

On the integration of Ayurveda and biomedicine: perspectives generated from interviews with Ashtavaidya Ayurveda physicians of Kerala

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Traditional medical systems have played important roles in the healthcare needs in all societies. In the recent past, due to a variety of reasons, there is an upsurge of interest in age-old medicines and therapeutic methods, especially in Ayurveda, and an important issue facing modern Ayurveda is integration with biomedicine. The present article summarizes our research on the history and culture of the few remaining classically trained Ashtavaidya Ayurveda scholar physicians of Kerala and their perspectives on the current status of Ayurveda education and practice. Based on the views expressed by these scholar physicians, with history of learning and practice of Ayurveda, and our own research into issues surrounding integration of traditional medical practices with biomedicine, this article explores steps towards modernization of traditional medical education and practice that could be important for rediscovering the full potential of therapies implied in classical Ayurveda.

Keywords: Ayurveda, biomedicine, healthcare, traditional medical doctors.

TRADITIONAL medical systems have played an important role in the healthcare needs in all societies. According to a WHO report, up to 80% of people in developing countries use traditional medical therapies as the first line of defence against illness¹. In the recent past, due to a variety of reasons, there is an upsurge of interest in age-old medicines and therapeutic methods. Governments and public health organizations are increasingly under pressure from the public, patient advocacy groups and established medical professionals to evaluate and standardize practices of traditional medicine according to the norms of modern Western medicine (termed biomedicine throughout this article). The debates on how to integrate practices and formulations of traditional medicine according to biomedical standards are unlikely to be resolved any time soon, considering that the two systems are based on fundamentally different principles and purists on both sides of the debate hold fast to the beliefs that integration will corrupt their respective advantages. But it is time for both sides to be open to dialogue and capitalize on the potentials of traditional medicine.

Our research on the history and culture of the few remaining classically trained Ashtavaidya Ayurveda scholar physicians of Kerala highlights the challenges of and

suggests steps towards integrating traditional medical practices with biomedicine to achieve the expectations and needs of the modern healthcare environment. In Kerala, classical Ayurvedic medicine and regional folk medical practices utilizing regional *materia medica* and physical medical techniques have coexisted with biomedicine for more than a century. Ashtavaidya physicians have remained at the vanguard of classical Ayurvedic learning and practice, adapting ancient textual knowledge brought to Kerala during the second half of the first millennium with regional therapeutic practices. The history and culture of learning and unique practices of the Kerala Ashtavaidyas have stimulated broad interest in this scholarly medical tradition²⁻⁶.

This article summarizes what we have learned from our extensive interviews over several years with the Ashtavaidyas and their associates about the years of classical 'Gurukulam' education of these scholar physicians, their intricate therapeutic procedures, and how they are adapting their classical knowledge to contemporary healthcare needs. In addition, we discuss here their concerns about the quality and kinds of medicine available in the market, modifications in Ayurveda education and certification procedures to satisfy official requirements, and expectations of the public accustomed to the norms of biomedicine. We address below important issues highlighted during these interviews that relate to the future of traditional medical knowledge and practice.

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Changes in the education of the Ayurvedic physicians

Gurukulam learning versus institutional learning

Historically traditional medical education and practices were dictated by the ways knowledge was passed on from one generation of practitioners to another. For centuries healers were educated by apprenticeship, Gurukulam learning, and for the Ashtavaidyas training involved many years of rigorous study of the classical texts and apprenticeship with a master physician². Some Ashtavaidya families had royal patronage and land grants awarded to them that made extensive periods of such learning possible.

Education of a physician involved training the mind to be analytical and to have a strict footing of knowledge based on the classical medical texts. Even 50 years ago it was not unusual for student physicians to undergo approximately 15 years of training, which included not only the study of healing practices, but subjects such as 'tarkam' (logic) and 'jyotisham' (astrology, or divination and rituals). The latter was considered important for the development of the mind and for producing physicians who were 'agadha pandithans' (Malayalam for profound scholars).

During this period of intense training, the student had the opportunity to participate in all aspects of medical practice, including diagnosis and preparation of medicines and formulations. Later when the student was deemed to have achieved the level of proficiency expected by the master, he (for gurukulam training generally excluded women) spent an additional period in meditation, and recitation and memorization of the classical text used by the Kerala Ashtavaidyas, *Ashtangahrdayam*. Only then was the young physician considered to be competent to embark on his career as a physician.

Towards the 19th century, traditional medical education in the European fashion began to be experimented with in India and in Kerala. At present, institutional learning similar to that for biomedical physicians, with a fixed curriculum and teachers with different specializations, is required for Ayurvedic medical certification. The training period ends with qualifying exams, and licensing is necessary for medical practice. An advantage of the institutional training is that, unlike in the gurukulam learning, students could benefit from learning with teachers with different specializations. In contrast to the apprenticeship system of the past that required many years of commitment to a teacher, the colleges are turning out larger numbers of Ayurvedic physicians whose services are widely available. Also traditional medical education is now accessible to students from all levels of society, unlike in the past when caste distinctions limited many students' access to high-caste scholar physicians like the Ashtavaidyas. The standardization of the syllabi used in Ayurvedic colleges includes the study of anatomy, physiology and biochemistry, which in theory facilitates inter-

action with biomedicine, the dominant medical system in Kerala and elsewhere in India.

The Ashtavaidya Ayurvedic physicians we interviewed felt that while the current system of training has some advantages, the modern curricula diminishes the student's depth of knowledge of the fundamental principles of Ayurveda. And isolating disease to a condition affecting a part of the body, as biomedicine does, removes an important understanding of disease and treatment as visualized in Ayurveda. As the medical anthropologist Good has pointed out, biomedicine views 'disease as the object of medical practice'⁷, but in traditional medicine illness is perceived to be multifaceted and therapies are aimed at restoring overall well-being, a unique aspect of classical medicine. Traditionally trained physicians feel that this important concept is not conveyed in depth in the current system and thus undermines the very core of Ayurvedic philosophy of healing.

Traditional materia medica and the use of medicinal plants

An area where the modernization of traditional medical education is problematic is in the teaching of therapeutic methods and *materia medica* of Ayurveda. Unlike in the past, students no longer acquire the extensive knowledge of medicinal plants, preparation of medicines and traditional therapeutic methods. Medicines are now mass manufactured and administered in prescribed doses, in the manner of biomedicine, and the students are educated accordingly. Formulations manufactured for mass marketing make assumptions regarding extractability, stability and efficacy of the active ingredients under the altered extraction and manufacturing conditions. The complex issues involved in large-scale manufacture and commercialization of traditional Indian medicines are well discussed by Bode⁸.

Several unique and important aspects of classical Ayurvedic therapy, such as adjusting and varying ingredients in formulations to suit the condition of each patient on the basis of his/her constitution and symptoms, necessitate that physicians are educated in the properties of medicinal plants and their applications. Aiya³ describes the practice of traditional physicians thus: 'For the Native Vaidyan knows the plants and herbs himself, knows where they are to be had, collects them, makes the medicine himself either in his own house or in that of his patient. He attends upon the patient or the patient's father or uncle for days and weeks together, discussing with him the nature of the disease and the virtues of his pharmacopoeia, the progress from day to day and the further medicines or treatment that may be required, and ceases his visits only after the patient has bathed which is the test of recovery'. Classical texts specify the time of the day and the season when medicinal plants should be collected and prepared so as to optimize their efficacy. It was also common practice among older generation of Vaidyas, to

modulate specific ingredients and their quantity in a given formulation as the patient's treatment progressed. To apply such procedures, thorough knowledge of the medicine's properties, how medicines in formulations interact with one another, and how they influence the human body is essential.

In addition, details of the preparation of medicines were unique to different traditions and masters, and students in the past learned their skills during their apprenticeship by observation and participation. Such a level of learning is no longer available in the modern curriculum. According to the doyen of the Ashtavaidyas, the vast numbers of formulae to be found in Ayurveda texts were examples for making medicinal preparations, and it was up to the Vaidya to tailor them to suit the patient. In the introduction to his important work *Single Drug Remedies*, the late Ashtavaidyayan Mooss⁹ states that in addition to the text-based knowledge, the most important aspect of using plant medicines has to come from practical training and work in the field as an Ayurvedic practitioner.

Some of the innovations taking place in traditional medicine relate to therapies directed at diseases for which traditional medicine does not have identification, such as cancer. Ayurveda is now being adapted to conditions resulting from chemotherapy and radiation, and end of life care. For example, for patients dealing with pain management and the effects of morphine, there are pain modulation therapies in traditional medicine that have less adverse consequences than those available from modern medicine.

One of the Ashtavaidyas we interviewed has for more than two decades conducted a once a month 'cancer camp' for cancer patients who have previously undergone treatment in biomedical centres and come to the clinic as a last resort. His ability to adapt Ayurvedic therapies to meet the needs of these cancer patients reflects his extensive knowledge of Ayurvedic *materia medica* and years of experience with their uses resulting from his in-depth classical education. From what we have observed and heard from patients, his treatments have helped alleviate the discomforts of chemotherapy and radiation therapy. He has apparently managed to prevent conditions from getting worse, and in a few cases arrested the proliferation of malignant cells. We have videotaped one of his 'cancer camps', where we saw him fine-tuning medicines by modifying the ingredients or doses based on changes to the patient's condition. With the help of the Vaidya we are studying the video recording to understand the procedures he uses. Without the extensive knowledge about classical therapies as he has, the use of Ayurvedic medicines would be soon limited to popular formulations and constrain such future innovations of traditional medical therapies.

Another important adjunct to Ayurveda therapies are the dietary and lifestyle regimens that are essential components of treatments. In Ayurveda, foods and lifestyle have major influences on disease and health, and medicines are

seen as an extension of food, and the vocabulary related to digestion turns up in discourse on disease. All therapeutic procedures include specific dietary prescriptions and restrictions to maximize the efficacy of the medicine and to help the process of healing. Classical Ayurvedic education also provided contexts for rethinking and understanding the place of food and life regimens in the process of healing¹⁰.

The current trend to look at Ayurveda as a data bank for the discovery of new drug molecules is to miss out on the more valuable aspects of the tradition. Moreover, to examine the validity and potential of a medical tradition like Ayurveda, experimental procedures need to be sensitive to integrate the knowledge of classically trained physicians and their extensive knowledge acquired through experience. Unfortunately, the numbers of classically trained Ayurveda physicians with such knowledge are diminishing and little has been done to document in detail and safeguard their knowledge and subtle techniques.

Challenges of integrating Ayurveda and biomedicine

An important issue facing modern Ayurveda is integration with biomedicine. The history of Indian medicine shows that over centuries Indian traditional *materia medica* and medical therapies were taken to the pan-Asian Middle Eastern and European worlds^{11,12}. In turn, Indian healers have adapted knowledge and techniques from cultures outside India. During the pre-colonial period and up to the early 19th century, European physicians in India relied on indigenous medical knowledge as the main source of healthcare^{13,14}. Later, as British colonial rule was firmly established in India, European medical colleges were established in the subcontinent to train Indian physicians in new developments in European medicine. As more and more Indians physicians in urban areas began to embrace the new medical system, it gradually went on to become the dominant medical system. By the beginning of the 20th century, the norms of European medicine began to exert crucial influences on Ayurvedic educational institutions and the physicians they produced. Mass production of Ayurvedic medicines and the growing dependence on biomedical tools of diagnosis as well as its vocabulary have led to the emergence of a new form of Ayurveda.

Beginning in the last decade, perhaps due to awareness of the limitations of biomedicine, especially for chronic illnesses, there is revival of interest in India and the world over to incorporate traditional therapies with biomedicine for healthcare and health maintenance. Interestingly, integration of Ayurveda and biomedicine is largely coming from patients' demands, and how a patient elects to use Ayurvedic medicine or biomedicine is a complex process. The patient accustomed to the ways of biomedicine expects modern tools and technology to be part

of Ayurveda and Ayurvedic therapies to be dictated by diagnosis in biomedical analytical terms. However, the line from biomedical diagnosis to traditional therapy is not linear since both systems view illness in very different terms.

Results of a survey of records at the Kottakkal Arya Vaidya Sala from 1980 to 1999 and interviews with resident patients by one of us (A. Spudich) in 1999, showed that patients come to Ayurveda largely by their own choice, seeking remedies for chronic illnesses after biomedical therapies had failed, or because of difficulties in tolerating side effects of biomedicine. Patients interviewed maintained that for chronic ailments biomedicine gives them short-term relief, but Ayurveda 'cures from within' with little or no side effects, although it required longer therapy time. Several of the patients said that their biomedical doctor was skeptical and asked them to report back about their experience with Ayurveda therapy. The costs of Ayurveda and biomedical care were about the same then; so cost was not a factor for patients choosing Ayurveda for chronic illness.

The scholar physicians we interviewed have adopted different ways to accommodate traditional practices to the demands of modernity. Biomedical style in-patient clinics and diagnostic modalities are some of the ways in which they retain control over their medical practice and continue to practice traditional medicine. Some have used their reputations to connect with the 'new age Ayurveda' that has taken hold in India and abroad, and maintain spa-like medical practice of rejuvenation therapies focused on modified wellness medicine. And many such commercially successful establishments are drawing large number of Indians and foreigners who seek alternatives to biomedicine, but are not ready to undergo the full rigours of traditional medicine.

By speaking of traditional and modern versions of Ayurveda, we are contrasting the differences that exist between the new and old educational systems, diagnostic techniques, therapeutic procedures and manufacture and use of medicines of the traditionally trained Vaidyas and the Ayurvedic physicians educated in the modern colleges. Since modern Ayurveda has already a large overlap with biomedicine, it is evidently easier for interactions between them, but even that is not happening in any substantive way. Even though it may be more demanding to interact with traditional style Ayurvedic physicians, investigation into methods based on classical knowledge that they use needs to be an equally important resource and priority. It is therefore vital to interact with the few remaining scholar practitioners of the old school to study and record their healing methods and formulations before they will be lost forever. As one of the Ashatavaidya physicians said to us, in a couple of more generations, unless a concentrated effort is made to promote and integrate classical style depth of knowledge into the mainstream, Ayurveda as it was will be only found in classical books.

Proposals for future directions for Ayurveda education and drug discovery

For a new paradigm of integrative medical practice to emerge, biomedical practitioners have to be knowledgeable about the therapeutic potentials of traditional medicine and must be encouraged to collaborate with Ayurvedic practitioners as part of regular patient care. In order to do that in a productive and cooperative manner, there has to be openness on both sides, and in particular, biomedical practitioners need to have a depth of awareness about Ayurveda's views on disease, health and healing. Practitioners of Ayurveda may have an advantage since modern Ayurveda has adapted, for better or worse, a number of concepts, frames of reference, norms and practices of biomedicine. A number of excellent studies have been published in the last few decades to explain the conceptual framework of Ayurveda to specialists as well as lay readers^{15,16}.

Until now the impetus for resorting to Ayurveda instead of biomedicine in healthcare has largely come from the patients themselves, when biomedical therapies have failed them or have resulted in adverse side effects. Kottakkal Arya Vaidya Sala is a premier example of an institution where Ayurvedic physicians and biomedical physicians practice side by side for patient care. Other enlightened institutions in India and abroad, the Amala Cancer Research Centre, and the University of California, San Francisco, among others, are integrating traditional medical systems and biomedicine into patient care, but this type of integration could be more widespread for the benefit of patients. From the start it would be important to assess if for some diseases traditional medicine may be a safer alternative for certain patients, especially for those who need long-term therapy. In addition, the two different medical systems could deal with different aspects of an illness, for example, palliative therapy and rejuvenation after chemotherapy for cancer patients could be supported by traditional therapies. India, where traditional medicine is well established along with biomedicine, should be a vanguard in such integrative medical care.

And as we discussed earlier, diet and lifestyle modifications that are an integral part of Ayurvedic therapies could aid patients' recovery, and interfacing with Ayurvedic physicians in disease management would bring such considerations into mainstream practice. More work also needs to be done on possible adverse cross-reactions between Ayurvedic formulations and biomedical drugs. That too requires exchange of knowledge and closer collaborations between physicians with in-depth knowledge of each system.

It is also a critical time to ask how the current Ayurveda education and training can be modified to train physicians with the skills and confidence to adapt to contemporary healthcare needs, like the scholar physicians we interviewed. Patwardhan *et al.*¹⁷ and others have written extensively about current Ayurveda education and

how to modify the education system. The interviews we conducted suggest that one goal could be to create a highly selected interdisciplinary Ayurvedic scholar physician programme to train students in classical Ayurveda who will have the excellence to interact with modern research methods and tools. That requires serious commitments on the part of the students and scholars of classical Ayurveda, and from basic and biomedical scientists engaged in current research methodologies. And while the classical texts describe the ideal student, modern economic and cultural realities limit such dedicated students from coming to Ayurvedic colleges. So the challenge is to recruit committed and competent students who will be ready to take on the programme of integrating learning from the Shastras and modern patient care and research methods, and to offer them the support they will need for a prolonged period of study. Students for such scholar physician programmes have to be recruited at an early stage of their education and assured financial support throughout the programme. The successful MD/PhD programmes in prominent American universities do this well and have some of the best students competing for their programmes in spite of the 6–8 year commitment. With the enthusiasm and involvement in mentoring and training of the students by prominent Ayurvedic scholars and institutions in India, such programmes can develop Ayurvedic scholars who are ‘agadha pandithas’, profound scholar physicians.

And finally the time has come for Ayurvedic scholars and experimental scientists to collaborate and evaluate classical therapies and medicinal formulations by going beyond the single-molecule concept of drug discovery¹⁸. Participation of the remaining Ashtavaidyas and other scholar physicians with in-depth knowledge of classical Ayurvedic medicinal formulations and methodologies will be essential for such experimentation. Procedures of administering medicines are undoubtedly one of the important aspects of medical practice in both biomedicine and Ayurveda. Classical texts of Ayurveda delineate considerations that physicians should adhere to when administering medicines in order to optimize their bioavailability and efficacy. The older generation of traditionally trained Ashtavaidya Ayurvedic physicians we interviewed were deeply concerned that in modern Ayurvedic practice classical methods of making and administering medicines are being simplified by manufacturers and researchers because classical protocols are complex, and moreover, may even be illegal according to contemporary norms. If pharmacological research based on the potentials of Ayurveda’s *materia medica* is to make breakthroughs and discover new medicines, it is crucial that little or no compromises are made, and that those parameters that classical Ayurveda considers to be essential for optimizing the efficacy of medicines are strictly followed. Although certain classical parameters may be more difficult to follow today (such as those mentioned earlier), to do full justice to Ayurveda’s potentials

would require researching classical Ayurvedic methods, still practised by the few remaining scholar physicians. Rethinking research models and drug administration protocols, including outcome-based studies that extend beyond the limited concept of single-molecule drugs as new medicines, would be important for rediscovering therapies implied in classical Ayurveda.

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Note: Summaries of interviews we did with all the Ashtavaidya practitioners of Kerala will be made available through the NCBS website at a future date: <http://ncbs.res.in/HistoryScienceSociety/IndianHealing-Traditions>.

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