



Integrative medicine for musculoskeletal pains - A proposed model based on clinical experience

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ABSTRACT

With an increasing number of chronic diseases and related disabilities, modern medicine is falling short of offering definitive, cost-effective, long-term solutions. As we realize contemporary medicine's limitations and side effects, we are gravitating towards whole-person care. Taking learnings from integrative medicine treatment of musculoskeletal pains, I comprehended that a paradigm shift is needed in thinking about etiopathogenesis and diagnosing disease. Different healing possibilities can be identified in humans if we shift our focus from reductionist science to whole-person care. Each health condition is an outcome of disturbed homeostasis involving multiple body systems. Based on homeostatic balancing principles and clinical experience, five interrelated and interdependent pathways are discussed. Based on these pathways, a working model of integrative medicine is presented. It can act as a template for medical practitioners to start integrative medicine practice for the benefit of patients. To make integrative medicine mainstream, there is a need to standardize care, frame regulations, train and educate the practitioners. At the same, it shall be put to rigorous scientific experimentation, research, and scrutiny.

1. Introduction

Musculoskeletal (MSK) pain is responsible for poor quality of life and decreased productivity. MSK impairment is the most common chronic impairment in developed as well as in developing countries, as nearly 25 % of the adult subjects suffer from chronic MSK pain [1]. Pain is not just perceived by nociceptive receptors sending signals to the brain. It is influenced by so many other sensory and mental perceptions. The same type and severity of slip disc give each patient different types of pain. Pain perception is also multifactorial, including actual physical damage, the reason for the injury, personality trait, family and social environment, childhood memories about the pain, known cases of the same condition, doctor's opinion, etc.

A 25-year-old girl patient visited us a few weeks back. She suffered from severe headache, giddiness, and neck pain for the last six months. She took treatments and therapies, modern as well as traditional, at various places, including in top hospitals abroad and in India. She was working abroad and staying alone in cold European weather; she made some of the worst lifestyle choices due to her hectic work schedule. Every aspect of her daily routine went against what Indian traditional Ayurvedic science reinforces - food, sleep, exercise etc. After a detailed analysis of our questionnaire, anxiety was also included as a factor in worsening her situation. After examining and reviewing her investigations, she was diagnosed with cervicogenic headache. Our first

concern was to provide her with immediate symptomatic relief. We did a local steroid injection for the right greater occipital nerve to treat neuralgia, followed by other multidisciplinary therapies. We put her through a customized integrative medicine treatment program. She underwent manual therapy, yoga therapies, ergonomic training, nutritional consultation, psychiatric consultation and psychological counselling, mindfulness training, ayurvedic treatments, and vitamin supplementation for three weeks in conjunction with biomedicine. Within three weeks, she was feeling better.

If we look at the changing lifestyle and advances in modern medicine, the disease patterns are also changing. The Indian Healthcare system is already overburdened with managing chronic diseases and related complications [2]. WHO advocates working on an integrative medicine model to provide better, equitable, and effective health for all [3]. Based on our experience in integrative medicine, we will discuss musculoskeletal (MSK) pains in general and then present a clinically relevant model for integrative medicine and how it works, especially in the context of pain. The aim is to give an experiential analysis of the integrative medicine approach and extend its application to many other chronic diseases.

2. MSK pains and integrative medicine

Many times, the exact cause of pain is not clear. What's evident to

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doctors is the patient’s complaint about their low back pain and the related MRI findings showing slip disc at the same level. Reductionist science believes that fixing the slipped disc shall fix the pain problem. But in our experience, this approach often proves inadequate for pain relief to the patient. Even after fixing their disc injury by another doctor, we see patients with persistent pains. We treat patients with failed back surgery syndrome, where the surgery has not yielded satisfactory results. In many such cases, we have noticed that the main issue is to look at the person as a whole instead of looking only at the individual pathology of the vertebra or disc as the reason for pain.

Treating MSK pains needs more than painkillers and operative treatments. Most patients end up with repeated visits to various doctors with more investigations and different prescription medicines. They end up frustrated and, at times, undergo interventions in the false hope of relief, further damaging their already fragile bodily systems. We have always followed evidence-based medicine and tried to find the exact pathophysiology of the condition using all the modern investigation tools. In many cases, all the investigation reports returned normal, or test results did not correlate with patient problems. Over the years, we realised that there is more to MSK pains than just muscles, joints, bones, and nerves. Pain is multifactorial, and each factor contributes to the patient’s suffering.

Since pain is multifactorial, multidisciplinary treatment is the ultimate key to treating the pain [4–6]. And since many of these causative factors are not even in the epistemology of modern medicine, the role of traditional medicine becomes crucial. Many Western medical practitioners are adopting integrative medicine [7], and is also increasingly being adopted by patients [8]. Integration does not mean just a combination of modern and traditional medicines and expecting better outcomes. Instead, it is the judicious use of biomedicine tools and techniques in association with traditional therapies to give better results with the aim to restore normal physiology than those used individually. Academic Consortium for Integrative Medicine defines integrative medicine and Health as “Integrative medicine and health reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic and lifestyle approaches, healthcare professionals and disciplines to achieve optimal health and healing” [9]. Integrative medicine restores the equilibrium of all body systems so that homeostasis is maintained. This homeostasis is crucial for pain-free, healthy human beings.

3. Integrative medicine clinic

Since we realised the need for a different approach to treating MSK pains, we started our quest for a possible solution. Various factors cause disturbance in homeostasis, and one can restore it in different ways. Though many interventions are possible, we decided to focus on a few based on our experience and practicality. After thorough analysis and our experience, in 2010, an integrative medicine team consisting of orthopaedic surgeons, an ayurvedic physician, a manual therapist, a yoga specialist, a physiotherapist, an ergonomist, a psychiatrist, a psychologist, a nutritionist, and a rheumatologist was set up to provide patients with optimal treatment and health. This well-researched and systematic integration of modern and traditional sciences has provided excellent long-term relief to our patients in minimal time, minimal medicines, and optimal cost [10,11].

4. How does integrative medicine work?

To understand how integrative medicine works, it is essential to understand the concept of homeostasis in the context of the whole person.

Homeostasis: Any organ system is not functioning solitary- but is a

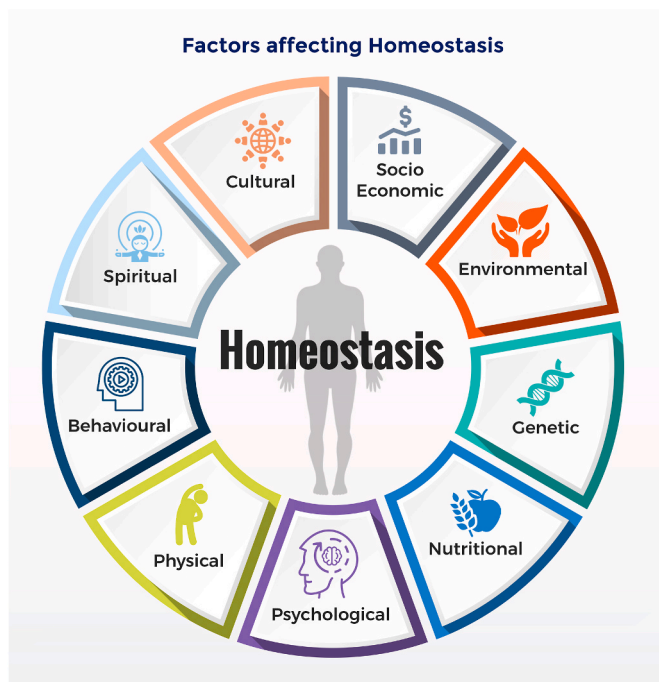


Diagram 1. Factors influencing homeostasis.

part of self-maintained bodily homeostasis. Maintaining this healthy equilibrium is always on autopilot mode at all times in the body. We propose nine dimensions of human life that influence this homeostasis, which are depicted in Diagram 1 and enumerated with examples in Table 1. Homeostatic mechanisms counteract any disturbance and mostly succeed. The homeostasis mechanisms work in unison whenever there is external (e.g., pathogen) or internal (e.g., blockages in an artery) disturbance in body equilibrium. In a way, there is a continuous dialogue between different body cells so that each physical and mental function of the body works at its best!

Disease: As the homeostasis pathways are readjusting to restore the balance, sometimes some aftereffects are seen as minor symptoms, which go away over a period of time. As the disease manifests and initial symptoms start (E.g., pain, nausea, giddiness) to show that something is wrong with the harmony. Which symptoms appear first will depend on which body function and cells are out of sync at the start. As more cells get affected, more symptoms start coming in, and the person feels sick. That’s why some diseases take years to develop and till then a person feels completely healthy.

Table 1
Factors with examples influencing homeostasis.

FACTOR	EXAMPLE
1. Socio-Economic	<ul style="list-style-type: none"> • Social Support • Family Cohesion
2. Environmental	<ul style="list-style-type: none"> • Altitude • Pollution
3. Genetic	<ul style="list-style-type: none"> • Genetic Predisposition
4. Nutritional	<ul style="list-style-type: none"> • Food Choices • Food Availability
5. Psychological	<ul style="list-style-type: none"> • Core Values • Coping Skills
6. Physical	<ul style="list-style-type: none"> • Flexibility • Endurance
7. Behavioral	<ul style="list-style-type: none"> • Addictions • Risk Mitigation
8. Spiritual	<ul style="list-style-type: none"> • Sense of Identity • Awareness of Meaning
9. Cultural	<ul style="list-style-type: none"> • Perception of Disease • Treatments Preferred

Healing: Once the symptoms are seen, it is imperative to diagnose the patient clinically and if needed, investigate with modern tools available and determine which homeostasis pathways are affected and to what extent. Based on the diagnosis and analysis, use different integrative interventions to support and revitalize each affected pathway to restore homeostasis. While treating the patient, modifiable influencing factors from Table 1 are also considered. This is to be done with minimal bodily invasion, in optimal time, in a conducive environment and at a reasonable cost. The goal is not only to cure but to heal and restore a healthy state of homeostasis!

5. Homeostasis pathway model

Integrative medicine restores homeostasis among different bodily systems to achieve optimal health. Since each treatment method is based on different ontology and epistemology, there is no unified model of integrative medicine and how it works [12,13]. To understand how integrative medicine works and heals the body as a whole, we need to consider an alternate model of body systems and functioning. With our more than 22 years of experience in healthcare systems and Integrative medicine, we have put a simple structure to the principal ways integrative medicine works and maintains homeostasis in the human body. According to this model, the body maintains equilibrium through five interrelated pathways. Each pathway is also interdependent and has effects on each other. Each treatment modality in the integrative approach significantly impacts one or two pathways and a minor on a few others. In Diagram 2, the effects are depicted schematically. Let us briefly look at the different interrelated homeostatic pathways in play in humans.

1. Bio-Physical Pathway:

It consists of the physical structures such as the musculoskeletal system and all the bodily cells, tissues and organ systems that form the body's physical (gross) structure. It relates to how body parts maintain mechanical balance and work seamlessly without disturbing homeostasis.

- 1.1. *Soft Tissues:* All the internal organs are maintained in a particular shape, size, and position for optimal body functioning. E.g., in the case of a slipped spinal disc, a person experiences pain, and a brain tumour will damage surrounding neurons, leading to various effects.
- 1.2. *Hard Tissues:* Bones and joints are essential in locomotion and maintaining a balanced posture. Any fracture or deformity creates pain and postural abnormality.

Structural integrity and interrelation of all the organs are vital for the well-being of a human being. Examples of diseases due to the effect on this pathway include fractures, ligament injuries, tumors, etc. Interventional procedures, Physiotherapy, and Ergonomics have a significant impact on this pathway.

2. Bio-Circulatory Pathway:

Efficient circulation of body fluids in the body through different channels is essential for long-term homeostasis. Humans are approximately 75 % water by mass as infants and 50 %–60 % water by mass as adults. Furthermore, fluid is constantly in flux through various regulatory mechanisms to maintain appropriate concentrations throughout the

Integrative Therapies and Effects On Homeostasis Pathways

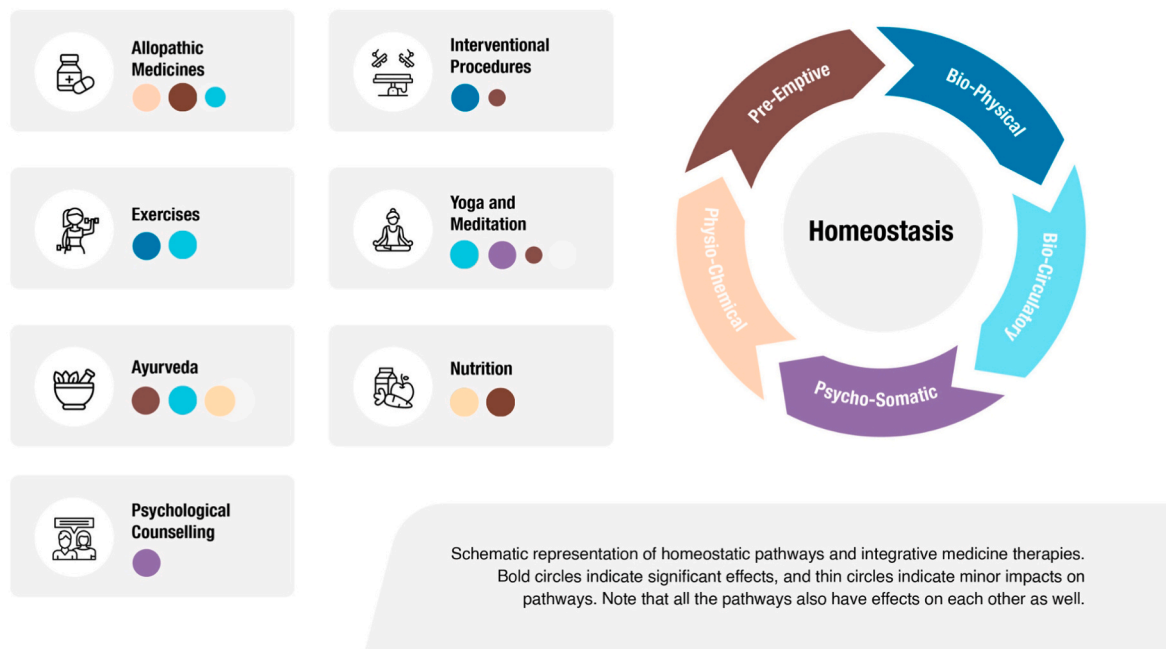


Diagram 2. Schematic representation of homeostatic pathways and integrative medicine therapies. Big circles indicate significant influences and small circles indicate minor impacts on pathways. Each therapy will have at least a little impact on each pathway. Note that all the pathways also have effects on each other as well. Integrative Medicine therapies mentioned here are representative.

various compartments of the body [14].

The following mechanisms maintain it.

- 2.1. **Blood Circulation:** Cardiovascular and related systems provide vital nutrients to all body cells. Nutrients travel through diffusion at places with no vasculature, such as spinal discs and articular cartilage.
- 2.2. **Lymphatic Circulation:** The Lymphatic system plays a vital role in body immunity and balancing fluid levels in extracellular space. Pathogens are removed at lymph nodes during lymph circulation in the lymphatic system. Other essential functions include the absorption of digestive fats and the clearing of cellular waste.
- 2.3. **Excretory system:** Removing waste material and maintaining water, salts, and nutrient equilibrium is essential for homeostasis. Kidneys, lungs, liver, gut and skin play a crucial role in this aspect of homeostasis.

Any disequilibrium in these processes can result in pain and disease. E.g., in muscles, if there is excessive accumulation of P factor – pain is experienced, lymphadenopathy will cause foot oedema, and excess free radicals cause cell damage. Ayurveda, Yoga, and Exercise have significant effects on this pathway.

3. Psycho-Somatic pathway:

The mind plays a significant role in any individual’s overall health and well-being. Every cell is believed to carry its memory and circadian rhythm, and our thoughts influence all the cells in the body [15]. Take an example of two precisely similar athletes on all parameters – but the one with a positive mental attitude wins the gold [16]. We might have also experienced how a sudden tumultuous event causes the whole body to experience change. Each body cell has memory and intelligence to adapt to the local environment. Though the psycho-somatic pathway itself may be the primary reason for very few diseases, e.g., fibromyalgia, it has a role in every human condition.

- 3.1. **Nervous System:** The body’s primary regulatory and communication network is the central, peripheral, and autonomous nervous

systems. It is the principal place of mental activity and control over body functions. Any upregulation or downregulation of this system can be a reason for disease in the body. The importance of thoughts and consciousness has long been identified to enhance body healing. Though there is enormous research in neurology, we are still searching for the answer to the *Hard Problem of Consciousness*. [17] The Yogic philosophy of Super Consciousness helps many patients be spiritually aware and cope with and recover from diseases through meditation [18].

- 3.2. **Prana:** The traditional science of Yoga believes that the *Prana* is the primary source of all the energy and drives all the body’s biological processes [19]. Though the exact pathway through which Prana moves is not identified, yogis believe there is a pathway of Nadis in the body through which Prana force travels, and its meeting points are Chakras. The free flow of Prana is vital for the balanced function of the body. Recent research is also tries to relate these Chakras with the possible anatomical structures in the body [20].

Influencing this pathway has a significant impact on health and disease. The idea of mind-body medicine techniques spurs from this concept. Any disruption in this pathway sometimes causes psychological diseases and many a time adds to the suffering from other diseases. Examples are neurotic diseases, hypochondriasis, Fibromyalgia etc. Meditation, Yoga, and Psychotherapy have a substantial effect on this pathway.

4. Pre-emptive Pathway:

The human body and mind have unique, innate healing powers that help prevent any homeostasis disturbance. This pathway is always in action mode to stall any external agent or internal disharmony. This depends on individuals’ anti-inflammatory power, immunity, and epigenetic states.

- 4.1. **Anti-Inflammatory:** Inflammatory processes are involved in all acute and chronic diseases [21,22]. Normally, when there is a threat to internal homeostasis, inflammatory activity is temporarily upregulated and resolves once the threat is eliminated or passed. However, due to certain modern-day proinflammatory

Table 2
Integrative Therapies and their effects on five pathways.

Pathways		Bio-Physical	Bio-Circulatory	Psycho-Somatic	Physio-Chemical	Pre-Emptive
Therapy	Examples					
Drugs	Vasodilators Immunotherapeutic	NA	Vasodilators increase circulation	Neurochemical alterations	Antibiotics, Anti-diabetics	Altered immune response
Interventional Procedures	Spinal injections, Angioplasty, Surgeries	Open reduction fracture fixation, Tumour removal surgery	Open up clogged arteries with angioplasty	NA	NA	Spinal injection to reduce local inflammation
Ayurveda	Panchakarma, Shirodhara, Herbal Medicines	<i>Shalya Tantra</i>	Increase blood circulation, <i>Mala</i> (waste product) elimination	<i>Shirodhara</i> balances <i>Satoguna, Rajoguna</i> and <i>Tamoguna</i>	<i>Tridosha</i> balancing through detoxification	Correcting <i>Dysbiosis</i>
Yoga & Meditation	Yoga Poses, Meditation	Muscle endurance, postural balancing	Help in normalizing blood circulation	Spiritual aspect of health, Mind body medicine	Regularises proper circulation of neurochemicals	Reduce biomarkers of inflammation, Improve telomeres
Nutrition	Balanced diet	Basic building blocks of body	Regulate composition of blood, lymph, sweat etc	Improve neurotransmitter levels	Production of body chemicals	Gut microbiota, Immunity boosters
Psychological Counselling	MBT, CBT	NA	NA	Change thought process, Improve neurocognitive function	NA	NA
Physiotherapy Modalities	USG, IFT, Mobilizations	Repair, Restore skeletal mal-alignments	Improve local blood circulation, Normalizing adverse neurodynamic	NA	Wash out of waste products	NA
Ergonomics	Postural training	Maintain bio-mechanical balance	Nutrient circulation to all organs	NA	Ensure muscle relaxation and contraction	NA
Exercises	Running, Aerobics, Calisthenics	Muscle strengthening	Muscle strengthening	Endorphins release	Increase blood circulation and nutrient delivery	Boosts immunity

Table 3

Clinical application scenario of integrative medicine treatment.

SYMPTOMS	PATHWAY AFFECTED	ETIOPATHOLOGY	INTEGRATIVE THERAPIES
Principal Diagnosis: Cervicogenic Headache Associated Conditions: Mechanical Neck Pain, Occipital Neuralgia, <i>Manyagat Vaat</i> , Spinal Column Malalignment, <i>Chinta</i> , Postural Imbalance, Nutritional Deficiencies, Lifestyle Issues etc. Diagnosis Tools: History, Clinical Examination, Questionnaire Assessments, Next to Kin Interviews, Investigations such as X-Ray, MRI, Lab Tests. Integrative Core Team: Orthopaedic Surgeon, Ayurvedic Physician, Psychiatrist, Manual Therapist, Ergonomist, Yoga Specialist, Physiotherapist. Extended Team: Nursing Staff, Ayurvedic Therapist, Nutritionist, Psychologist, Therapy Co-Ordinator.			
Giddiness Neck Stiffness Tingling in Back of Head	Physio-Chemical Pathway	Occipital Nerve Neuralgia Deficient Vit B12 & D	Drugs for Neuropathic Pain <i>Sthanik Snehana</i> , <i>Sthanik Naadi Swedana</i> Treatment Neural Mobilizations Vitamin Injections Local Injection Procedure
Indigestion Occipital Region Pain Giddiness Constipation	Pre-Emptive Pathway	Chronic Inflammation Compromised Immunity	Antihistaminics Dietary Counselling <i>Matra Basti</i> Treatment
Inability to focus Tiredness Fear of Major Disease Overthinking Loneliness	Psycho-Somatic Pathway	Anxiety Stress Insomnia	Short Course of Anxiolytics Psychological Counselling <i>Yoga - Anulom Vilom</i> <i>Siddha Tail Shirodhara</i>
Muscle Weakness Rounded Shoulders Forward Neck Posture Loss of Lumbar Lordosis	Bio-Physical Pathway	Straightening of Cervical Spine Muscle Weakness Postural Imbalances Malalignment of Spinal Column	Vitamin Supplements Spinal Mobilizations Ergonomics Training Physiotherapy Exercises Yoga Postures
Neck Pain Headache Nausea Vomiting	Bio-Circulatory Pathway	Muscle Spasm Referred Pain Nerve Irritation	Muscle Relaxants & NSAID <i>Sthanik Snehana</i> Procedure Physiotherapy Modalities Meditation

issues linked to environmental, social, psychological, and lifestyle factors, there is a continuous state of low-grade, sterile (non-infective) systemic chronic inflammation [23]. The severity and duration of inflammation are a reason for many diseases [24]. How we can manage and prevent these dysregulated inflammatory processes from causing self-harm is essential to prevent and treat all chronic diseases. E.g., accumulated inflammatory cytokines in joints cause cartilage damage and result in arthritis.

4.2. **Immunity:** Overuse of antibiotics and westernized diets have altered the composition of diverse microbiota, directly affecting the human immune response. The microbiota has a significant role in immunity and overall health [25]. All autoimmune disorders, such as rheumatoid arthritis, SLE, etc., are on the rise. Research in the immunology of chronic diseases such as rheumatoid arthritis, cancer, heart disease, etc., has thrown new insights into the pathophysiology and opened a field of immunotherapy for chronic illnesses [26]. Though modern medicine has developed many immunotherapy modalities – they have achieved sporadic success with multiple side effects [27]. Thus, inflammation and immunity go hand in hand in the causation of chronic diseases. Ayurveda takes care of both factors by regulating human microbiota.

4.3. **Epigenetics:** Since genetics plays an essential role in disease manifestation, modulation of gene expression through epigenetics has been of particular interest to researchers to find a long-term cure for chronic diseases. Experiences of our ancestors and those of our parents may have altered our gene expressions, making us more prone to non-communicable chronic diseases [28]. A better understanding of risk factors and their epigenetic influences has a role in effectively controlling and managing epidemic of non-communicable diseases [29]. In the Ayurveda system of medicine, predisposition to disease and selection of a preventive and curative regime is primarily based on a phenotypic assessment of a person, including one's body constitution

termed "*Prakriti*". *Prakriti* is a consequence of the relative proportion of three entities (*Tri-Doshas*), *Vata*, *Pitta* and *Kapha*, which are not only genetically determined (*Shukra Shonita*), but also influenced by environment (*Mahabhuta Vikara*), maternal diet and lifestyle (*Matur Ahara Vihara*), and age of the transmitting parents (*Kala-Garbhashaya*) [30]. These recent efforts on epigenetics by modern science have already been taken into account by traditional medicine of Ayurveda.

The preemptive pathway is the body's defence system and keeps the body healthy. Any alteration, internal or external, results in diseases. Examples are autoimmune diseases (primarily internal disturbance) and infectious diseases (primarily through an external agent). Ayurveda, Nutrition, and Biomedicines have significant effects on this pathway.

5. Physio-Chemical Pathway:

It is estimated that around 60 million chemical reactions occur in a minute just in ribosomes alone, leading to the synthesis of approximately 120 thousand protein molecules! [31] The magnitude of physiological and biochemical reactions is incomprehensible and is still under research. A great many such chemical reactions make metabolic homeostasis possible. Every cell in the body is surrounded by intercellular fluid through which chemicals enter and leave cells. Efficiency in physiochemical processes is through coordinated and frenetic communication between different body cells via known and unknown networks. A few known factors influencing these reactions are.

- 5.1. **Oxygenation:** Circulation of oxygen from breath to cellular Krebs cycle for ATP synthesis - gives energy to all activities of humans.
- 5.2. **Biological Catalysts:** Enzymes effectively manage local chemical reactions, and hormones work on distant organs.
- 5.3. **Electrical:** Every cell also carries electricity on the surface and helps with signal transfer – especially in neurons. Many chemical

reactions are based on the effective transfer of chemicals across cell walls through different ion channels.

Disturbed metabolism is a precursor to many diseases. E.g., Calcific tendinosis in the shoulder results from hypoxia-induced fibrocartilaginous metaplasia. The body's metabolic activity changes during the day and in different seasons. Ayurveda has recommended various therapies at the change of the season to regularize the body's metabolism and keep homeostasis. Ayurveda, Biomedicines, and Nutrition are the principal therapies to influence this pathway.

6. Clinical application scenario

The *Homeostasis Pathway Model* presented here is based on understanding integrative medicine and MSK pain. A summary of the model with the effects of different therapies is given in [Table 2](#). The model discussed is of high clinical importance in treating patients through integrative medicine. To demonstrate the practical use of the model, we have summarised a case study of a 25-year-old patient from the Introduction section in [Table 3](#). Once she was diagnosed, we identified which pathways were affected and designed the therapy program. This model can be used as a template to treat any disease with Integrative Medicine.

7. Discussion

Modern medicine has become a global institution and has improved life expectancy across geographies. It works on its reductionist strategy. Simply put, a human body is divided into smaller parts, from organs and tissues to quarks and X-particles. The last 150 years of mainstream healthcare research have focused on acquiring knowledge about these parts and finding the complex micro-processes in play. Accordingly, disease solutions are researched to alter these individual processes and functions. Since these solutions work on the whole person and not only on the micro process or single affected body part, the outcome is a mixed bag of effects and side effects, few known and many unknown.

Scientific theories and proofs we celebrated ten years back are replaced with new explanations and, at times, reversed views. Cholesterol was evil, and now it is a controversy [\[32\]](#)! In comparison, if we see any traditional primary treatment methodologies – it has always remained the same with minor cosmetic changes based on cultural evolution and lifestyle change. It also prioritizes prevention which works better than any treatment. We are not suggesting that new scientific discoveries should not be encouraged; instead, they form the basis of making human life more efficient by focusing on productivity. We shall integrate the best elements from both systems – modern and traditional to harness the strength of medicine and optimally use them for patient benefit.

In recent years, many breakthrough discoveries have emerged, revealing their intended corporate utilisation. At the same time, we have seen the evolution of treatment for all diseases and have better outcomes and survival rates compared to 50 years back. It has increased life expectancy, but has it improved the quality of life? Moreover, how have we landed on this new epidemic of chronic diseases? [\[33\]](#) Is it the hidden side effect of an almost complete shift to modern medical practice? Are we falling prey to quick-fix symptomatic solutions?

Today, we have many sophisticated techniques and data analysis tools for experimental analysis, and scientific knowledge is decimated faster globally. There is far more investment, regulation, specialization, collaboration, and peer review for scientific advancement. People discard things easily which cannot be measured or experienced with the five senses. Traditional medicine was based on analysis methods of an ancient era, which we have probably lost or forgotten. We need to see how we can develop new measurement and analysis tools for measuring the outcomes of Integrative medicine. We have to invest, innovate and improvise on types of equipment for data gathering and find new ways of measuring health outcomes.

Indian states are spending only around 1 % of net state domestic product on public healthcare which is way lower than the world average [\[34\]](#), and from that, minuscule goes into integrative medicine compared to modern medicine. Though things are changing, they need to change fast enough to get the integrative medicine treatment protocols and research on the optimal path. Industry, regulatory focus, and investment need to be equal for integrative medicine, if not more.

We wonder, "Are we searching in the wrong direction?" Our budgets are directed towards perfunctory solutions and running behind an elusive elixir. Should we change the basic framework of the organ system and start basing our theories on the pathway system? Research in this direction will save us from diseases and offer a health span that has eluded us. Each medical system is based on a unique hypothesis and rationale. Keeping patients at the center, these systems can be connected, and common threads will emerge. As we see more patients getting better with the integrative approach, our belief in the whole-person health philosophy is well-founded.

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