user comments	Introductory messages, setup guidelines and process	Synchronized health data, personalized notification and suggestions	Historial health records, tracking advertising	Recommendation, directionaladvertisement, loyaltyprogram
Services	Pre-sale service, trial service	Account creation, presetting health-related information	Health monitoring and alert, including heart rate and blood pressure, sleep and nutrition, workout plans, after-sale service	Historial health analysis, data backup	Directional send, data backup

Why does it create values?

In this case, the stakeholders include HUAWEI and users (active health seekers), users' families, and healthcare professionals. They can receive values as follows.

HUAWEI company: As the manufacturer of the HUAWEI Watch D, HUAWEI designs, develops, and produces the smart health watch, driving the overall vision and strategy of the product. Revenue generated from the sale of the HUAWEI Watch D and related accessories, contributed to the company's financial growth. The product helps HUAWEI develop new business pathways and enhance brand reputation and customer loyalty through innovative and high-quality smart health wearables, driving the adoption of the HUAWEI ecosystem.

Users: Active health seekers actively engage with the ecosystem by purchasing and using the smartwatch to track their health metrics and achieve their wellness goals. They gain access to advanced health and fitness tracking features, real-time data, personalized recommendations, and services that assist them in monitoring and improving their well-being. This enhances convenience, motivation, and empowerment enabling them to better manage their health, reach fitness objectives, and connect with a community of like-minded individuals.

Users' families: The product offers ongoing health monitoring for elderly individuals or patients with chronic diseases who require care from their families. Patients' health data is transmitted to their families, aiding in better understanding of their health status, and facilitating their care. This product alleviates some of the pressure on their family in caring for them.

Healthcare professionals: Healthcare providers are indirect stakeholders who may utilize the data collected by the HUAWEI Watch D to offer personalized guidance and support to users. Their participation adds value by providing expert advice tailored to the user's health and fitness metrics. The product potentially opens up new business opportunities for HUAWEI company. This capability allows them to offer comprehensive and data-driven health coaching and healthcare services, attracting users who value the integration of technology in their wellness journey. This may enhance

the company's reputation and revenue, while also providing income and convenience for healthcare professionals themselves.

Case 2: UBER Health
The other case concerns Uber Health, which is dedicated to enhancing health outcomes and improving the experiences of patients, caregivers, and clinicians by facilitating better access to care and services. This platform involves several services, including health plans, health systems and providers, home health, brokers, and transportation providers. It offers a unique experience for both patients and caregivers, with benefits such as improved caregiver experience, simplified administration, and reduced healthcare costs.

Who is it for?
The user groups for Uber Health mainly include healthcare organizations such as hospitals, clinics, rehabilitation centers, and nursing homes; Medical professionals such as doctors, nurses, and care coordinators; Patients with mobility issues, including elderly individuals, chronic patients, the disabled, and postoperative patients.

Healthcare organizations aspire to enhance patient outcomes by addressing transportation barriers and ensuring patients can access promptly and reliably healthcare services, reducing the likelihood of delayed or missed appointments. They encounter challenges in managing transportation logistics for numerous patients, coordinating with various healthcare providers, and ensuring patient privacy and safety during transportation.

Medical professionals aspire to provide comprehensive care for patients by addressing the medical journey. They hope to simplify the process of medical treatments, including arranging transportation for patients, streamlining logistics, and minimizing administrative burdens. They encounter challenges in complex coordination between different healthcare providers, low cost-effectiveness, and difficult communication with patients.

Patients aspire to easy access to transportation services that cater to their specific needs when they seek medical treatment. They desire reliable and timely transportation options for attending medical appointments, consultations, and treatments. Mobility issues and physical or cognitive limitations make it challenging for them to arrange transportation independently.

What do they make as offerings and how will people experience it?
Uber Health provides a comprehensive system of offerings that enable healthcare organizations, medical professionals, and patients to address transportation challenges and improve access to healthcare services (Table 2).

Table 2. POEMS framework of uber health.

User	Explore	Enter	Engage	Exit	Extend
People	Doctors and nurses, friends,neighbours, other users	Customer representatives	Healthcare organizations, medical professional, drivers, family		Customer representatives, friends
Objects	Phone, Marketing brochure,posters, advertising board,websites, social media	Phone, websites, APP	Phone, APP, other intelligent devices	Phone	Phone, e-mail, message, APP
Environmrnts	Local communities, hospitals or healthcare centers, online environments	Home, IoT environment	Home, IoT environment, vehicle, hospital	Healthcare destinations	Online environment
Messages	Service introduction, benefits, functions, user comments	Introductory messages, setup guidelines and process	Location and time information, notification, traffic state	Fee-based information, historial journey information	Feedback, recommendation
Services	Consultation service, trial service	Account and personal information creation, setup support	Journey scheduling, GPS, transportation services, communication with healthcare organizations, sending journey to the family	Data backup	Directional send, data backup

Why does it create values?

In this case, the main stakeholders include Uber company, healthcare organizations, medical professionals, patients, and Uber drivers.

Uber company: Uber owns and operates the platform. Their main goal is to provide convenient and reliable transportation solutions for the healthcare industry. As the platform provider, Uber Health aims to generate revenue and establish itself as a trusted and preferred transportation partner for healthcare organizations. Uber Health generates tangible value through revenue generation, market expansion, and data analytics. It also creates intangible value through brand reputation, innovation, collaboration, improved patient outcomes, and enhanced patient experiences.

Healthcare organizations: Healthcare organizations, including hospitals, clinics, medical centers, and other healthcare facilities, are eager to participate in order to enhance patient experiences, increase operational efficiency, and minimize missed appointments or delayed treatments. The platform aids in improving patient outcomes, reducing missed appointments, achieving cost savings through efficient transportation, and streamlining administrative

processes. It enhances the reputation as patient-centric providers, increases patient loyalty, and contributes to improving community health.

Medical professionals: Medical professionals are interested in participating because the platform can simplify the process of arranging transportation for patients, enhance care coordination, and improve patient satisfaction. This service strengthens patient relationships and enhances reputation as caregivers.

Patients: Patients benefit from reliable, accessible, and on-demand transportation services and flexible appointment services. It helps them overcome transportation barriers and ensures they receive timely treatments.

Uber drivers: Drivers participate to earn stable income and contribute to the healthcare ecosystem by assisting patients with their transportation needs. Their values include an increased customer base as well.

RESULTS

Case studies reveal that current healthcare services only cover certain aspects and lack an integrated healthcare experience that fully utilizes wearable technologies. Additionally, these services are often isolated, hindering effective communication between patients and medical institutions.

An essential aspect of harnessing the potential of intelligent wearable devices in remote diagnosis is the establishment of relevant platforms offering transport services and in-car pre-diagnosis services, incorporating digital tools and medical equipment within vehicles. Typically owned and operated by tertiary hospitals or top specialized healthcare institutions, these platforms enable patients to undergo pre-diagnosis procedures in vehicles. By integrating connectivity with hospitals, these platforms facilitate the timely exchange of pre-diagnosis data between the hospital and the vehicle, optimizing subsequent medical treatment processes upon arrival at the healthcare facility and enhancing the efficiency of medical resource utilization. This integrated service allows patients access to long-term transportation or transportation across cities, ensuring they can reach specific healthcare institutions tailored to their needs.

Who Is it for?

Middle and upper-class patients with specialized healthcare needs: Middle and upper-class individuals are more likely to require top and specialized medical care, such as those with chronic conditions, rare diseases, or complex medical cases. They often seek access to top-tier healthcare institutions beyond their local vicinity. They aspire to receive the highest quality of healthcare from renowned specialists and cutting-edge medical facilities. They seek convenience, efficient medical processes, and timely access to appropriate care. However, users may encounter challenges, including the burden of traveling long distances, spending significant time on the journey, and queuing at hospitals.

Top healthcare institutions in China: Tertiary hospitals and specialized healthcare institutions aim to expand their reach and provide seamless healthcare services to patients beyond their facilities. They aim to enhance patient

outcomes, optimize resource utilization, and improve the overall patient experience. Some related challenges may include efficiently managing patient transfers and providing personalized healthcare. They strive to streamline the transition from remote pre-diagnostic services to in-hospital care seamlessly.
What do we make as offerings and how will people experience it?
This integrated solution will facilitate connectivity between patients and healthcare institutions, fostering closer communication between them (Table 3).

Table 3. What is the service?

User	Explore	Enter	Engage	Exit	Extend
Pactients	Patients become aware of the platform through healthcare institutions or other medical-related channels. They explore the platform's features, including service and medical-related information, and access to specialized care.	Patients start their medical journey by contacting their healthcare institution to request transport services through the platform. They provide the necessary information, including health state, preferred appointment time, and destination healthcare institution.	Patients receive confirmation-sprttde-tais.Vehicles are equipped with gs wearable devices, and medical equipment. They receive pre-diagnostic sevice in vehicles. Patient data and pre-diagnostic results are securely transmitted to the connected healthcare institution in real time.	Upon arrival at the healthcare destination, patients are seamlessly transitioned into further treatments. Patients undergo further consultations, tests, or treatments based on the prediagnostic results.	Patients can choose to receive extended services and follow-up care, including virtual consultations or remote monitoring. Their medical-seeking data will be stored to facilitate more informed decisions during subsequent visits.
Healthcare institu-tions	Healthcare institutions operate the platform and promote it to patients through medical-related channels. They assess the platform's suitability for enhancing patient care and streamlining transportation services.	Healthcare institutions respond the patients' requests quickly. According to the patient's specific condition, the appropriate vehicle will be coordinated to pick up them. They integrate their inhospital systems with the vehicles, ensuring secure data exchange.	Healthcare institutions arrange medical personnel to provide personalized medical services and pre-diagnostic services to patients during transportation. Doctors engage with the platform's data exchange system, reviewing pre-diagnostic results in real time.	Upon the patient's arrival at the healthcare institution, medical staff seamlessly transition them into the facility based on pre-diagnostic data. Pre-diagnostic data is immediately accessible to informing subsequent treatment plans and decisions.	Healthcare institutions leverage virtual consultations or remote monitoring to provide extended care and ensure patient well-being. Healthcare institutions keep on patient follow-up care and provide extended support beyond the initial visit.

Why Does it Create Values?

For patients, firstly, they gain access to higher-quality medical treatments. This one-stop medical service offers tangible access to top-tier healthcare institutions beyond their local area, providing personalized and specialized treatments. Secondly, it streamlines medical process and improves the efficiency of medical treatments. Patients can access transportation services and in-car pre diagnosis, including real-time assessment and vital sign monitoring, which facilitate subsequent treatments at the hospital, reducing the need for multiple appointments and unnecessary waiting times. Lastly, patients benefit from continued engagement and follow-up. They can create a profile and monitor their health through capable intelligent wearable devices.

For healthcare institutions, it can streamline medical processes and optimize resources. Its connectivity and real-time data exchange between vehicles and healthcare institutions can maximize the efficiency of the patient transfer process. The pre-diagnostic data collected during the journey allows healthcare professionals to prepare in advance, optimizing resource utilization, and reducing patients' in-hospital times. In addition, this service extends their reach and patient base beyond physical locations. By offering comprehensive mobile medical services, healthcare institutions can attract and serve patients from surrounding cities, thereby expending patient base and revenue.

CONCLUSION

Different kinds of intelligent wearable devices and medical services continue to emerge on the market. They can contribute to better prevention alerts and remote diagnosis by incorporating features such as continuous health monitoring, real-time data analysis, and personalized alerts for potential health risks. However, most of these medical products are for patients' personal use. Few products can connect to the network of hospitals and involve medical professionals to provide patients with more continuous and personalized one-stop medical services. At present, the medical channels are gradually diversified, and online medical treatment is also becoming an emerging force in the healthcare industry. Diversified online channels are growing rapidly, but the proportion of healthcare needs currently covered is still small. Intelligent wearable systems may be integrated into the field of remote diagnosis in the future. Healthcare providers may apply this technology to explore a new way of medical treatment.

New technological and social forces are driving the next big shift in medical care. The emergence of connected, electric, and autonomous vehicles will have profound strategic implications for related businesses. The proposed strategy will capitalize on evolving trends, such as distributed care networks, changing consumer behavior, new mobility patterns, and alternative supply chain solutions. The future mobility will transform healthcare delivery, changing where medical services are provided and how they are designed. Furthermore, future directions of digital health may include integrating advanced technologies like AI and machine learning for more accurate diagnostics and treatment recommendations, expanding remote patient monitoring capabilities, and fostering collaboration between wearable device

manufacturers, healthcare providers, and researchers to drive innovation in digital health.

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