Available online on 15.12.2025 at http://ajprd.com

Asian Journal of Pharmaceutical Research and Development

Open Access to Pharmaceutical and Medical Research

Open Access

Review Article

The Evolution of Human Healthcare System: From Ancient Practice to Modern Medicine

Gite Anamika*, Gaware Vinayak, Thorat Sneha

PRES's College of Pharmacy (For Women), Chincholi, Tal. Sinnar, Dist. Nashik.

A B S T R A C T

The formation of the European Union (EU) medical device regulatory framework was largely driven by significant public health crises, including the thalidomide tragedy of the 1950s and 1960s, which revealed the dangers of insufficient oversight in both pharmaceuticals and medical devices. In response, the EU introduced a series of directives, starting with the Medical Device Directive (MDD) in 1993, aimed at harmonizing regulations across member states and ensuring patient safety. Early challenges in these regulations, such as insufficient clinical data and weak post-market surveillance, led to ongoing revisions, particularly as medical technology evolved. The thalidomide disaster highlighted the need for stringent, independent oversight, pushing the EU toward more rigorous standards for clinical evidence, post-market monitoring, and oversight of Notified Bodies independent organizations that assess device conformity.Subsequent medical device failures, such as the PIP breast implant scandal and issues with metal-on-metal hip implants, further exposed gaps in regulation. These prompted the introduction of the Medical Device Regulation (MDR) in 2017, emphasizing enhanced clinical evidence, stricter post-market surveillance, and greater transparency. Key provisions include device classification based on risk, mandatory Unique Device Identification (UDI) for traceability, and a centralized database (EUDAMED) for improved visibility. This ongoing regulatory evolution ensures the safety and efficacy of medical devices across the EU, responding to technological advances and increasing public demand for stronger protections in healthcare.

Key words: Thalidomide tragedy,public health crises,medical device failures

A R T I C L E I N F O: Received 10 Agust 2025; Review Complete 25 Oct. 2025; Accepted 10 Nov. 2025; Available online 15 Dec. 2025

Cite this article as:

Gite A, Gaware V M, Thorat S, The Evolution Of Human Healthcare System: From Ancient Practice To Modern Medicine, Asian Journal of Pharmaceutical Research and Development. 2025; 13(6):70-78, DOI: http://dx.doi.org/10.22270/ajprd.v13i6.1654

*Address for Correspondence:

Dr. Vinayak Madhukar Gaware, Department of Pharmaceutical Chemistry, College of Pharmacy (For Women) Chincholi, Nashik, 422101, Maharashtra, India.

INTRODUCTION

Ayurveda and allopathy have developed largely as resembling systems, one with its strengths and the other with sins. With its substantiation-grounded system, ultramodern drug has gone an enormous way in controlling acute conditions and adding lifetime. Yet, it tends to be lacking when it comes to habitual diseases and heartiness. Again, while Ayurveda is veritably good at forestalment and life correction, it has been blamed for lack of rigorous scientific evidence and standardisation. [1] Natural products are used to be an important part in the Traditional drugs (TMs). Medicine practices, similar as traditional Chinese drug(TCM), Ayurveda, Kampo, traditional Korean drug(TKM) and Unani, are natural products- grounded practices, which have been applied throughout the world for several hundreds or thousands of times, and flourished. [2] The primary theme of Ayurveda is balancing the natural state of the mortal body and promoting a healthy way of life. Grounded on the principles of Ayurveda, the mortal body consists of three dominant doshas – Vata, Pitta and Kapha powers. Every existent has a unique proportion of these doshas, and their equilibrium is the foundation of health [3] In this contemporary period, population preference is in favor of deciding between the operation of contemporary drug and traditional drug treatment. Traditional drug has long been. It has been characterized by [4] The World Health Organization(WHO) has described TM as' the sum aggregate of the knowledge, chops and practices grounded on the propositions, beliefs and gests indigenous to different societies, whether soluble or not, used in the conservation of health, as well as in the forestallment, opinion, enhancement or treatment of physical

and internal ails"[5] Traditional and contemporary systems of drug evolved due to colorful doctrines in colorful artistic climates. They perceive health, conditions and etiology of conditions else. These variations introduce different paradigms of health and conditions. Both the systems, however, handle the same content – human being. The old and new art of mending must attend. [6] Traditional drug for primary health care is a potentially important resource for the delivery of health care and that medicinal shops are of great significance to the health of individualities and their communities traditional drug, to probe the possible mileage of traditional drug including assessment of practice and analysis of the safety and efficacy of remedies. [7] By synergizing the strengths of the two systems, the addition of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy(AYUSH) with mainstream drug aims at offering a more holistic and effective health care system. [8]mortal well- being is a crucial global issue. Multitudinous associations have been established throughout the world to help humans in healing the colourful conditions. [9]

Ancient Healthcare Practice

Humans have been employing natural products, including plants, animals, microbes, and marine organisms, in medicine to treat and relieve diseases of all types since prehistoric times. [10]Traditional medicine involves medicinal practice informed by evolved theoretical knowledge bases, including Traditional Chinese Medicine (TCM), Ayurveda, Unani, and European herbal medicines. They possess considerable historical and cultural importance, characterized by unique and lasting contributions to world healthcare. [11] History of traditional herbal medicine practice Traditional herbal medicine encompasses a long and varied history that reaches across cultures and continents. Some of the ancient civilizations like the Egyptians, Chinese, Greeks, and Indigenous people of diverse regions have been using herbs and botanicals long ago to cure diseases and ensure good health. The practices were mostly supported by observation, experiment and error, and collective wisdom handed down verbally or in written form.86,87 In the classical systems such as Ayurveda in India, TCM, and Native American herbalism, herbs are not just remedies but are viewed as more holistic solutions that take into account the balance of body, mind, and spirit. This holism focuses on the interconnectivity of all health aspects and on the need to maintain harmony within the body [12] Ayurveda progressed and broadened its scope with the help of great scholars like Sushruta Samhita and Charaka Samhita are two original works that contain complete guidelines for diagnosis, treatment, and prevention of diseases. [13] Traditional medicines relies on scientific evidence, demonstrating safety and efficacy, standardizing the dosage form. [14].

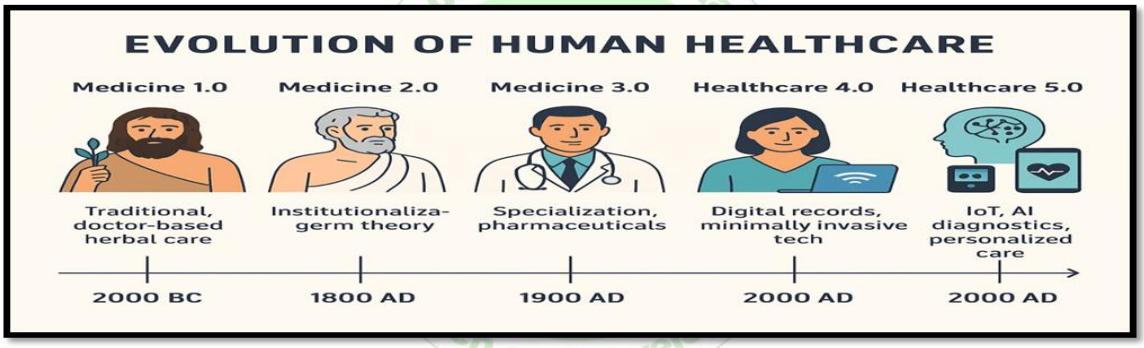

Figure 1: Evolution of Human Healthcare System

ANCIENT CIVILIZATIONS

Ancient Societies like Egypt, Babylon, China, and India. In those days, ails were attributed to spiritual as well as natural causes. also, in ancient India, the generalities of" Ayurveda," and in China, traditional medical practices were codified in written records. [15]Herbal medicines only include those classical drugs which majorly employ medicinal factory medications for treatment. The first written records of their use in Indian, Chinese, Egyptian, Greek, Roman and Syrian jottings go back to around 5000 times. The classical Indian textbooks are Rigveda, Atherveda, Charka Samhita and Sushruta Samhita. The traditional cures herbal drugshave therefore been drawn from rich traditions of ancient nations and scientific heritage. Traditional drug is the practice, knowledge and skill in holistic healthcare, honored and validated for its donation to the preservation of health and the operation of complaint. [6] From the Vedic period and through the expansive medical literature of Ayurveda in the last three glories, there are different proved aqueducts of traditional medical knowledge in Indian key. There are other inversely popular and ancient systems like Siddha, Unani. From the expansive literature available in original languages as well as Sanskrit, Tamil or Persian, it's possible to understand that these systems have been revised on a nonstop base up to recent times.[16] TM is developing and expanding alongside ultramodern drug.[17] Medicine is one of the oldest and most vital areas of mortal knowledge, nearly connected with the development of civilization.[15]Traditional drug is rehearsed extensively, harmonious with the social and artistic tradition of colourful countries.[6]

Egypt

Egypt Ancient Egyptian history is broken down into a number of ages, each playing its part in the elaboration of medical practice.

- Old Kingdom (2686 – 2181 BCE): The roots of medical knowledge, with primitive surgical waysand operation of herbal remedies.
- Middle Kingdom (2040 – 1650 BCE): Progress in medical attestation and the institution of medical seminaries.

- New Kingdom (1550 – 1069 BCE): The zenith of medical knowledge, with sophisticated surgical styles and the operation of medical papyri. [18]

India

Indian medicine blended religion with lay medicine. Surgery was also commonly practiced in Indian medicine. In ancient India, for example, ayuverdic medicine was extremely popular and was described as the "knowledge of living"[19] Conventional medicine is an old system of medical system which has an important role in keeping one healthy and fighting against various life threatening physical as well as mental illnesses. [20] India possesses a rich heritage of indigenous system of medicine on the basis of six systems, of which Ayurveda is the oldest, most prevailing, practiced and flourished indigenous system of medicine. All other allied systems of medicine in India are Unani, Siddha, Homeopathy, Yoga and Naturopathy. Homeopathy employs medicines that cause similar symptoms to the disease for therapeutic purposes to cure the pathological condition first by causing or exacerbating the pathological conditions and later by curing it. For more than a century this system is been practiced in India and has formed an integral part of the Indian traditional system of medicine. [21].

- EARLY VEDIC AGE (1500–1000 BCE): The first mention of Ayurveda practice is in the ancient Vedic scriptures, including the Rigveda, Atharvaveda, and Yajurveda. These scriptures refer to medicinal plants, surgery, and dietary rules for leading a healthy life. Ayurveda also had much connection with religion and spirituality, with priests and healers conducting healing ceremonies in temples.
- CLASSICAL ERA (1000–500 BCE): Ayurveda underwent important developments during this era, and a number of influential works were composed. The most seminal among these works are the Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya. These works presented a holistic system of Ayurvedic medicine, discussing anatomy, physiology, pathology, diagnosis, and treatment.
- PRE CLASSICAL PERIOD (500–300 BCE): This was the era of the establishment of numerous schools of Ayurvedic philosophy. The most well-known schools were the Charaka School, the Sushruta School, and the Vagbhata School. In spite of the differences, these schools all had the same faith in a balanced diet, herbal medicine, and modification of diet and lifestyle for healthful living
- GOLDEN AGE OF AYURVEDA (300–1000 CE): This was the age of the peak development of Ayurveda with major inputs from great physicians and scholars. People of note during this period include Nagarjuna, Charaka, and Sushruta. Ayurveda was practiced all over India, and Ayurvedic literature was translated into many languages, such as Arabic and Persian. Ayurvedic physicians also started opening medical schools, hospitals.
- DECLINE OF AYURVEDA (1000–1500 CE): The growing power of allopathic drug and the presence of foreign raiders who raided the Indian key contributed to the decline in fashion ability of Ayurveda. Ayurveda was considered old- fashioned and unscientific, and its operation dropped vastly. [13]

Herbal medicine

The World Health Organization(WHO) has lately defined traditional drug (including herbal medicines) as comprising remedial practices that have been in actuality, frequently for hundreds of times, before the development and spread of ultramodern drug and are still in use moment. Or say, traditional drug is the conflation of remedial experience of generations of rehearsing croakers of indigenous systems of drug. The traditional medications comprise medicinal shops, minerals, organic matter, etc. In Traditional drug, Medicine refers to a branch of mortal knowledge dealing with the restoration of health. It is, in the widest sense of the word, the wisdom and art of the forestalment and treatment of mortal conditions, and other conditions of the mortal body or mind. It's nonetheless constantly only used to denote the matters treated by academically trained croakers and surgeons. [6] While some traditional curatives, similar as acupuncture and herbal drug, have been studied considerably and shown to have remedial benefits, others warrant empirical substantiation and may carry pitfalls of detriment if misused. To integrate ancient mending traditions into ultramodern healthcare, it's essential to conduct rigorous exploration to estimate their effectiveness, safety. [22]

China

Western drug was first introduced during the sixteenth century, yet it did not develop until the nineteenth century. presently, TCM continues to play a vital part in China, and it's being continuously bettered upon. TCM is embedded in 5000 times of clinical practice and experience, and is impregnated with information on" clinical trials" that insure its efficacy and effectiveness. [2] Traditional Chinese drug(TCM) has evolved to be a standardized system of drug through organized development throughout global healthcare practice. Still, issues remain about the safety, efficacy and quality of traditional medicinal medicines. [11]previous to also, traditional Chinese drug(TCM) had been the most extensively rehearsed form of healthcare in the country. Interestingly, there's a growing confluence between TCM and ultramodern drug. With the advancement of recent technology, it's now doable to establish the pharmacology and mechanisms of action of several Chinese sauces, and TCM is now accessible in the environment of contemporary drug. With developments in the theoretic foundation, principles of remedy, related technologies, and knowledge of the life lores, it has come possible to more understand the active ingredients of TCM. At the launch of the nineteenth century, the age of" ultramodern" medicines arrived. [10] During the 16thcentury, so- called" western drug" was brought into China but was not extensively applied and thus wielded a minimum impact. It was not until the Opium War that" western drug" started to crop in China. Therefore, before the circumstance of that event, traditional Chinese drug was always the predominant force of medical care in China. [23]

Greece and Roman

Ancient Roman drug was a mix of physical intervention with different tools, and holistic drug involving rituals and a

religious belief system. Early Roman drug was a mix of religion and necromancy, but latterly it came decreasingly dominated by the Greek medical lore's.[19]This period saw the formalization of medical ethics, with the Hippocratic Pledge serving as a foundational textbook, guiding the ethical liabilities of croakers from its ancient origins in societies like Egypt, India, and China, where early medical practices were recorded in textbooks and papyri.to the methodical approaches developed in Greece and Rome — stressed by Hippocrates' ethical principles and Galen's anatomical studies. [24] The scientific progress made during the period of the Roman Empire in the first century BCE to fifth century CE further converted humanity's understanding of health. The most prominent croaker of the Roman Empire, Galen, [25] Imperial Rome inherited Greek medical tradition and practices. It also had its own laws of medical service especially with regard to public health. Sanitation was an important point of Roman life including subsurface seamsters, drawing the thoroughfares and the distribution of drinkable water. Rome had also a public medical service especially to attend to the requirements of the poor, and a sanitarium system which was maybe originally connected with the Roman service system. latterly military hospitals were established at important strategic places. In the succeeding centuries, the philanthropic tradition of launching hospitals was carried on wherever Islamic culture took root. [26] Galen contributed to the development of a further holistic idea of health that considered the whole case, including internal and emotional countries. Through Roman inventions in sanitation and public health, the focus of healthcare began to shift from a single existent to an entire society [25] practices and rituals ancient Egyptian and ancient Greek societies performed on tormented persons and how similar practices are still applicable and applicable to contemporary healthcare and drug. [27] Unani is a traditional Greek holistic healthcare system whose history dates back 2500 times. From themid-1970s, when WHO started giving further significance to TM [14]

HIPPOCRATES (460-356 BC): Religion and drug go way back in time with a crooked history, gauging thousands of times. Magic and wisdom, and drug and religion share multitudinous veritably strong similarities. Religion played a vital part in the origin of ancient drug. [28] They associated four liquids(humours) flowing in the body, similar as unheroic corrosiveness, black corrosiveness, blood and numbness, that have analogues to the four rudiments and their parcels. Four sets of large modes outlined in the ancient Greek deconstruction. [29] Hippocrates's gospel of delivering medical care was centredaround a holistic model of health care. Hippocrates also was among the inaugurators of the clinical drug. [28] Hippocratic drug is grounded on the substantiation- grounded knowledge that was available at that time, since Hippocratic croakers had to give full and thorough medical histories, and this reminds us of the present exploration protocol that exists moment. Particularly, in their syndromic or complaint opinion.[30]

BIRTH OF MODERN MEDICINE [18th- 19th]

The transition from the 18th to the 19th c. is a time in the history of drug when the split of the top modernisation course in clinical drug was established. [31] The development of public health systems and legal fabrics in the 18thcentury onwards homogenized the regulation of medical practice and case rights. Ultramodern medical law now encompasses a broad diapason of issues including ethics, patient rights, and bioethics, conforming to new medical technologies and societal demands ultramodern challenges and technological advancements. By contemporizing medical structure, enhancing the chops of healthcare workers, and developing-health and telemedicine, the discovery of new medical ways, similar as vaccination and surgery, needed the development of further sophisticated legal regulations to insure patient safety and ethical practice. [22] The 18th century is regarded as the Golden Age of both the successful guru as well as the successful quack. The advancement of drug during this time was more theoretical than practical. Internal drug was enhanced by new handbooks listing and detailing multitudinous new complaint types, and by the addition of new drugs, including digitalis and opium. [31] Medical chroniclers further point out that the 19th century was a century when the remainder of rectifiers was before, and appertained to it as a period of public health. New advances in bacteriology enabled water sanctification and pasteurization of milk, which vastly reduced death rates. In addition, the arrival of antiseptic surgery in the 19th century reduced the mortality from injuries and operations and increased the range of surgical. [31] The preface of antibiotics and sulphonamides was particularly significant in treating formerly murderous conditions. Sir Alexander Fleming's (1881- 1955) serendipitous discovery of penicillin in 1928 was vital in starting the antibiotic period. [32]

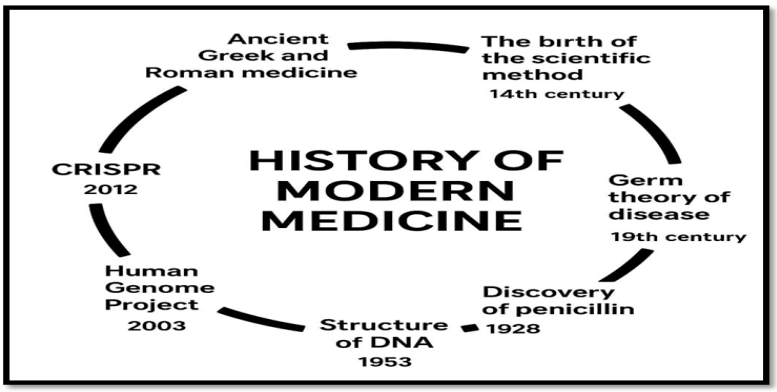

Figure 2: Historical Outline of Modern Medicine

Technological inventions in medical instruments have revolutionized healthcare delivery, opinion, and treatment, leading to bettered patient issues and increased effectiveness in health care systems. From the invention of the stethoscope in the early 19thcentury to the development of advanced imaging ways and robotic surgical systems in the 21stcentury, technological advancements have converted the practice of drug and expanded the possibilities for opinion and treatment across a wide range of medical specialties. One of the most significant technological inventions in medical instruments is the development of individual imaging ways, similar asX-rays, reckoned tomography reviews, MRI, and ultrasound. [22] While moment's ultramodern drug is grounded on advanced technologies, precise individual styles, and innovative treatment approaches, [15] revolutionized the opinion of bone fractures, lung conditions, and other conditions by allowing croakers to see inside the body without invasive procedures. also, MRI and reckoned tomography reviews give detailed images of soft apkins, organs, and blood vessels, enabling early discovery of excrescences, strokes, and other life-hanging conditions. [22] Since also, further development supported the allopathic system to expand in the area of product, quality control, opinion and remedy. [33]

Germ Theory &Microbiology

Louis Pasteur (1822- 1895) linked the anaerobic nature of the butyric turmoil bacteria and described the terms aerobic and anaerobic bacteria in roughly 1861. Around the same period, he set up that the pellicle needed in the ginger conformation from wine was made of a rod- shaped microorganism, Mycodermaaceti. Pasteur's contemporary, Robert Koch, (1843- 1910), started a brilliant career and a series of discoveries with his 1876 report on the total life history and sporulation of the anthrax bacillus. His culture ways were vindicated by Pasteur; and in 1877 Koch described his styles of fixing and drying flicks of bacteria on coverslips, staining them with Wiegert's aniline colorings, staining flagella and shooting bacteria for identification and comparison. [31]

20TH CENTURY MEDICAL ADVANCEMENT

The 20thand 21stcenturies have witnessed accelerating advances similar as antibiotics, inheritable studies, and organ transplant, adding life expectation and quality of life. [24] The preface of antibiotics and sulphonamides was particularly significant in treating formerly murderous conditions. Sir Alexander Fleming's (1881- 1955) serendipitous discovery of penicillin in 1928 was vital in starting the antibiotic period. [32] At the launch of the 20th century, remedial agents were still limited in number, and most common conditions that are fluently treated moment were still regarded as life- hanging. With advances in individual styles and the discovery of new medicines, the laboratory gave drug's authority a spur by investing it with the power to descry and cure complaint.[31] traditional drug, ultramodern drug as defined a general term for conventional health care grounded on the western model of substantiation-grounded practice for diagnosing and treating complaint.[34] new technology being developed as an volition to conventional surgery.[35] Allopathy like charges onX-rays, ECG, pathological tests. Of course, these tests are also employed by medical croakers in AYUSH, but public information is that these are employed considerably in Allopathy.[36] enhancing the chops of healthcare workers, and developinge-health and telemedicine, the discovery of new medical ways, similar as[22] imaging modalities likeX-ray and sonography are more patient-friendly because they've been familiar for a long time, but their delicacy and perfection are lacking compared to sophisticated Imaging modalities like CT, MRI, and PET reviews. inheritable testing like chromosomal microarrays has also been talked about. inheritable advances have handed the possibility of relating conditions in embryos that can prove to be useful, but manipulating the embryos may pose ethical issues. [35]

Evidence Based Medicine (EBM): EBM has come a vital aspect of contemporary medical practice. The modern approach to traditional knowledge has been one of either contemporize or vanish. EBM, studies on chosen motifs of TCAM by means of randomized controlled trials, and integration of successful care practices as substantiation-grounded ultramodern drug is estimated to lead to medical immersion and eventually to corrosion of alternate health approaches. [37]

21ST CENTURY: DIGITAL AND PERSONALIZED MEDICINE

Health Creation in the 21st century in general, health status has bettered overall for utmost people for utmost of the 20th century still, a number of abecedarian challenges to health at the global and public position must be faced as we enter the 21st century. [38] The first major break from supernatural generalities of health came from the academy of Hippocrates around the fifth century BCE. Considered the "Father of Modern Medicine" Hippocrates was the first to separate Greek drug from magical and religious beliefs and establish the relationship between environmental/ particular cleanliness and the origin of complaint. [39] By contemporizing medical structure, enhancing the chops of healthcare workers, and developinge-health and telemedicine, the discovery of new medical ways, similar as vaccination and surgery,[22] Since ultramodern history, as technology has evolved and further health mindfulness.[40] In the early 21stcentury, one hundred times after IlyaMechnikov and Paul ehrlich, the authors of the current impunity proposition(1908), entered the Nobel Prize, knowledge about the delicate molecular mechanisms of antibody functioning and commerce with the organism's defensive systems has made the topmost step forward. similar progress is assured by the new technologies. [39] New Advancements to Imaging Technology, the inordinate use of radiation is still an ethical issue in radiology. Imaging technologies have been playing a pivotal part in detecting conditions at the original stages, proper opinion, and better staging of the inflexibility of complaint. Some of the well-known exemplifications among these technologies are CT reviews, MRI reviews and PET reviews. [41] AI for individualized drug and digital halves are two affiliated but distinct generalities. AI uses algorithms to perform tasks that generally bear mortal intelligence, similar as supported opinion, prognostic, and treatment recommendation. [42] Since AI prognosticate and diagnose conditions at a quicker rate. [43] AI is being employed as a device for precise restatement of imaging technology images and indeed aiding Radiologists in their interpretation. One study that was released pertaining to AI capability to interpret a bone MRI

and arrive at an opinion was varied against the standard computer- backed software to observe which would more help Radiologists. [41] Utmost of the companies is applying AI- backed tools for diagnosing and detecting colorful types of cancer. [43]

21st century particular drug and genetics has arrived, presenting us with new testing technologies like inheritable testing large scale, panel and single gene, but it has also presented us with new innovative tools that can help with fighting complaint due to inheritable mutation, like crisp. The future of individualized drug and genetics will be performed with lesser operation of WES and WGS testing, farther clinical trials and increased backing to induce a broader sample of data. [41]individualized jotting styles can help medical miscalculations and promote patient safety. individualized drug protocols can be understood as a major vault in preventative and substantiation- grounded health care systems.[44] substantiated medicine curatives in the treatment of diseases where inheritable and environmental aspects have a major influence can enable the product of targeted medicines.[44] individual brings the individualized drug, rather of itself being substantiated, can enable personalization of those it treats through the information it generates.[45] Remote monitoring technologies, similar as telemedicine platforms and mobile health apps, enable cases to consult with healthcare providers, admit medical advice,[22] Electronic Health Records(EHRs) and other electronic systems, healthcare data tends to be insulated and stuck in data silos between colorful healthcare providers, specialties, and institutions. wide absence of common norms for data gathering, structuring, and participating oppressively impedes smooth inflow of patient data. [46]

In India, the first urologic robot named da Vinci S was set up at the All India Institute of Medical lores, New Delhi in 2006. This inauguration was followed by an exceptional expansion of robotic surgery in the country. Till July 2019 there were 66 centers and further than 500 professed robotic surgeons in India who had successfully performed more than 12,800 surgeries with the backing of robots. This unanticipated expansion of robotic surgery shows that the future of robotic surgery in India is veritably bright. [43]used robots during the epidemic, as they were helpful to control the rate of spreading of complaint. During the COVID- 19 epidemic, excellent work was done for epidemic preparedness, webbing, contact dogging, disinfecting, and administering counter blockade and social distancing. Robots can be efficiently used for making judgments of different conditions by using artificial intelligence. The radiologist robots, which can be efficiently used for making judgments of different conditions by using artificial intelligence.[43]

COMPARITIVE ANALYSIS: Ancient vs. Modern

Traditional drug has generally been perceived as being safer than ultramodern drug. currently, traditional drug as a cover for traditional drug is gaining fashion ability, particularly with the desire to go back to nature. [47]once healthcare practices are distinguished from medical technologies, [48] Repliers from the old age and the senior also show a strong interest in traditional drug rather than ultramodern drug. The womanish gender has a lesser interest in traditional drug than ultramodern drug. [47] Ancient practices of mending have been an integral part of mortal societies for centuries, contributing mainly towards the operation of health and heartiness well before the time of ultramodern drug. [22]find out the information regarding the development and comparison between the two systems of drug. The effectiveness, graces and downsides of systems.[33]

Cost-effectiveness: Conventional medicines may be cheaper than contemporary medicines, and hence more affordable to a larger population, particularly in resource-poor areas.

Efficacy: There have been promising results from some traditional medicines in treating specific conditions. For illustration, tribulusterrestris herbal drug has shown implicit to treat sexual dysfunction.

Safety: Traditional medicines are fairly safe when applied within traditional knowledge. There is, still, a need for violent scientific exploration to confirm safety and efficacy.

Regulation and Standardization: Contemporary medicines are regulated by strict norms and quality control.

Integration into Healthcare: The integration of traditional medicines into contemporary healthcare systems needs cooperation between traditional healers and physicians. Cultural awareness and respect between the two groups are crucial during this process. [49].

Comparative Analysis

Aspect	Traditional Medicine	Modern Medicine
Philosophy	Holistic, balance-focused	Disease-targeted, reductionist
Evidence Base	Empirical, historical	Controlled trials, scientific
Accessibility	Low-cost, community-based	Institutional, high cost
Strengths	Prevention, cultural fit	Acute & emergency care, high cure rates
Limitations	Variable quality, safety risks	High cost, tech dependency

Figure 3: Comparative Analysis of Traditional and Modern Medicine

CHALLENGES

The eventuality of AI to revise healthcare cannot be denied, but its wide and responsible integration is hovered by a complex set of challenges. These challenges are n't only specialized in nature; they extend ethical, nonsupervisory, data- driven, and socio- profitable disciplines, demanding holistic and cooperative approaches to insure that AI really favors all the stakeholders within the healthcare system. [46] Robots are automated machines and, thus, prone to faults and miscalculations. Power deficit andnon-availability of other infrastructural installations do n't allow access to the use of robotics across the Indian healthcare system. trained and professed labor force for the operations and conservation of the robotics and AI system is a challenge. [43]

Challenges That Need to Be Overcome:

Lack of Scientific: substantiation utmost traditional medicines do n't has strong scientific evidence for their effectiveness and safety.

Regulatory fabrics: It's necessary to have nonsupervisory fabrics for conventional medicines in order to make them safe and of quality.

Cultural Preservation: It's necessary to make sustentations of traditional mending wisdom in order to retain it in the forthcoming generation. [49]

There will be multitudinous medical developments that will enable more accurate and personalized wireworks with consideration of inheritable predilection, life, and health history. also, early discovery and treatment strategies. [50] Traditional drug is rehearsed extensively, harmonious with the social and artistic tradition of colourful countries. Each mortal society meets the challenge of health conservation and complaint treatment by creating a medical system. [6]

FUTURE PERSPECTIVES

The revolutionary eventuality of AI in healthcare requires ongoing exploration, development, and strategic deployment to overcome the enormous challenges defying it. unborn exploration will be aimed at the development of bettered operations, disquisition of new capacities, and ahead- of-time consideration of the ethical, nonsupervisory, and societal goods of ever- further sophisticated AI. [46] unborn studies ought to concentrate on their security as well as efficacy and stability in treatments. Synthetic biology and artificial intelligence (AI) are promising to boost the progresses both in drug and drugstore, but the area is in an early stage. AI is a megahit not only in computer wisdom, but also in biology exploration. The AI vaticination of protein structures ranks as the top one in ten scientific improvements in 2021. [51] While the use of AI and robots in the health assiduity is yet to start, the prospects for the future are extremely bright as far as adequacy and viability are concerned [43].

Human-AI Collaboration and Workforce Development

- Resolvable AI (XAI) And Trust: unborn work will concentrate on ways that give perceptivity into AI's decision- making processes, maybe by pressing the data features most influential in an opinion or treatment suggestion.
- Reducing Algorithmic Bias and Maintaining Fairness: Future studies will concentrate considerable trouble on laboriously detecting, measuring, and reducing impulses in AI algorithms and training data.
- Generative AI and Large Language Models (Llms) In Clinical Workflows: The arising area of generative AI and LLMs is enormous. unborn conditioning will look at their deeper integration into clinical workflows for functionalities like
- Mortal- AI Teaming Optimization: unborn studies will emphasize the development of AI systems that blend easily into mortal workflows to compound collaboration rather of substituting mortal knowledge. This includes developing easy- to- use interfaces, smart decision-support tools that enhance clinical wit, and systems that give practicable perceptivity and do n't submerge clinicians with information.
- Medical Education and Curriculum Development: Curricula for medical education need to develop at a decreasingly fast pace to prepare forthcoming healthcare professionals to work effectively with and use AI. This involves education on data knowledge, AI ethics, mindfulness of AI capabilities and limitations, and critical thinking in assessing AI- generated findings.
- Bridging The Digital Divide: unborn sweats need to combat the digital peak aggressively with investment in broadband structure, low- cost access to digital health technology, and strong digital health knowledge programs for marginalized groups. This is essential so that the value of AI- enabled healthcare can be made accessible to everyone, fostering health equity. [46]

CONCLUSION

The evolution of human healthcare from ancient traditional practices to modern, technology-driven medicine reflects humanity's relentless pursuit of wellness and longevity. Ancient systems like Ayurveda, Traditional Chinese Medicine (TCM), and Unani provided foundational philosophies centereda round holistic well-being, spiritual balance, and natural remedies. These systems, rooted in cultural wisdom and empirical knowledge, have significantly contributed to the global understanding of disease prevention and health maintenance. With the advent of modern medicine in the 18th and 19th centuries, scientific advancements revolutionized diagnosis, treatment, and public health infrastructure. Innovations such as antibiotics, vaccines, imaging technologies, and surgical techniques greatly improved life expectancy and disease control. Today, the integration of artificial intelligence, personalized medicine, robotics, and digital health solutions marks a transformative phase in healthcare delivery. However, both traditional and modern systems have their strengths and limitations. While modern medicine excels in acute care and technological precision, traditional practices offer valuable insights into preventive care, lifestyle management, and holistic healing. A synergistic approach that bridges these two worlds—backed by rigorous scientific validation and ethical regulation—can lead to a more comprehensive, inclusive, and effective healthcare system. As we move forward, embracing interdisciplinary collaboration, technological

innovation, and cultural sensitivity will be key to addressing global health challenges and ensuring equitable, patient-centered care for all.

ACKNOWLEDGEMENT

The authors MS. Gite Anamika C., Dr. Gaware Vinayak M., and MS. Thorat Sneha A. Would like to express their sincere gratitude to Pravara Rural Education Society's College of Pharmacy (For Women), Chincholi, Nashik, Maharashtra, for providing the facilities, resources, and encouragement required to complete this review article entitled"The Evolution Of Human Healthcare System: From Ancient Practice To Modern Medicine."The authors are profoundly thankful to their respected guide and teaching faculty members for their valuable guidance, continuous support, and insightful suggestions throughout the preparation of this review. Their expertise and motivation have been instrumental in the successful completion of this work.

REFERENCES

1. Gupta R. Integrating Ayurveda with modern medicine for enhanced patient care: Analysis of realities. The Physician. 2024;9(1):1–6.
2. Yuan H, Ma Q, Ye L, Piao G. The traditional medicine and modern medicine from natural products. Molecules. 2016;21(5):559.
3. Patel A, Choudhary S. Traditional Indian Medicine: Ayurveda and its Integration with Modern Medicine. Am J Innov Sci Res Dev. 2025;2(4):1–4.
4. Maung T. Traditional Medicine Vs Modern Medicine in Rural Area of Kedah State, Malaysia. 2019.
5. Al-Ghamdi E, Qureshi NA, Krekman L, Al-Ghamdi A, Al-Bedah AM. Traditional medicine and modern medicine: Knowledge, attitude and practice of medical students and their mothers in Tabuk City, Saudi Arabia. Br J Med Med Res. 2016; 16:1–12.
6. Shah SM, Akram M, Asif HM, Rehman RU, Ahmad K, Madni A, et al. Hormonization of traditional medicine with modern medicine. 2011.
7. Vlachogianni T, Loridas S, Fiotakis K, Valavanidis A. From the Traditional Medicine to the Modern Era of Synthetic Pharmaceuticals. Pharmakeftiki. 2014; 26(1):16–30.
8. Javed D, Dixit AK, Anwar S, Giri N. Exploring the integration of AYUSH systems with modern medicine: benefits, challenges, areas, and recommendations for future research and action. J Prim Care Spec. 2024; 5(1):11–15.
9. Kumar A, Chattree G, Periyasamy S. Smart healthcare monitoring system. Wireless Pers Commun. 2018;101(1):453–63.
10. Ukana EI, Eka GJ. An assessment of common health challenges of elderly and modern remedies.
11. Hua H, Tang JY, Zhao JN, Wang T, Zhang JH, Yu JY, et al. From traditional medicine to modern medicine: the importance of TCM regulatory science (TCMRS) as an emerging discipline. Chin Med. 2025;20(1):92.
12. Balkrishna A, Sharma N, Srivastava D, Kukreti A, Srivastava S, Arya V. Exploring the safety, efficacy, and bioactivity of herbal medicines: bridging traditional wisdom and modern science in healthcare. Future Integr Med. 2024;3(1):35–49.
13. Verma SK, Pandey M, Sharma A, Singh D. Exploring Ayurveda: principles and their application in modern medicine. Bull Natl Res Cent. 2024;48(1):77.
14. Dalamagka MI. Integrating traditional medicine into a modern health care system. Int J Sci Res Arch. 2024; 12(1):2372–5.
15. Yuldasheva A. Historical medical manuals and their importance in modern medicine. Ekonomika i Sotsium. 2025;6-1(133):898–902.
16. Elujoba AA, Odeleye OM, Ogunyemi CM. Traditional medicine development for medical and dental primary health care delivery system in Africa. Afr J Tradit Complement Altern Med. 2005;2(1):46–61.
17. Eghbalian F, Mohammadi H, Jamshidi AH, Taghavinia M. Innovation in how to present a lesson on traditional Persian medicine: explaining the experiences of medical students. BMC Med Educ. 2025; 25(1):863.
18. Roshdy R. Medicine in Ancient Egypt: A Comprehensive Study. Aswan Afr Obstet Gynecol J. 2025;1(2):1–9.
19. Žuškin E, Lipozenčić J, Pucarin-Cvetković J, Mustajbegović J, Schachter N, Mučić-Pučić B, et al. Ancient medicine—a review. ActaDermatovenerol Croat. 2008;16(3):0–0.
20. Fitriah R, Hidayati RAHMI, Muthia RH. Comparison of public's interest in selecting traditional and modern medicine therapy. Int J Appl Pharm. 2022;14(2):17–21.
21. Jaiswal YS, Williams LL. A glimpse of Ayurveda – The forgotten history and principles of Indian traditional medicine. J Tradit Complement Med. 2017;7(1):50–3.
22. Elendu C. The evolution of ancient healing practices: From shamanism to Hippocratic medicine: A review. Medicine (Baltimore). 2024;103(28):e39005.
23. Dong J. The relationship between traditional Chinese medicine and modern medicine. Evid Based Complement Alternat Med. 2013;2013(1):153148.
24. Abdurashidovna MF. The evolution of medicine and medical law: From ancient civilizations to modern Uzbekistan. Integr Biomed Res. 2024;8(7):1–4.
25. Badash I, Kleinman NP, Barr S, Jang J, Rahman S, Wu BW. Redefining health: the evolution of health ideas from antiquity to the era of value-based care. Cureus. 2017;9(2).
26. Subbarayappa BV. The roots of ancient medicine: an historical outline. J Biosci. 2001; 26(2):135–43.
27. Porter D. Health, civilization and the state: a history of public health from ancient to modern times. London: Routledge; 2005.
28. Harust YV, Kurylo V, Kiselyova E, Pavlenko B. Medicine and humankind since ancient times: historical and legal aspects of joint development. 2020.
29. Teppone M. Medicine has always been "Modern" and "Scientific" from ancient times to the present day. J Integr Med. 2019;17(4):229–37.
30. 30. Kleisiaris CF, Sfakianakis C, Papathanasiou IV. Health care practices in ancient Greece: The Hippocratic ideal. J Med Ethics Hist Med. 2014;7:6.
31. Płonka-Syroka B. Medical doctrines at the turn of the 18th and 19th century and their philosophical foundations. Pol J Public Health. 2018;128(1):36–43.
32. Berger D. A brief history of medical diagnosis and the birth of the clinical laboratory. Part 1—Ancient times through the 19th century. MLO Med Lab Obs. 1999;31(7):28–30.
33. Ahmad AS, Sharma R. Comparative analysis of herbal and allopathic treatment systems. Eur J MolClin Med. 2020;7(7):2869–76.
34. Boukerroucha H, Atiyah AI. The standard of care in traditional medicine and modern medicine. J Asian AfrSocSciHumanit. 2016;2(2):152–62.
35. Caramia G. The twentieth century: The century of progress and medicine. J MaternFetal Neonatal Med. 2006;19(6):317–22.
36. Srinivasan R, Sugumar VR. Spread of traditional medicines in India: Results of national sample survey organization's perception survey on use of Ayush. J Evid Based Complement Alternat Med. 2017;22(2):194–204.
37. Payyappallimana U. Role of traditional medicine in primary health care: an overview of perspectives and challenges. Yokohama J Soc Sci. 2010;14(6):57–77.
38. Hancock T. Health care reform and reform for health: creating a health system for communities in the 21st century. Futures. 1999;31(5):417–36.
39. Deyev SM, Lebedenko EN. Modern technologies for creating synthetic antibodies for clinical application. Acta Naturae. 2009;1(1):32–50.
40. Guo K, Lu Y, Wang X, Duan Y, Li H, Gao F, et al. Multi-level exploration of auricular acupuncture: from traditional Chinese medicine theory to modern medical application. Front Neurosci. 2024;18:1426618.
41. Browning A, Bushmais L, Rahman A, Kose HB. Advancements of the 21st century and their implications on medical research and diagnosis. Proc Lond Int Conf. 2024;11:34–51.
42. Padoan A, Plebani M. Dynamic mirroring: unveiling the role of digital twins, artificial intelligence and synthetic data for personalized medicine in laboratory medicine. Clin Chem Lab Med. 2024;62(11):2156–61.
43. Deo N, Anjankar A. Artificial Intelligence with Robotics in Healthcare: A narrative review of its viability in India. Cureus. 2023;15(5):e39416.
44. Uğraş EB. The significance of personalized medicine in healthcare services of the 21st century: a brief literature review. Eur Res J. 2024;2024(6).
45. Abettan C, Welie JV. The impact of twenty-first century personalized medicine versus twenty-first century medicine's impact on personalization. Philos Ethics Humanit Med. 2020;15(1):11.
46. Panahi O. The AI Revolution in Healthcare. Int J Nurs Health Care. 2025;2(1):1–4.
47. Fitriah R, Hidayati RAHMI, Muthia RH. Comparison of public's interest in selecting traditional and modern medicine therapy. Int J Appl Pharm. 2022;14(2):17–21.

48. Kessler SE. Why care: complex evolutionary history of human healthcare networks. Front Psychol. 2020;11:199.
49. Tojiddinova M. Comparative analysis of Central Asian traditional medications and modern medicine. Ekonomika i Sotsium. 2023;9(112):609–11.
50. Seyi SE, Imaralu JO, Digban KA, John-Ugwuanya GA, Ajike SO. Improving women's health in the 21st century: Current challenges, medical advancements and future prospects. J Women Health Care Issues. 2023;6(5).
51. Yan X, Liu X, Zhao C, Chen GQ. Applications of synthetic biology in medical and pharmaceutical fields. Signal Transduct Target Ther. 2023;8(1):199.