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Original Article

Revolutionizing Herbal Medicine: The Role of E-health Informatics and Network Pharmacology in Personalized Herbal Therapies

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ABSTRACT

Aim: The purpose of this study is to investigate how network pharmacology and e-health informatics affect the effectiveness and personalization of herbal treatments, while also discussing related issues and potential future developments. **Background:** The field of traditional herbal medicine is undergoing a transformation due to the incorporation of technology. Treatment plan accuracy and customisation are being improved by e-health systems, data analytics and Artificial Intelligence (AI). Insights into the intricate relationships between botanical substances and biological systems can be gained through network pharmacology, while genomic medicine allows for the customization of treatments according to individual genetic profiles. Notwithstanding the possible advantages, problems including data integration, interoperability, privacy issues and inconsistent regulations still exist. **Objectives:** The purpose of this research is to determine how network pharmacology, genomic medicine and e-health informatics can improve the effectiveness and personalization of herbal therapies. It will look at how e-health systems help with data collecting, patient monitoring and remote consultations. It will also examine how network pharmacology helps to comprehend how botanical substances interact with biological systems in order to develop successful multi-target therapies. Additionally, the paper examines developments in genomic medicine that enable personalized treatment plans based on genetic profiles and suggests ways to overcome obstacles with data integration, interoperability, privacy and regulatory constraints. **Materials and Methods:** To obtain information on the use of network pharmacology, artificial intelligence and e-health informatics in herbal medicine, a thorough analysis of recent case studies and literature will be carried out. The effectiveness, personalization and difficulties posed by these technologies will be the main topics of data analysis. **Results and Findings:** According to preliminary research, e-health informatics greatly improves the precision and customization of herbal remedies. Effective multi-target medicines are made possible by the crucial insights that network pharmacology offers on the interactions of botanical chemicals and biological systems. Highly customized treatment programs based on unique genetic profiles are made possible by genomic medicine. Nonetheless, issues with privacy, interoperability, data integration and regulatory standards must be resolved. **Conclusion:** Herbal medicine can undergo a revolution thanks to network pharmacology and e-health informatics, which will result in more individualized, secure and efficient therapies. Ethical standards, standard operating procedures and data security must all be addressed for these technologies to be successfully used and for equitable access to healthcare.

Keywords: E-health informatics, Network pharmacology, Personalized herbal therapies, Genomics, Artificial intelligence.

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INTRODUCTION

Overview of Herbal Medicine

With a history spanning thousands of years, herbal medicine-also referred to as botanical medicine or phytotherapy-is one of the oldest types of medicine. It entails using plants and plant extracts to keep people healthy and treat a variety of ailments. Many different civilizations around the world have evolved distinctive herbal medical systems. Examples of these include European herbalism, Native American herbal practices, Ayurveda from India and Traditional Chinese Medical (TCM).

Historical Context

The practice of herbal treatment dates back thousands of years. The ancient Greeks, Romans and Egyptians were the first to employ therapeutic herbs. Writings by Hippocrates and Galen in

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Greece, as well as the Ebers Papyrus from Egypt (c. 1550 BCE), attest to the use of plants in traditional medicine.

Traditional Uses

Herbal remedies have been utilized historically to address a diverse array of illnesses, ranging from minor ailments like colds and stomach problems to more serious situations including infections and long-term illnesses.[1-3] Every plant has several applications and can be made into teas, tinctures, extracts, powders and topical treatments, among other preparations.[4-6]

Cultural Importance

Herbal medicine is used as a component of everyday life and spiritual rituals in many cultures, in addition to being a therapeutic tool. For example, in Traditional Chinese Medicine (TCM), herbs are mixed to create custom formulae based on each person's unique health requirements.[7-9] The goal is to balance the body's life force, or Qi (Table 1).

Emergence of Personalized Medicine

The 21st century has seen a paradigm shift in healthcare, moving from a one-size-fits-all approach to more personalized medical care. Personalized medicine, also known as precision medicine, aims to tailor healthcare treatments to individual characteristics, such as genetic makeup, lifestyle and environment.

Personalized healthcare

This approach considers the individual differences in genetics, environment and lifestyle.[29-31] More precise disease diagnosis, risk assessment and treatment plans are made possible by this method. Pharmacogenomics, for instance, is a branch of personalized medicine that focuses on how an individual's genetic composition influences how they respond to medications, with the goal of developing safer and more effective pharmaceuticals.

The Value of Personalized Medicine

There are Many Advantages to Personalized Healthcare, such as: Increased Treatment Efficacy: Physicians can recommend more likely-to-be-effective treatments by taking individual characteristics into account.[32-34]

Decreased Adverse Effects

By customizing care, the risk of negative medication reactions is decreased.

Preventative Care

Early intervention and preventative measures can be implemented by using personalized medicine to identify those who are at high risk of developing specific diseases.[35-38]

Integration with Technology

The field of personalized medicine has greatly benefited from technological advancements such as big data analytics, artificial intelligence and genomic sequencing.[39,40] With the use of these technologies, enormous volumes of data may be analyzed to find trends and insights that guide personalized treatment regimens.

MATERIALS AND METHODS

Through the use of a variety of data sources, including e-health platforms (HerbList, TCM Database, HerbMedPro, MyHerb), scientific databases (PubMed, SpringerLink) and mobile health applications (Herbpathy, MyHerb), this study examined the integration of e-health informatics and network pharmacology in personalized herbal therapies. The study methodology was centered on investigating the uses and advantages of e-health tools, comprehending the fundamentals of network pharmacology and developing strategies for utilizing genomic data to customize herbal remedies. Case studies of successful implementations, evaluation of technology tools and qualitative synthesis of information were all part of the data analysis process. Data privacy, the use of genomic data and striking a balance between conventional and new methods were among the ethical issues. By utilizing credible sources for cross-referencing, evidence-based data and expert consultations, validity and dependability were guaranteed. This all-encompassing method shed light on the revolutionary possibilities of merging network pharmacology and e-health informatics in herbal medicine.

DISCUSSION

The Intersection of E-health Informatics and Herbal Medicine

Definition and Scope of E-health Informatics

In order to enhance healthcare administration and delivery, e-health informatics is an interdisciplinary field that brings together information technology, healthcare and telecommunications. It entails managing health information and services through electronic communication and processes. Electronic Health Records (EHRs), telemedicine, mobile health (mHealth) apps, health information systems and data analytics are important elements of e-health informatics.

Applications in Medical Fields

Electronic Health Records (EHRs)

Digital copies of paper patient charts that give authorized users access to real-time, patient-centered data.

Telemedicine

The practice of providing clinical healthcare remotely by the use of telecommunications technologies, allowing for remote consultations and follow-ups.

Mobile Health (mHealth)

The practice of providing healthcare and public health that is aided by portable electronics like tablets and smartphones, allowing for treatment adherence, health education and monitoring.

Health Information Systems

These are systems made to handle data related to healthcare, such as analytics, hospital administration and patient records.

Data analytics

The process of looking at health data to make inferences about treatment effectiveness, patient outcomes and health trends.

Integration with Herbal Medicine

E-health technologies are increasingly being applied to the field of herbal medicine, enhancing its accessibility, effectiveness and integration with conventional healthcare practices. This integration encompasses several key areas:

Digital Herbal Databases

Comprehensive digital repositories of herbal information, including plant species, active compounds, traditional uses and scientific evidence. These databases aid in research, education and clinical decision-making.[11-13]

Telemedicine for Herbal Consultations

Telemedicine platforms enable practitioners of herbal medicine to conduct remote consultations, diagnose conditions and recommend personalized herbal treatments.[14,15] This expands access to herbal medicine, particularly for patients in remote or underserved areas.

EHR Integration

Integrating herbal medicine information into EHRs ensures that all aspects of a patient's treatment, including herbal therapies, are documented and accessible to healthcare providers.[9,10] This facilitates coordinated care and reduces the risk of adverse interactions between herbal and conventional treatments.

Mobile Health Applications

mHealth apps designed specifically for herbal medicine provide users with personalized herbal recommendations, dosage reminders and educational content. These apps often include features for tracking symptoms and treatment progress.

Online Herbal Marketplaces

E-commerce platforms for herbal products, offering detailed product information, customer reviews and purchasing options, thereby increasing the availability and transparency of herbal remedies.[16-19]

Benefits of E-health in Herbal Therapies

The incorporation of e-health informatics into herbal medicine offers several significant benefits, enhancing the overall quality and effectiveness of herbal therapies:

Table 1: Key Compounds in Popular Medicinal Herbs.

Herb	Common Name	Key Compounds	Primary Uses
Salvia miltiorrhiza	Danshen	Tanshinone IIA, Salvianolic acid B.	Cardiovascular health, blood circulation.
Curcuma longa	Turmeric	Curcumin	Anti-inflammatory, antioxidant, anti-cancer.
Glycyrrhiza glabra	Licorice	Glycyrrhizin, Liquiritigenin.	Liver protection, anti-inflammatory, immune support.
Withania somnifera	Ashwagandha	Withaferin A, Withanolides.	Stress reduction, anxiety relief, immune modulation.
Rhodiola rosea	Rhodiola	Rosavins, Salidroside.	Adaptogen, stress resilience, cognitive enhancement.
Hypericum perforatum	St. John's Wort	Hypericin, Hyperforin.	Depression, mood disorders, antiviral.
Boswellia serrata	Frankincense	Boswellic acids	Anti-inflammatory, arthritis, pain relief.
Berberis vulgaris	Barberry	Berberine	Antimicrobial, blood sugar regulation, liver health.
Cimicifuga racemosa	Black Cohosh	Triterpene glycosides, Isoflavones.	Menopausal symptoms, PMS, bone health.
Salix alba	White Willow	Salicin	Pain relief, anti-inflammatory, fever reduction.

Network Pharmacology: Bridging Modern Science and Traditional Medicine

Understanding Network Pharmacology

In order to comprehend the intricate relationships that exist between pharmaceuticals and biological systems, a new area called network pharmacology combines systems biology, computational biology and pharmacology.[20-22] Several targets, pathways and the comprehensive effects of medications on the body are taken into account in network pharmacology, as opposed to traditional pharmacology, which frequently concentrates on single drug-target interactions. The study of herbal medicine, which frequently incorporates multi-component and multi-target therapies, is especially well-suited to this methodology (Table 2).

Principles and Definition

Systems Approach

According to network pharmacology, biological systems are made up of interconnected networks of substances including proteins, metabolites, genes and pathways.[23-25]

Multi-Target Strategy

It recognizes the involvement of several biological targets in many diseases, particularly complicated ones like diabetes and cancer. Many times, simultaneous modulation of multiple targets is necessary for effective treatment.

Computer Modeling

To simulate and evaluate biological networks and forecast the effects of medications, the area mostly relies on mathematical models and computer techniques.[26,27]

Holistic Perspective

Network pharmacology seeks to comprehend the wider effects of medicines on general health and disease states by taking into account the interactions between diverse biological components.

Application in Herbal Medicine

Utilization in Herbal Medicine

Network pharmacology naturally aligns with the complex mixes of bioactive substances found in herbal medicine. This subject offers the means to unravel the complex mechanisms by which herbal medicines work their therapeutic magic.

- Interpreting Complicated Interactions: Network pharmacology facilitates the delineation of the intricate relationships that exist between the many active constituents found in herbs and their diverse biological targets. This may demonstrate synergistic effects, in which several chemical combinations cooperate to improve therapeutic results.[28]
- Determining Bioactive Compounds: Researchers can determine which constituents in an herbal mixture is most likely to be successful against particular disease targets by using network analysis and computational modeling.[23-28]
- Mechanistic Insights: It clarifies how herbal components affect various pathways and biological processes by offering insights into their mechanisms of action. This knowledge can increase the safety and effectiveness of herbal remedies.
- Drug Development and Discovery: By forecasting potential therapeutic effects and interactions with biological networks, network pharmacology helps uncover new drug candidates from natural sources.
- Optimizing Herbal Formulations: Herbal formulations can be made for optimal efficacy and lowest adverse effects by knowing the network-level effects of herbal constituents.

Table 2: Major Benefits of Integrating E-health Informatics in Herbal Therapies.

Benefit	Description
Improved Patient Monitoring	Continuous health tracking and monitoring through wearable devices and mobile apps.
Enhanced Data Collection	Comprehensive data from various sources including EHRs, patient-reported outcomes and genomic data.
Remote Consultations	Access to healthcare professionals via telemedicine platforms, reducing the need for in-person visits.
Personalized Treatment Plans	Tailored herbal therapies based on individual health profiles, genetic information and real-time data.
Increased Access to Information	Digital databases and mobile apps provide patients and practitioners with easy access to herbal information.
Data-Driven Decision Making	Use of AI and big data analytics to inform treatment strategies and predict outcomes.
Better Patient Engagement	Mobile health apps and wearable devices engage patients in their own healthcare, promoting adherence.
Cost-Effective Care	Reduction in healthcare costs through remote monitoring and reduced hospital visits.

Personalized Herbal Therapies

Personalization of Care

Customizing herbal remedies to fit each person's distinct needs is known as personalized herbal therapy. In order to enhance therapy outcomes, this strategy takes into account a number of aspects, including genetic makeup, lifestyle, health state and personal preferences (Table 4).

- Patient profiling: A thorough evaluation of the patient's health that takes into account their lifestyle, food, medical history and environmental influences. Finding the best herbs and formulas is made easier with the use of this knowledge.
- Biomarker analysis: Making decisions about herbal treatments based on biomarkers, which are quantifiable indicators of biological processes or disorders. Genetic markers, blood tests and other physiological assessments are examples of biomarkers.
- Herbal Formula Adjustments: Tailoring conventional herbal formulae to meet the demands of specific individuals. To address specific health conditions, this may entail varying dosages, mixing various herbs, or choosing particular extracts.

Personalized Monitoring

Using digital health instruments, a patient's reaction to herbal remedies is continuously monitored. The therapeutic plan can be modified in real time with the assistance of monitoring feedback.

Genomics and Herbal Medicine

Genomics, the study of an individual's genes and their functions, plays a crucial role in personalizing herbal therapies. By understanding genetic variations, practitioners can predict how

Table 3: Case Studies in Network Pharmacology Applied to Herbal Medicine.

Herb	Disease/Condition	Key Compounds	Findings	Outcome	Source
Salvia miltiorrhiza (Danshen)	Cardiovascular Diseases	Tanshinone IIA, Salvianolic acid B.	Identified key compounds interacting with cardiovascular-related targets.	Supported multi-target therapeutic potential of Danshen, guiding effective formulation.	PubMed
Curcuma longa (Turmeric)	Inflammatory Diseases	Curcumin	Found modulation of NF-κB and COX-2 pathways by curcumin.	Reinforced therapeutic potential for inflammatory diseases.	PubMed
Glycyrrhiza glabra (Licorice)	Liver Diseases	Glycyrrhizin, Liquiritigenin.	Identified compounds targeting liver protection and regeneration.	Provided scientific rationale for licorice in liver disorders, supporting new therapeutic strategies.	PubMed

Table 4: Examples of Personalized Herbal Therapies.

Condition	Genetic Insight	Herbal Components	Therapeutic Strategy	Outcome
Anxiety	Variations in serotonin transporter genes.	Ashwagandha, Rhodiola.	Tailored herbal formula to support serotonin regulation and stress response.	Significant improvement in anxiety levels, minimal side effects.
Type 2 Diabetes	Predisposition to inflammation, poor insulin sensitivity.	Berberine, Turmeric.	Personalized regimen to improve insulin sensitivity and reduce inflammation.	Better blood sugar control, reduced inflammatory markers.
Menopausal Symptoms	Variations in estrogen metabolism genes.	Black Cohosh, St. John's Wort.	Customized treatment to alleviate hot flashes and mood swings.	Significant relief of menopausal symptoms, improved comfort and mental health.
Chronic Pain	Genetic variations influencing pain perception, inflammation.	Willow Bark, Boswellia.	Tailored herbal therapy to reduce pain and inflammation.	Reduced pain levels, improved mobility, decreased dependence on conventional pain medication.

different individuals will respond to specific herbs and tailor treatments accordingly.

Pharmacogenomics

This field studies how genetic differences affect an individual's response to drugs and herbal compounds. Variations in genes encoding drug-metabolizing enzymes, drug transporters and drug targets can influence the efficacy and safety of herbal treatments (Table 3).

Herbal Genomics

Analyzing the genetic profiles of medicinal plants to identify active compounds and understand their interactions with human genes. This knowledge helps in selecting the most effective herbal products for specific genetic profiles.

Precision Medicine

Integrating genomic data with traditional herbal knowledge to create precision herbal therapies. This approach ensures that the selected herbs are not only effective but also safe for the individual based on their genetic makeup.

Technological Tools and Platforms

Platforms for Herbal Medicine in E-Health

- Herbal medicine is undergoing a transformation thanks to e-health platforms, which offer all-inclusive digital solutions for patient care, research and teaching. These platforms provide a range of features to help with individualized herbal treatments.
- HerbList by NIH: An app created by the National Institutes of Health (NIH) that offers details on the efficacy and safety of herbal products as supported by science.
- Traditional Chinese Medicine (TCM) Database: Online resources providing a wealth of knowledge about TCM herbs, including their applications, molecular makeup and therapeutic effects.
- HerbMedPro: A reputable resource that offers access to empirical research on the health and therapeutic applications of herbs. Clinical study reports, pharmaceutical research and historical applications are all included.

Natural Medicines Comprehensive Database

An evidence-based source offering comprehensive details on supplements and herbs, including safety, clinical effectiveness and possible interactions (Table 5).

Data Analytics and AI in Herbal Medicine

The analysis and optimization of herbal remedies are changing as a result of big data and artificial intelligence (AI).

- Big Data Analysis: To find patterns and correlations, large datasets from clinical trials, patient records and herbal research are analyzed. This aids in anticipating patient reactions and comprehending the efficacy of herbal remedies.
- AI Algorithms: Complex interactions between herbal substances and biological systems are analyzed using machine learning algorithms. AI is capable of forecasting treatment results, spotting possible adverse effects and recommending the best herbal combinations.

Table 5: Overview of Key E-health Platforms Supporting Herbal Medicine.

Platform	Description	Key Features	Website/Source
HerbList by NIH	App providing information on scientific evidence behind the safety and effectiveness of herbal products.	Comprehensive herb profiles, safety information, evidence-based research.	HerbList
TCM Database	Database offering extensive information on Traditional Chinese Medicine (TCM) herbs.	Chemical compositions, traditional uses, therapeutic effects.	TCM Database
HerbMedPro	Professional database providing access to scientific data on herbs.	Summaries of clinical studies, pharmacological research, historical uses.	HerbMedPro
Natural Medicines Database	Evidence-based resource providing detailed information on herbs and supplements.	Clinical efficacy, safety information, potential interactions.	Natural Medicines Database
Herbpathy	App offering detailed information on various herbs and their uses.	Symptom tracking, personalized herbal recommendations.	Herbpathy
MyHerb	App allowing users to log herbal intake, monitor health metrics and receive reminders.	Health tracking, educational resources, dosage reminders.	MyHerb

Table 6: Technological Tools Used in E-health Informatics for Herbal Medicine.

Tool/ Platform	Functionality	Benefits
Electronic Health Records (EHRs)	Comprehensive patient data management.	Improved accessibility to patient history and treatment plans.
Telemedicine Platforms	Remote consultations and follow-ups.	Increased access to healthcare, especially in remote areas.
Mobile Health Apps	Personalized health tracking and recommendations.	Continuous monitoring and timely interventions.
Digital Herbal Databases	Extensive data on herbal properties and clinical evidence.	Evidence-based decision making.
AI and Machine Learning	Data analysis and predictive modeling.	Enhanced accuracy in treatment recommendations.
Wearable Devices	Real-time health monitoring (e.g., heart rate, activity levels).	Immediate feedback on health status and treatment effectiveness.
Natural Language Processing (NLP)	Extracting insights from unstructured data (e.g., clinical notes, research papers).	Comprehensive understanding of herbal efficacy and safety.
Blockchain Technology	Secure and transparent data sharing.	Enhanced data security and integrity.

- Natural Language Processing (NLP): NLP is used to extract useful information from unstructured data sources, such as clinical notes, research articles and patient comments. This allows for a thorough investigation of the effectiveness of herbal medicines.

Mobile Health Applications

Herbal remedies are becoming more accessible and personalized thanks to wearable technology and mobile health (mHealth) applications Table 6.

- Herbpathy: An app that offers comprehensive details about different herbs, their applications and suggested dosages. Users can keep track of their symptoms and get recommendations for customized herbal remedies.
- MyHerb: An app that tracks a user's herbal intake; keeps track of health metrics and sends dose reminders.

Table 7: Challenges in Integrating E-health Informatics with Herbal Medicine.

Challenge	Description	Potential Solution
Data Integration	Difficulty in combining data from various sources (EHRs, genomic data, etc.,).	Developing standardized data formats and protocols for seamless integration.
Interoperability	Ensuring different e-health systems and devices can communicate effectively.	Implementing universal interoperability standards.
Privacy and Security Concerns	Protecting patient data from breaches and unauthorized access.	Utilizing advanced security measures like blockchain technology.
Regulatory Variability	Different regulatory standards for herbal medicine across regions.	Establishing international guidelines and quality control standards.
Ethical Issues	Concerns regarding informed consent, data ownership and transparency in AI use.	Developing clear ethical guidelines and ensuring patient awareness and consent.
Limited Scientific Evidence	Lack of extensive clinical trials and scientific validation for many herbal treatments.	Encouraging rigorous research and clinical trials to build a robust evidence base.
Technological Barriers	Variability in access to and proficiency with digital health tools among patients and practitioners.	Providing education and resources to improve digital health literacy.

Additionally, it offers instructional materials about herbs and their advantages.

- Wearable Technology: Wearables such as fitness trackers and smartwatches keep an eye on vital signs including heart rate, sleep quality and activity level. Herbal remedies can be customized depending on current health information by integrating this data with mHealth apps.

Challenges and Solutions

Technical Challenges

Data Integration

Standardized formats and processes are necessary to facilitate the challenging process of integrating data from several sources,

including genomic databases, electronic health records and patient-reported outcomes.

- Interoperability: For complete patient care, it is essential that various e-health systems and devices be able to easily share data and communicate with one another.
- Privacy Issues: A major worry is safeguarding patient data from breaches and illegal access, which calls for strong security measures and adherence to laws like GDPR and HIPAA.

Ethics and Regulation Concerns

- Regulatory Framework: There are regional variations in the regulatory landscape for herbal medicine, which makes it difficult to standardize procedures and guarantee their quality and safety (Table 7).
- Ethical Implications: It's important to address concerns about informed permission, data ownership and the moral application of AI to decision-making. Clear information on the advantages and disadvantages of individualized herbal therapy should be available to patients.

Possible Remedies

- Technological Advancements: Smooth data communication can be facilitated by creating sophisticated data integration platforms and interoperability standards. Blockchain technology can improve the integrity and security of data. Recommendations for Policy: Clear regulations for the use of herbal medicine within the context of individualized treatment should be developed by governmental and regulatory organizations. This entails harmonizing efficacy validation, safety testing and quality control.
- Moral Principles: It's critical to establish ethical standards for the use of AI and patient data in herbal medicine. Transparency, patient consent and the ability to refuse data exchange are all part of this.

CONCLUSION

Herbal medicine has advanced significantly with the integration of e-health informatics and network pharmacology, which provides a route towards more individualized and efficient treatments. E-health platforms and tools improve patient tracking, allow for remote consultations and make it easier to gather and process large amounts of health data. These features enable medical professionals to create individualized treatment programs based on real-time data and patient profiles.

This customisation is further supported by network pharmacology, which explains the intricate relationships that exist between biological systems and herbal substances. Through the utilization of big data and artificial intelligence, practitioners can enhance their ability to predict therapeutic outcomes, choose the best herbal compositions and reduce side effects. An additional degree of precision is added when genomic data is incorporated into the tailoring of herbal medicine, guaranteeing that treatments are not only successful but also in line with patients' hereditary predispositions.

Realizing the full potential of individualized herbal remedies is a journey fraught with difficulties, though. It is necessary to solve issues with privacy, interoperability, data integration and regulatory compliance. Overcoming these obstacles requires strong ethical rules, established processes and technological improvements.

All things considered, the merging of network pharmacology and e-health informatics is turning traditional herbal therapy into a more empirical, data-driven field. This development has enormous potential to improve the safety and effectiveness of herbal treatments, which will eventually improve patient outcomes and promote a more all-encompassing approach to healthcare.

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CONFLICT OF INTEREST

The author declares no conflict of interest.

ABBREVIATIONS

AI: Artificial Intelligence; **HER:** Electronic Health Record; **GDPR:** General Data Protection Regulation; **HIPAA:** Health Insurance Portability and Accountability Act; **mHealth:** Mobile Health; **NLP:** Natural Language Processing; **PMS:** Premenstrual Syndrome; **PubMed:** A free search engine for life sciences and biomedical topics; **TCM:** Traditional Chinese Medicine; **WHO:** World Health Organization.

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