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Artificial Intelligence for Knowledge Translation and Personalized Preventive Healthcare in Ayurveda: Integrating Classical Wisdom, Clinical Evidence, and Digital Health Innovations

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Abstract

Background: In today's era AI is important in our lives as it plays an important role in healthcare and

detecting the healthcare outcomes. It helps to make better and efficient results. As we know due to today's lifestyle or sedentary lifestyle many problems arise such as mental stress, poor health status. Due to poor lifestyle or changes in the industrialization it effect the our overall health. By means of prevention or

control we need better outcomes using AI and create new innovations in our healthcare systems By integration of AI, Yoga, and Ayurveda we helps to maintain our four health aspects according to WHO

which makes a bridge between the Ancient ayurvedic knowledge and modern knowledge. Objective: The goal of this work is to look Into how AI can help with innovation and sharing knowledge in Ayurveda, especially in areas like personalized medicine, understanding ancient texts, improving public health through digital tools, Ayurvedic treatments, and lifestyle changes into today's healthcare system to make health better. Methods: A qualitative and Conceptual research method was used. Current research from 2020 to 2026 in areas such as Ayurveda, application of AI in health care, computational linguistics, and translational medicine. Effects of changing lifestyles, prevention of diseases through the use of herbs, individualized doses, and variations in life expectancies worldwide. Through a synthesis of ancient wisdom with modern concepts in public health, we gained a wider outlook. Results: The potential areas where AI can be applied include analyzing body types, NLP in sanskrit analysis, clinical decision support, discovery of new herbal medicines, and patient communication in various languages. Ayurvedic theories like Yukti, Trisutra, and Vyakti Vishesh Chikitsa serve as an excellent base for developing accurate AI

algorithms. Furthermore, variations in life expectancy in different nations clearly indicate that lifestyle and medical

systems have a considerable impact on longevity. Conclusion: AI can act as a strong link between the traditional wisdom of Ayurveda and the modern, data- driven healthcare systems we have
today. To connect traditional and modern healthcare, there needs to be a multidisciplinary approach and efficient ways to translate knowledge this can improve global health and support long term well being.

Keywords

Ayurveda, multi-disciplinary innovation, Personalized medicine, Knowledge translation, Artificial Intelligence, Lifestyle change, Preventive medicine

Introduction

The healthcare system in the 21st century is shaped by fast- paced industrial growth, environmental
pollution, stress from city life, a culture of sitting for long hours at work, overreliance on digital devices, and unhealthy living habits. This had a great effect on the manner in which diseases are now emerging
amongst mankind. Being sedentary, engaging in excessive computer usage, failing to exercise regularly, having poor nutritional intake, poor sleep cycles, and stress are some examples of things that have led to more cases of diseases like obesity, diabetes, heart disease, infertility, depression, and early aging.

In Ayurveda, the manner of living, diet, surroundings, and emotional health have a great influence on the onset of a disease.

The concept of preventing the emergence of disease by preventing the causative factors, termed as “Nidana Parivarjan”.

AI offers the chance to blend this traditional knowledge with modern, data driven, and personalized health suggestions.

It is capable of processing massive amounts of data generated from various sources such as:

- Eating habits
- Genetic markers
- Ayurvedic body types
- Exposure to environmental pollution
- Sleep patterns.
- Physical activity levels
- Herbal pharmacological databases

Ancient ayurvedic text as foundation of AI translations:

Personalized medicine (Purusham purusham vikshya)

पुरुषं पुरुषं वीक्ष्य भिषग् दोषौषधं पुनः । मात्राकालौ च भवज्ञाय ततः कर्मसमाचरेत् ॥ (Charaka Samhita, Sutra Sthana 22/16)
Each **patient** should be **assessed individually** to **determine** the **correct medicine**, **dosage**, and **timing**. This **approach** is **very similar** to how AI is **used** in Precision Ayurveda
to **develop customized treatment plans**.

Diagnostic intelligence (Hetu-Linga-Aushadha Jnanam)

हेतुभलङ्गौषधज्ञानं स्वस्थातुरपरायणम् । भत्रसूत्रं शाश्वतं प्रोक्तं तभिद्याद् भिषगुत्तमः ॥ (Charaka Samhita, Sutra Sthana 1/24)
In Ayurveda, **understanding** the **causes**, **symptoms**, and **treatments** of **diseases** is **fundamental**. This is **similar** to how AI-**powered diagnostic tools** and **clinical support systems function**

Structured diagnostic framework (Nidana Purvarupa)

भनदानपूवमरूपाभण रूपोपशयसम्प्राप्तयः । इभत रोगभवभनश्चयः ॥
(Madhava Nidana, Chapter 1)

Making a diagnosis depends on factors like the cause of conditions, early signs, visible symptoms, how the treatment works, and the progression of the disease. This is like how the AI based models analyze disease and predict outcomes.

Research gap

Even though there is increasing awareness about the need for adopting holistic and preventing healthcare practices in the world, a lot more still needs to be done when it comes to the effective use and different healthcare knowledge systems. One of the most crucial problems in this regard is the problem of inadequate integration between the traditional and modern systems of medicine. While modern medicines mostly deals with diagnostic diseases and their cure, the traditional system like ayurveda, for instance, emphasizes on prevention and health.

Another significant gap is the lack of standardization of ayurvedic formulations. The majority of ayurvedic medicines are often used in the form of churna (powder). However, the proper guidelines on how to prepare these formulations and how to use them are missing. In addition, the scientific verification of the efficacy of these formulations is not enough, which complicated their further usage in practice.

Another deficiency pertains to the absence of strong evidence with regards to the active components and the mode of action of the herbal medicine. Despite the long history of use of the ayurveda treatments and its wide application nowadays, there is still insufficient scientific knowledge about the biologically active components, as well as the pharmacological and physiological mechanism of its action.

Another field that require extensive research is personalized medicine. According to ayurveda treatments are always based on the person uniqueness, which include his/her prakriti (body constitution), way of life, and even environmental factors. Modern medicine, on the other hand operates with standard methods that do not necessarily take into consideration individual differences of patients.

In conclusion, there is little application of preventive healthcare approaches in modern day medical practices. The traditional health care system lays much stress on disease prevention, healthy living habits, and early detection of illness, modern medicine seems to have shifted it focus from prevention and management of disease. This gap is responsible for raising the cost of health care delivery, heavy disease burden, and poor quality of life.

Methodology

This study uses a qualitative and Conceptual approach that is based on: Data sources
Pubmed, Google scholar, Scopus indexed journals, AYUSH journals.

Fruit and nutraceutical research

- Fruits such as Amla, Haritaki, Bhibitaki, Dates, Pomegranate, Draksha, etc.
- AI helps to identify phytochemical cluster, active principles, Antioxidant potential, Rasayan relevance, Anti-ageing effects.

Drug knowledge and active principles.

- Importance of active principles present in a herb
- AI helps with Marker compounds identification, metabolomics, herbs-drugs interactions prediction, Optimal dose intelligence.

Formulation of different types of herbs in powder

- AI helps with Particle size, Shelf stability, Moisture thresholds, Potency retention, Bioavailability, and Preservation methods.

Results

Impact on lifestyle changes:

- More reliance on computers
- Less physical activity
- Higher stress level
- New health challenges emerging

Importance of ayurvedic formulations:

- Importance of active ingredients
- Avoiding unnecessary load chemical load on the body

Personalized medicine and Dosage variation:

- Dosage varies depending on individual factors
- Need for personalized treatment plans According to age, condition, and body type

Preventive healthcare focuses:

- Disease prevention
- Early intervention
- Lifestyle modification

Global life expectancy difference:

- In India: Male- 71.2 Years, Female- 76.4 Years
- In Japan: 85.4 Years
- In Hongkong: 85.8 Years
- In Nigeria: 54.6 Years
- In South Sudan: 57.7 Years

Discussion

Modern medicine is good at diagnostic and emergency care, while traditional systems offers preventive and holistic car.

Ayurvedic formulations and Rational use:

- Avoiding unnecessary load on the body, which shows the importance of using medicines wisely. Herbal formulations should be standardized and scientifically tested.

Personalized medicine:

- Unlike conventional practices, Ayurveda focuses on individual treatment. Using this approach in modern medicine can improve treatment results.

Preventive healthcare:

- There should be a move towards prevention of diseases instead of their occurrence, since this can save cost on health care and prevent diseases.

Knowledge translation knowledge:

- Convert traditional knowledge into scientific frameworks.
- Create evidence based guidelines
- Encourage collaboration between different fields

Conclusion

This paper demonstrates that innovation and implementation of knowledge are crucial for addressing health challenges. The integration of ayurveda with lifestyles and modern health care systems will bring about great health benefits.

Key conclusions:

- Holistic methods are better than single treatment
- Preventive healthcare should be the priority.
- Personalized medicine increases the effectiveness of the treatment.

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Author contribution

Conceptualization, writing and analysis, final paper preparation.

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