



Integrating Tradition with Innovation: Transforming Ayurveda for the Future

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ABSTRACT:

Background: *Ayurveda* is not just a science of life; it is also a method for improving human health. This ancient practice from India is a special legacy utilized for health and wellness. Technology is important for spreading *Ayurveda* globally and helping people to accept and use it in their lives.

Aims and objective: To understand the role of technology in the upliftment and standardization of *Ayurveda*.

Material and Methods: The various primary and secondary data available in different books, journals, and internet sites are analyzed and prepared.

Discussion: The addition of technology into the practice of *Ayurveda* does not only raise the standards of practice of *Ayurveda*. It aids in the dissemination of the practice of *Ayurvedic* medicine all over the world. To promote it as a universal system of medicine and to prepare *Ayurveda* for unimaginable 21st-century global healthcare requirements, it is crucial to modify the ancient practice in line with emerging science and technology. From all the above, it can be understood that restructuring of *Ayurveda* may be necessitated by present-day demands of a cyber society wherein information and communication technology will be applied. The present review is also concerned with some of the areas of *Ayurveda* where the technology can be incorporated with the help of a few examples.

INTRODUCTION

The throne of Indian diversity can be explained in three words – CULTURE, CUSTOMS, and COMPLEXITY. *AYURVEDA* serves as the foundation to learn and inculcate these three things in every Indian's way of living. To sum up, *Ayurveda* is beyond just being a health science. It is a technology that focuses on the well-being of humans. *Ayurveda* doesn't just teach that every disease has a specific medicine that one must point to, such as sciences which explain how life forms studied to the moment before conception protrude outwardly, direct how best to live the 'present' and speaks of the end after spoke of beginnings, middles, and ends, and deems the learning of *Ayurveda* as necessary. Again, the all-encompassing goal of all science, as it can be thoroughly understood, is achieving Moksha. However, for this old phoenix to embrace the fire a brighter phoenix indeed, technology remains paramount.

India is embedding its core requirements towards a New India and AYUSH is also instrumental in making 'New India' healthier. In this regard, all the stakeholders including policymakers should be focused on the Indian knowledge system, culture, talented people available, and the national goals in their thinking and their plans. The present practice of *Ayurveda* emphasizes traditional and orthodox ways of treatment. The issue of globalization, patent, and intellectual property rights, and biopiracy are posing themselves as very serious

threats in the customary and traditional practices of medicine such as *Ayurveda*. This means that the system of *Ayurveda* is also bound to have crises and challenges. To globalize *Ayurveda* as modern medicine as well as prepare *Ayurveda* to fulfill the recent healthcare needs of the 21st century there is a need to upgrade the centuries-old practice to be on par with technological advancement. Given all the above, it becomes imperative to re-orient *Ayurveda* at the global level to provide the anticipated growth of a digital economy with the use of ICT.

MATERIALS AND METHODS

Information from various Textual sources, books, electronic publication media, the internet, and various technology forums are studied and compiled.

Technological Advancements and *Ayurveda* Today¹:

Computer use and technology in *Ayurveda* practice: Computerized studies on which *Ayurveda* practice has moved several steps ahead have examined several essential considerations concerning the present and future impact of *Ayurvedic* treatment on computers and information technologies. These concerns include progress in information technology, biotechnology, the evolution of hardware and software, the changing demographics of *Ayurveda* practitioners, the shifting medicolegal landscape, and the evolving approach towards health care. As of now, there are few if any interactive software in *Ayurveda* for the diagnosis and treatment of diseases by *Ayurveda* practitioners. Some of the well-known computer-based *Ayurveda* packages comprise:

- Body Tune (Computerized Ayurvedic Medicare): software for assessment of *doshas* in the body was developed by Dr. M A Shajahan in 1983 and tested at Gujarat *Ayurveda* University.
- PRAKES: Computerized Evaluation of *Prakruti* (body constitution) made by CIRA (Centre for Informatics Research Advancement, Kerala)
- PILEX: The software is designed for the treatment of patients suffering from piles, its diagnosis, and complications associated with treatment punctuated with case histories. The software was based on the Basic Program and was built at Gujarat *Ayurveda* University Jamnagar, Gujarat in 1990.
- MADHAVA: assists in identifying a wide range of disorders within the *Ayurveda* context.²

Future steps to unite technology and *Ayurveda*³:

- It is a powerful tool that helps to bear such ideas of *Ayurveda* that can be beneficial to future PORs in terms of its profusion and durability. Expecting that there shall be a need to propagate how good this *Ayurveda* is, with the inclusion of this scientific medicine around the globe, what possible strategies of IT can we incorporate in various components of *Ayurvedic* practice.
- Adoption for diagnosis of disease: Software and applications can be designed for the diagnosis of the disease by the assessment of *Dosha*, *Dushyadi dashavidha pariksha bhavas*, Library research, creating a Wikipedia-style page on *Ayurveda*, and so on.
- Introduction of *abhyanga* machines for *panchakarma* therapy with variation in the use of automated systems complicated tapered end design for deep-rooted use churning nipples inciting treatment protocol, *Shirodhara* systems, etc in conditions where classical methods were associated with heavy resources of time and labor.
- Devise machines to enhance the efficacy of procedures for regionally focused therapeutic intervention. Automated therapy machine, linked with a temperature regulator for (*karnadhopana*) ear treatment, *Shiro abhyanga* therapeutic procedure devices, etc.
- *Kshara* makes equipment such as cutting machines that are automated and uses machinery for almost every type of surgical procedure performed on the body.

- Standardization of formulations, quality testing, HPTLC/TLC, etc. test, preparation of new formulation, packing, labeling etc.

Process of the integration of technology at the treatment level:

- Hospital information system & Health management information system: This is advantageous to large hospitals, connected hospitals & chain hospitals. The different aspect of a hospital like material services, payment details, costing, budgeting, patient billing accountability & action plans for the future comes under HIS & HMIS.
- EHR (Electronic health record) & EMR (Electronic medical record) - aid in
- Patient level: Before making an appointment, simplified health records management regarding service, broadened access to it, and its teaming with other services.
- Hospital maintenance: Safekeeping the health records, fast retrieval, databasing all information towards evidence, increasing work output with less manpower costs, and satisfaction of patients. It advances the hospital services.
- Nation level – Render preferable services to the people, victorious on cutting frivolous health sector expenditures, and address the current insistent social problems.
- PHR (personal health record) - The health record of the patient that the patient keeps, and which is accessed by the patient anytime and anywhere.
- Enforce hygiene and sanitation: through the use of cleaning barricade machines, robotic sterilizers, incinerators, etc.

Adoption of technology in teaching:

- Teaching tools - computers, projectors, digital boards, and audio-visual aids play a tremendous role in improving the standards of education, MS PowerPoint, MS Excel, video conferencing, organizing of web seminars, etc. It enables the transmission of the experts' knowledge, their skills & even their opinions to the desired places.
- MOOCs (Massive online open courses) - as delivered by LinkedIn, Coursera, Swayam, NIOS (National Institute of Open Schooling), and so on. These courses add to the skills and knowledge of learners.
- E-libraries such as LIBSYS, E-library, etc are easy to use in the school.
- Academia software helps in managing academic work – collaboration among employees, details of employees, distribution of students into batches, and so on.

Use of technology in research^{4,5}: Indeed, technology (IT) serves as the core of the research. It facilitates the works supplely such as harvesting data, sorting data, managing big loads of data, analyzing data, accessing contained data easily, keeping data safe, processing images, moving and getting access to information, and all exploratory processes on the information. To gather data, different kinds of software and applications such as SPSS, Sigmastat, Statmate, Pubmed, Cochrane, Google, and others are employed.

Highlighting the potential of young inventors:

- Emphasize the need to find young people who are already present in local schools and other educational and research institutions by organizing workshops and exhibitions, model competitions and to inspire and motivate them for better performances by providing awards such as innovation fellowship, development fund, centralized training, and budget act.

Technology supporting product innovations and marketing^{6,7}:

- Owing to rapid digitization and research apparatuses incorporating technological software, machinery, etc, it should be possible to develop new breast cancer drugs synthesizing models of current drug development

utilizing empirical evidence, without excluding clinical trials and further research and development of specific drugs.

Capturing and celebrating the achievers:

• Those individuals who have mooted abridged technological paradigms in *Ayurveda* must also be bestowed with recognition awards such as young scientists, or Research Ratna indigenously to the profession. It fosters a spirit of creativity in the young generation.

Overall benefits ⁸ :

• The primary focus is on the socially beneficial implementation of *Ayurveda*, which could be made easier through the use of information communication technologies. There are several reasons below:

1. Embracing the ideology of Digital India, SMART India; Health for all – Technology for all.
2. Capacity Building of AYUSH experts.
3. Integration of Information Technology with Health.
4. Introduction to several components of Health Informatics, their Current Status, and Case studies.
5. ‘End Users’ – ‘Experts’ and ‘Technology Providers’.
6. Encourages teamwork in various franchises of research.
7. The emerging domains of AYUSH Informatics.
8. New career opportunities.

Constraints and Barriers:

• The limitation is characterized by other factors like lack of expertise with the technology, lack of sufficient information, few trained technical personnel as well as weak commitment.

• To solve the problem of integrating IT into the practice of traditional medicine, it calls for improving the education and the training of the people through workshops, training symposiums, etc.

• Also, improvement of soft skills, ability to learn, clinical expertise, and motivation in teachers, students, and support staff.

• Creating awareness of the relevance of IT and making sure implementation takes place at every working station.

DISCUSSION

Integrating technology in the fields of *Ayurveda* helps not only raise the levels of *Ayurveda* but also aids in the spreading of *Ayurveda* to all corners of the world. To promote as a global medicine and equip *Ayurveda* to meet the global healthcare needs of the 21st century, there is an urgent need to modernize the ancient system in pace with the development of science and technology. Therefore, considering all these points, *Ayurveda* needs to be restructured in the context of globalization to keep up with the future demands of a cyberspace society by utilizing information and communication technology.

CONCLUSION

All sectors relating to *Ayurveda* can embrace technology most effectively. There has been an increase in the use of information technology concepts and devices among a few eminent Ayurvedic practitioners. However, the majority of the practitioners are oblivious to such advancement. Technology aids in checking and ensuring data-based documentation, data preservation and security, easy access, and global dissemination. The triple-pronged academic-clinical-research *Ayurveda* needs to embrace and incorporate new technologies to enable the aged hawk of *Ayurveda* to soar higher and higher and shine brighter and brighter

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