The Translational Framework of Ayurveda as a Knowledge System

Translational research applies findings from basic science to enhance human health and well-being. In the context of medical research, findings in basic research are to be translated into medical practice that will lead to meaningful health outcomes. In spite of translational research being a buzz word, it is not clearly defined.

Translational research has been defined as part of a unidirectional continuum in which research findings are moved from the researcher’s bench to the patient’s bedside and community. In the continuum, the first stage of translational research (T1) transfers knowledge from basic research to clinical research, while the second stage (T2) transfers findings from clinical studies or clinical trials to practice settings and communities, with the result that the overall health of the community improves.

Cast in other words, translational research in medicine “translates” existing knowledge in the biological domain into practical techniques and tools for treating human disease. Translational research is to be distinguished from applied research inasmuch as the former emphasizes taking research to a practical level. Thus, we can say that translational research brings tangible outcomes at point of care.[1]

It appears that the Ayurveda knowledge system is itself structured as a translational model - with Tattva (principles) translating to Śāstra (theoretical constructs) and Śāstra translating to Vyavāhāra (practical applications). Thus the whole system is designed to translate knowledge into action that is of benefit to society - lokānugrahaaprayṛtyaḥ śāstravādaḥ.[2] In other words, the purpose of the Śāstra, especially in the context of medicine, is to improve quality of human life, and not to be confined within the limits of academic explorations. The three tier structure of the knowledge system of Ayurveda is aimed to ensure that academic insights get translated into practical applications.

However, the point of focus of Śāstra is lokānugraha through vyavahāra that is hitam (wholesome) and not just priyam (providing transient pleasure or comfort). The purpose of translation was to discover Vyavahāra or applications from the Śāstra that is hitam or wholesome for humanity in the long run.[3]

Translational research involves the application of knowledge gained through basic research to studies that could support the development of new products. In today’s market based economy, the outcomes of translational research become tangible in the form of products. But we have to bear in mind that the products are to be inspired by the concept of hitam rather than priyam. Research driven purely by business goals may lead to development of products that serve vested interests rather than the society.

The process of this translation is also explained through a three step process in the tradition - Śruti (science), Yukti (rationale) and Ānubhava (experience). Thus, the way to discover applications that will enhance the quality of human life is to derive Yukti from the Śruti or Śāstra. When Yukti is obtained by churning the Śāstra, then applications that enhance the quality of the human experience can be discovered. Ayurveda is reinvented continuously through this process of translation according to the need of the place and time. This can be called as the creation of the Yugānurūpasandarbha or the context for the contemporary application of Śāstra. Thus, Ayurveda represents endless opportunities for translational research.

When we look at translational research in the context of Ayurveda, the following steps can be envisaged. The first step is the churning of the teachings of Ayurveda through a rigorous process of analysis. As a result, we will be able to harvest the rationale that is known in Ayurveda as Yukti. Yukti is an insight from Śāstra that reveals the interplay of variables that can be controlled or manipulated to bring about a desired effect or result. Thus, we can say that the first step in the process of translational research in Ayurveda is the harvesting of a sound yukti from the Śāstra.

The next step is to translate the Yukti into practical applications that can enhance quality of human life. It is at this point that we need to bridge Ayurveda with modern science. Modern scientific techniques can serve as powerful tools to develop applications that can change and transform human life.

It is to be kept in mind that this process of translation is not intended to become a process of reducing and accommodating Ayurveda into the modern scientific paradigm. While modern scientific tools bring the capability of transforming the Yukti of Ayurveda into powerful applications, the Yukti of Ayurveda itself has the power to bring about paradigm shifts in modern scientific thinking. The process of drug discovery is a case in point. The traditional route in modern pharmacology is the isolation or synthesis of new chemical entities that will work like magic bullets on specific ligands like a lock and key mechanism. On the other hand, the rationale of the Ayurvedic approach is the combination of innumerable molecules that aim at multiple targets in the human body. Instead of reducing the Ayurvedic formulations into a single molecule, modern scientific methods may be used
to unravel the mechanisms behind the complex molecular interactions. Such an exercise can pave the way for an Ayurveda inspired approach to molecular combinatorics leading to the development of formulations that are molecular cocktails rather than single molecules.[4]

In Ayurveda, it is not the drug or formulation that is tested, but the Yukti or rationale of using the formulation that is tested. Ghee administered to a person who has metabolic stress in the form of Āma is bound to produce undesirable outcomes. It would be wrong to attribute these effects to the consumption of ghee. The fault lies in the Yukti of using ghee. Ghee should be administered only when digestion and metabolism are optimal as understood by the absence of āma (metabolic by products that interfere with the normal physiology of the body eventually leading to disease). The text clarifies that ghee is nectar and poison at the same time - pakvesu doṣevamantrant tadvisopamamanyathā.[5] Triphalā is almost a magical formulation, but it has an extremely drying effect on the tissues. There have been reports of mucosal erosion by abuse of Triphalā, especially in the elderly. Triphalā is not at fault here, but rather the Yukti of using Triphalā.

Treatment algorithms in Ayurveda are based on Non Linear Dynamics of biological systems. In Ayurvedic parlance, this is known as avasthā višeṣas or dynamic states of physiological and pathological states of the body. Treatments are continuously fine tuned in a reflexive manner based on real time responses from the body. For this reason, it is very difficult to test a particular drug or formulation by conducting the so called randomized controlled clinical trials which do not allow dynamic adjustments of the interventions.

So what is then the formula for translational research in Ayurveda? The basis of such an exercise in Ayurveda would be the deep study of the Śāstra to derive sound Yuktis or the Ayurvedic rationale. In the light of the Yukti, appropriate tools from modern science and technology can help to translate the Ayurvedic insights into practical applications that can enhance human health and well being.

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