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REVIEW

Cultural consonance, constructions of science and co-existence: a review of the integration of traditional, complementary and alternative medicine in low- and middle-income countries

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This review examined the determinants, patterns and imports of official recognition, and incorporation of different traditional, complementary and alternative systems of medicine (TCAM) in the public health establishment of low- and middle-income countries, with a particular focus on India. Public health systems in most countries have tended to establish health facilities centred on allopathy, and then to recognize or derecognize different TCAM based on evidence or judgement, to arrive at health-care configurations that include several systems of medicine with disparate levels of authority, jurisdiction and government support. The rationale for the inclusion of TCAM providers in the public health workforce ranges from the need for personnel to address the disease burden borne by the public health system, to the desirability of providing patients with a choice of therapeutic modalities, and the nurturing of local culture. Integration, mostly described as a juxtaposition of different systems of medical practice, is often implemented as a system of establishing personnel with certification in different medical systems, in predominantly allopathic health-care facilities, to practise allopathic medicine. A hierarchy of systems of medicine, often unacknowledged, is exercised in most societies, with allopathy at the top, certain TCAM systems next and local healing traditions last. The tools employed by TCAM practitioners in diagnosis, research, pharmacy, marketing and education and training, which are seen to increasingly emulate those of allopathy, are sometimes inappropriate for use in therapeutic systems with widely divergent epistemologies, which call for distinct research paradigms. The coexistence of numerous systems of medicine, while offering the population greater choice, and presumably enhancing geographical access to health care as well, is often fraught with tensions related to the coexistence of philosophically disparate, even opposed, disciplines, with distinct and unaligned notions of evidence and efficacy, and ethical and operational challenges of the administration of a plural workforce.

Keywords Alternative, complementary, integration, local healing traditions, medical pluralism, traditional

KEY MESSAGES

- The establishment of a pluralistic health system in most low- and middle-income countries has taken the route of de facto pluralism, followed by the establishment of allopathy as the mainstream medical system, the legitimation or delegitimation of different traditional, complementary and alternative systems of medicine, and finally the establishment of a pluralistic health system *de jure*.
- The rationale for the inclusion of TCAM providers in the public health workforce ranges from the need for personnel to address the disease burden borne by the public health system to the desirability of providing patients with a choice of therapeutic modalities and also nurturing of local culture.
- A hierarchy of systems of medicine, often unacknowledged, is exercised in most societies, with allopathy at the top, certain TCAM systems next and local healing traditions last.
- A pluralistic medical society, while offering patients greater options, bears tensions related to the coexistence of philosophically disparate disciplines, with unaligned notions of evidence and efficacy, and the ethical and operational challenges of the administration of a plural workforce.

Introduction

The transforming profiles of population health across the world, including the epidemiological transition in low- and middle-income countries (LMIC); the increase in the prevalence of non-communicable diseases, drug resistance and pharmaceutical complications; growing dissatisfaction with the outcomes of certain biomedical treatments; and the gaps in provision of conventional health care to several segments of the population, have directed much attention to traditional, complementary and alternative medical (TCAM) systems, and their harnessing to achieve better access and health equity. With allopathy, Western medicine or biomedicine defined as the mainstream or conventional system, TCAM systems are described as follows. Traditional medicine is defined as 'the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness' (World Health Organization 2002). Complementary and alternative systems of medicine 'refer to a broad set of health care practices that are not part of that country's own tradition and are not integrated into the dominant health care system' (World Health Organization 2002). In general, a system of medicine used along with the mainstream system is designated as complementary, and one used in place of the mainstream system, alternative. Thus, based on a system's origins and employment, it may be traditional, complementary or alternative, or a combination of these.

Public health systems in most countries have tended to establish health facilities centred on Western medicine, and then to recognize or derecognize different TCAM systems based on evidence or judgement, to arrive at health-care configurations that include several systems of medicine with disparate levels of authority, jurisdiction and government support. The coexistence of numerous systems of medicine, while offering the population greater choice in health-care modalities, and presumably enhancing geographical access to health care as well, is often fraught with tensions, clashes of beliefs and ascendancies and downturns based on political and societal vicissitudes.

This review was undertaken to examine the determinants, patterns and imports of official recognition, and incorporation, of different TCAM systems into the public health establishment of LMIC, with a particular focus on India. It also alludes to the inclusion of TCAM systems into the public health establishment in certain high-income countries, to discern similarities and differences in the processes and outcomes.

Methods

The following were used to source literature:

- Reports and policy briefs of TCAM integration produced by global and national bodies, such as the World Health Organization (WHO), and the Ministry of Health and Family Welfare, Government of India
- Internet database searches for peer-reviewed literature, including PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Elton B. Stephens Co. (EBSCO), Cochrane, POPLINE®, Web of Knowledge, African Index Medicus, Eastern Mediterranean Literature—WHO, Indexing of Indian Medical Journals (IndMED), Index Medicus for South-East Asia Region and Latin American and Caribbean Health Sciences/Virtual Health Library (LILACS/VHL)
- Additional Internet searches on Google, Google Scholar, Google Books and Amazon.com for research reports, evaluations, case studies and commentaries
- Specific website searches of organizations, Web Archives and electronic mailing lists known to specialize in the subject, e.g. Medico Friends Circle, and People's Health Movement.
- Specific requests for academic resources available with experts and organizations known to specialize in the field
- Cross-references identified from articles and books enlisted through the above methods

The Internet search terms employed were '[integrat* OR inclu* OR participat* OR engag* OR involv*] AND [health OR medic* OR system OR provider OR doctor OR healer OR physician OR practi*] AND [traditional OR complementary OR alternative OR local OR ayurved* OR homoeopath* OR homeopath* OR unani OR yunani OR siddha OR yoga OR naturopath*] OR [policy OR practice OR experience OR evaluat* OR strategy]'.

Articles or chapters written in English or Hindi, describing or defining the integration of providers of various systems of medicine, with full text available, were proposed to be included in the review. All the articles and chapters that the search yielded that met the criteria were in English. Approximately 53 articles, books, policy documents, webpages and commentaries related to TCAM integration were used in this review. Of the several hundred articles that met some of the search criteria, the majority was excluded from this review since they did not address the integration of TCAM into mainstream health care in LMIC, but explored other areas such as patterns of use, knowledge and safety and efficacy studies of particular systems of TCAM.

Items sourced were indexed, critically analysed and entered in a matrix of systems of medicine, policies and geographical regions. Based on this matrix and discussions within the research team, including inputs from books on behaviour and social functioning, this literature review was written up as an essay, with the following sections:

- Concepts of health workforce integration
- Rationale for integration of different systems of medicine
- Formalization and legitimacy of diverse health-care providers
- Policies for TCAM integration
- Experiences of integration
- Operational and ethical problems and solutions

Results and discussion

Concepts of health workforce integration

Integration is defined variously in different fields of study, from the bringing together of different groups into unrestricted and equal association, to blending, amalgamation and fusing. Thus, the term takes on shades from the coming together of diverse elements into a whole that either retains its heterogeneity or cedes the individual characteristics of the elements to a set of combined characteristics of the whole. Health system researchers have articulated several models of integration. Bodeker (2001) describes two models of integration—one that comprises a common system of education and practice for TCAM and allopathic practitioners, and the second that keeps the different systems parallel and distinct, but governs them through similar structures. Boon *et al*. (2004) articulate a greatly nuanced spectrum of team-delivered health care from parallel, to consultative, collaborative, co-ordinated, multidisciplinary, interdisciplinary and integrative, with decreasing hierarchical authority and increasing need for communication and consensus building in the movement from parallel to integrative. It is clear that integration comprises politico-cultural, epistemological and systemic elements (Sheikh and Nambiar 2011), and bears the potential for co-operation as well as conflict on all these planes.

Integration is a term applied often to not much more than the incorporation of TCAM practitioners and community workers into the task of identification and referral of patients to the biomedical facility (Poudyal *et al*. 2003; Peltzer *et al*. 2006). Activities aimed at the inclusion of diverse systems of medicine in the medical mainstream also appear to be based on the premise of the veracity, and accuracy, of biomedicine, as suggested in the study by Poudyal *et al*. (2003) on traditional healers in Nepal. These studies also highlight the level at which integration is taking place, i.e. practitioner rather than practice (Priya and Shweta 2010). That is, health-care personnel trained in diverse traditional, complementary and alternative systems of medicine, or health services such as midwifery, may be included in the workforce of the public health system and instructed and expected to administer allopathic medications, and assist allopathic medical providers in their diagnostic, therapeutic and disease-control tasks. Integration at the level of practice involves the establishment of a heterogeneous health system with practitioners providing services in their discrete disciplines.

Some researchers (Satimia *et al*. 1998) call for an evaluation of the effectiveness of each system of medicine in the treatment of prevalent disorders, to formulate a strategy for integrated health-care delivery tailored to the community. The underlying assumption appears to be that effectiveness may be defined in accordance with the rules of evidence of biomedicine. Along these lines, Mazumdar and Gupta (2007) suggest promoting Indian systems of medicine (ISM) as treatment for gynaecological disorders. However, advocates of TCAM argue that TCAM modalities, by their complex philosophy, application and holistic impact, including psychosocial factors not amenable to facile measurement in experimental trials, cannot be properly evaluated using conventional biomedical study designs (Broom and Tovey 2007).

Schuster *et al*. (2004a) recommend contextualizing the use of complementary and alternative medicine (CAM) in a wellness lifestyle, rather than viewing the use of CAM only to address disease. They argue that a large proportion of CAM use is reported for health promotion and disease prevention, and that research into CAM should use more inclusive and naturalistic techniques to respond to this broad conceptualization of health and wellness, for instance, stressing the role of wellness, rather than just freedom from disease as an outcome, since not all CAM is used for disease therapy. Furthermore, they found in a study of a CAM system (Schuster *et al*. 2004b) that patients undergoing CAM treatment reported both direct and indirect effects on wellness, the latter through the promotion of healthy lifestyles. The need for longitudinal data collection in the assessment of the impact of CAM on wellness is articulated. In a criticism of the prevalent model of 'integrative medicine', the researchers point out that groups of CAM systems are usually picked and applied to the treatment of disease in a reductionist biomedical manner, opposed to their (the CAM systems') own philosophies, thus failing to employ the CAM systems fully in their intended manner. They also observe that CAM systems are too often viewed as one uniform lump, whereas they are, in fact, a heterogeneous group of therapies. This impression of diverse TCAM systems as one is also resisted by the various components of TCAM systems, particularly those with some degree of legitimacy and regulation in their sociopolitical contexts, as a view that devalues the research and sociopolitical advances made in certain TCAM systems in clubbing them with other TCAM systems that have different levels of recognition (House of Lords 2000).

Rationale for integration of different systems of medicine

There are several factors in favour of a holistic approach to health care. Spirituality, religious beliefs and practice (Chattopadhyay

2007) and health behaviours and wellness (Schuster *et al*. 2004a) have been shown to predict health outcomes, and therefore merit consideration by health-care providers (Chattopadhyay 2007). Various systems of medicine address different aspects of the individual, with TCAM systems typically addressing emotional, mental and spiritual components in addition to physical. The health profile of the global population shows a growing range of conditions that are incapable of being addressed by any single system of medicine (Sujatha and Abraham 2009). Fisher (2004) points to effective gaps in unisystem treatment as a compelling basis for pluralistic medicine, in the context of evidence for CAM and the inadequacy of mainstream medicine to address contemporary health problems. The chronic inadequacy of trained personnel to provide the quality and range of health care required by people, in light of the availability of community health-care providers such as traditional birth attendants, points to an optimization strategy such as the addition of certain skills, e.g. observation, practice and referral, to the community health-care providers' repertoire, to promote community health (Brink 1982).

Traditional systems of health and medicine, being embedded in the cultural and climatic milieux, have a rich, sometimes storied, history and context. This stands in contrast to allopathic medicine, and, in turn, has bearing on health outcomes and healing ability (Hardiman 2009). It should be noted, however, that the labels 'traditional' or 'indigenous' do not automatically relegate a system of medicine to history (Sujatha and Abraham 2012); systems with origins in antiquity have, in most cases, been continuously employed till the present, and coexist with myriad other systems, old and new. 'Heritage consistency', described by Spector (2002), posits that the deeper people's identification with a traditional heritage, the more likely it is that they would hold traditional beliefs and follow health practices consonant with their ethnocultural heritage. The concept of heritage consistency is evident in the tension among the diverse systems and their acknowledged suitability to the place and the people, and also in the sometimes widely disparate stances to TCAM expressed by the governors and the governed, whose philosophical allegiances may differ greatly. This tension is likely to be expressed strongly in decision making regarding health-care seeking. Such decision making is often a family and kin or community activity, particularly in developing countries with a high prevalence of joint family living where the opinions and advice of senior family members tend to be most valued (Tovey *et al*. 2005). However, with the sweeping changes in the health-care structure and policy, and concomitant changes in health education and the accessibility of health care, in post-colonial states over the past few decades, the potential for disagreement among generations within a family and community may be greater, and friction in decision making triggered.

Gaps in knowledge about TCAM, prejudice against one or more systems, variable political support and special interest groups for or against TCAM notwithstanding, the majority of the population, in both industrialized and developing nations, uses some form of TCAM. Inadequate policy and funding, and educational, administrative and regulatory arrangements made for TCAM evince the lack of touch with the contemporary reality of the popularity of TCAM expressed by the biomedical profession (Spedding 2012). In view of the fact that the majority of the world's population, particularly in developing countries, uses TCAM, and furthermore, has limited or no access to reliable biomedical services, Bodeker (2001) points out that the formalization of TCAM has implications for equity, coverage and financing.

Formalization and legitimacy of diverse health-care providers

Formalization of a traditional, complementary or alternative system of medicine, particularly the education and training thereof, mostly takes the form of a westernized or biomedicalized curriculum design, grounding in modern biological sciences, increased use of biomedical terminology and research along biomedical lines. Such gauges of the value and efficacy of therapeutic systems have the impact of disenfranchising several local health traditions, even while legitimizing a select few TCAM practices (Sujatha and Abraham 2012). The practice of TCAM systems is viewed as more professionalized when it is organized in the manner of biomedical practice (Ariyasena 1989). This is reflected in the constant call for evaluation, validation, standardization and patenting of TCAM products (Madhu 2011). In fact, practitioners of TCAM gravitate towards modern, advanced instruments and tools, which are shared by allopathic practice, for diagnosis, treatment and research, in a bid to interpret health conditions in biomedical terms, and to find easier acceptance among health-care users, as described in a study among Ayurvedic practitioners and health-care users in Mysore, India (Nisula 2006). This trend is carried forward into the marketing of therapeutic products and services as well; for instance, Ayurvedic products and services are increasingly being marketed in a manner similar to biomedical products and services, granting them greater acceptability among users in the lay population (Nisula 2006). Interestingly, even the social sciences in India have assumed definitions of health from biomedicine rather than from indigenous systems (Sujatha and Abraham 2012).

Numerous studies demonstrate gaps in the knowledge and expertise of community health-care providers who may lack training in disease aetiology and transmission (Poudyal *et al*. 2003; Madhivanan *et al*. 2010; Gill 2011). Health-care providers trained and professionalized in line with biomedical role models are seen as more suitable to be placed in health-care facilities to deliver services. However, informal health-care providers are seen as more in tune with their communities and thereby more accessible, and better suited to the delivery of primary health care (Ariyasena 1989). Traditional healers are more likely than biomedical practitioners to practise medicine as a secondary or part-time activity or vocation rather than as a primary occupation (Jeffery 1982; Ariyasena 1989).

The legitimacy of practitioners is fundamental to the functioning of an integrated medical society. Contemporary assessment of expertise is invariably bound up with academic qualifications, a view that virtually excludes numerous practitioners of therapeutic systems, such as bone setting, who have practical learning and expertise but no formally documented epistemic expertise (Madhu 2011; Lambert 2012).

Training is usually viewed as unidirectional, flowing from biomedical professionals to community practitioners, and

comprising the transmission of biomedical terminology and techniques (Sorsdahl *et al*. 2009; Gill 2011). An unusual and model effort to facilitate multidirectional information flow among community representatives, folk healers and trained scientists to forge synergistic linkages between community and formal scientific knowledge was reported by Shukla and Gardner (2006). This initiative involved the training of folk healers in botany, strategies for community conservation of medicinal plants, documentation of folk healers' knowledge of local medicinal plants and facilitation of exchange of ideas among the healers, scientists and the community (Shukla and Gardner 2006).

Policies for TCAM integration

Countries with well-developed and widely used traditional systems of medicine have typically gone through a trajectory (Figure 1) of using traditional systems, with or without formal administrative set ups, followed by a virtual elimination of TCAM and the imposition of allopathic medical services and education, followed then by a revival of TCAM, usually as systems subordinated to the dominant allopathic system (Bodeker 2001; Chung *et al*. 2011). The revival of TCAM in these countries usually takes the route of evaluation and validation by biomedical experts, and varying political support, both these factors rendering the TCAM system vulnerable to being incompletely understood and represented, and often imbuing the TCAM system with communal or political shades and the aura of being backward, irrational or unscientific. Some commentators regard such a revival as an erosion of the traditional system of medicine in the country (Singh and Raje 1996).

Examples of somewhat different routes followed in certain Asian countries include the path taken by traditional Chinese medicine (TCM), which was perceived as an imperial legacy, which needed to be reinterpreted in modern scientific terms to be acceptable to the new democracy (Bodeker 2001). Another case is that of integration of various systems of medicine in Malaysia, which is based on self-regulation by distinct organizations for the different systems, to recognize, accredit and register practitioners, and develop training programmes, guidelines, accreditation standards and codes of ethics (Bodeker 2001).

Systems of medicine that are complementary or alternative, but not traditional to a particular culture, face a different situation in their evaluation as scientific and/or indigenous: a case in point, commented upon by Hausman (2002), is the status of homoeopathy in the south of India, where it went from being hailed as a scientific system of medicine, probably based on its provenance and recent development, to being considered on par with ISM, and governed through a common department in the ministry of health.

Reports abound of formal systems of TCAM, recognized by governments, not receiving parity in funding and political power with the allopathic system which forms the mainstream of medical care. Other TCAM systems that may not be codified, and further may be localized to small areas, are below the radar of most policymakers, even those making policies for formal TCAM systems. Shukla and Gardner (2006) comment on the inadequacy of support for TCAM, and the virtual absence of recognition and support for folk medicine, in spite of the high reliance of people on these systems to fulfill numerous health needs. They also warn of the deleterious downstream effect that such lack of support can have on the interest shown in these systems of medicine by future generations of the community, and therefore, the life expectancy of the systems themselves.

The political and administrative organization that forms the framework for the integration of different systems of medicine usually takes the shape of either a single department that governs all the prevalent systems of medicine, with the problems of hierarchy and inequitable representation attending it, or of separate departments, subject to poor communication and co-ordination, and often marginalization of certain systems of medicine. An intermediate system of organization is of

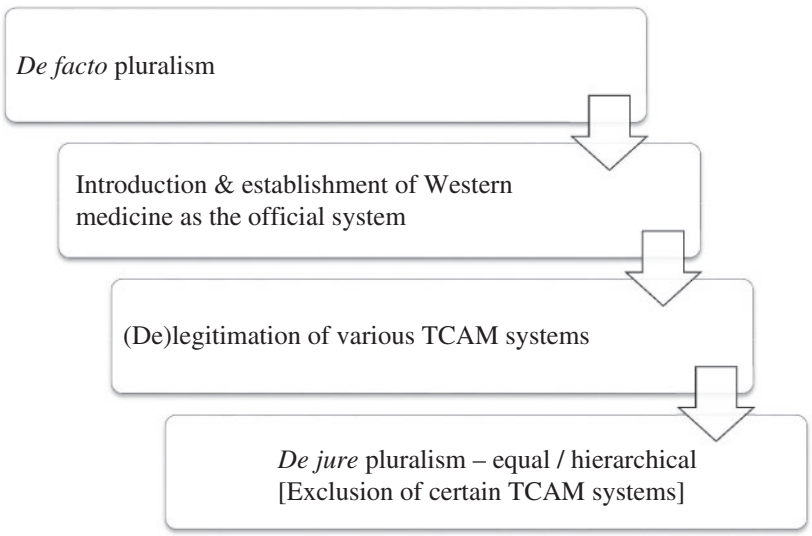

Figure 1 Trajectory of pluralistic health systems in LMIC

allopathic medicine being governed separately and as the mainstream or dominant system, and all other therapeutic systems being grouped together in a department (Srinivasan 1995) for further subdivision and governing. Government policy, in India as elsewhere, has tended, perhaps inadvertently, to bolster the hegemony of allopathic medicine (Jeffery 1982) via the disproportionate budget allocations for institutions, infrastructure, personnel and supplies, as well as administrative arrangements in the running of government health-care facilities.

In India

The history of the allopathic medical establishment in India includes the incorporation of a range of traditional practitioners, such as 'hakims', 'vaidyas' and 'dais', as well as Indian medical materials, in the provision of services for decades spanning the 19th and 20th centuries (Sujatha and Abraham 2009): this incorporation, based on the inadequacy of personnel and material from the allopathic system, and including some training in allopathic practice for traditional Indian practitioners, petered out as the influx of allopathic-trained personnel and supplies grew, paralleled by progressive disdain for ISM. Hierarchies in medical systems were evident in the different categories of registration available for traditional practitioners vis-á-vis allopathic doctors, B-grade and A-grade, respectively (Lambert 2012). Moreover, official recognition, as evinced by B-grade registration for traditional practitioners, was subsequently withdrawn (Lambert 2012), leaving certain traditional practitioners with no further recourse to inclusion in the health-care mainstream of the country.

It is observed that recognition, and withdrawal thereof, are not uniform across traditional therapeutic modalities; for instance, recognition is extended for 'marmachikitsa', a tactile therapy, but not for 'haadvaidya', or bone setting, another tactile therapy. This situation is compounded by the lack of uniformity in expertise, training, affiliation and praxis within communities of practising healers and health workers. Recognition by government based on textual knowledge is not readily applicable in therapeutic modalities in which expertise is performance based rather than data based, such as in bone setting. Furthermore, credentialling based on examination or ratification by biomedical experts may fail to tap into the philosophy of different therapeutic systems.

More recently, the Ministry of Health and Family Welfare, Government of India, established the Department of Indian Systems of Medicine and Homoeopathy in 1995, and reorganized it as the Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) in 2003. This department is tasked with the development of education, research and regulation of the AYUSH systems of medicine, and administration of AYUSH practice, as well as Sowa Rigpa, a traditional Bhutanese system of medicine. Placed within the conceptual framework put forward by Boon *et al*. (2004), the incorporation of TCAM into the public health system is, for the most part, currently implemented as parallel, in some cases collocated (i.e. placed in the same physical facility), practice in India. However, shortages of allopathic medical providers, and AYUSH medical supplies, have frequently rationalized the deployment of AYUSH providers for allopathic services in primary health centres.

Education in the allopathic and non-allopathic systems of medicine in India has undergone numerous alterations, including sorties into curricula that integrate numerous systems and resets to unisystem curricula (Hardiman 2009; Sujatha and Abraham 2009). The development of traditional systems is intricately interwoven with the political vicissitudes and philosophical ascendancies of key stakeholders. Thus, the promotion of a certain system may be related to the dominance of a certain religion or political group, and attention restored to a long-standing medical practice following neglect construed as revival of tradition (Hardiman 2009).

In other countries

Jingfeng (1988) reports that TCM has been considered on par with biomedicine ever since it began enjoying political support for its revival and re-establishment in 1949, dispelling the opposition to TCM from biomedical experts, in the course of which China went from supporting two distinct systems of medicine, viz. allopathic and TCM, to three, the third one being an integrated system. This is in contrast to the status of traditional medicine in Korea (Son 1999): standards set for education and practice of Western and Korean medical practitioners were repeatedly modified, in response to political upheavals, such as government by royalty, followed by Japanese occupation and then independence, until finally they were accepted as commensurate. The national system of insurance in Korea covered only Western medicine for decades, decreasing the use of Korean medicine by the population. It was in 1987 that insurance coverage was extended to the use of Korean medicine. Despite the purported parity in status of Korean medicine and allopathic medicine, Son (1999) observes that Korean medicine practitioners were not in positions of influence in policy making, and that disparaging remarks about Korean medicine made frequent appearances in the mass media and sparked several protests by advocates of traditional herbal medicine.

Formalization of education and training in traditional medicine in Bhutan was launched in the 1970s, with the concurrent establishment of pharmaceutical research centres and co-location of traditional medicine units with allopathic medicine in all the Basic Health Units in the country (Wangchuk *et al*. 2007), for consultative treatment and cross-referral between allopathic medical providers and traditional medicine practitioners.

The medical curriculum in Cuba is an unusual one that incorporates CAM training with biomedical at all stages of education (Appelbaum *et al*. 2006). A variety of CAM modalities are taught alongside biomedical subjects with the result that every medical graduate is equipped with basic knowledge of all the systems of medicine approved for use in the country. Furthermore, it is not permissible for non-medical graduates to practise any system of healing.

Experiences of integration

The practice of TCAM goes well before and beyond the definitions and classifications attempted by educators, policy activists and governments. For instance, Maclean and Bannerman (1982) describe the all-pervasiveness of 'African traditional medicine' at the household, neighbourhood,

community and national levels in sub-Saharan Africa. Policy support in the form of insurance and subsidies, i.e. financial support for the use of TCAM, has a profound influence on the sustainability of TCAM system. For example, financial support from the government of China facilitated the establishment of TCAM departments in health-care facilities. However, a difference is observed in the proportion of use of TCAM and biomedicine, based on insurance and subsidies. Further market subsidies may make the situation for TCAM providers precarious, by reducing their revenue on consultations and medical materials and services (Bodeker 2001). Cost-effectiveness studies highlight other financial implications of TCAM integration. For instance, a study comparing Chinese medicine with integrated (Chinese plus allopathic) medicine in the treatment of H1N1 showed that the group receiving Chinese medicine alone had better biomedically defined clinical outcomes, with lower expenditure of money (Lu et al. 2010). On the other hand, integration with and cost saving for the mainstream health system may be undesirable for practitioners who otherwise can reap margins by dint of their exclusion from public health programmes. For instance, herbalists in South Korea report not wanting the national medical insurance to cover traditional preparations for fear of their losing the huge margin of profit that is currently available to them on sales of traditional medical products (Bodeker 2001).

Users' choices among the diverse systems of medicine show several demographic divides, such as those based on socioeconomic and educational status (Satimia *et al*. 1998; Mazumdar and Gupta 2007), geographical location of practitioners (Satimia *et al*. 1998; Torri 2012) and level of social comfort between the practitioner and patient (Torri 2012), besides the accepted prognosis of the condition (Broom *et al*. 2009), and beliefs about the efficacy of the various systems of medicine for the health condition at hand (Mazumdar and Gupta 2007; Lambert 2012). Thus, more educated, financially better off and Christian villagers in Tanzania reported preferring allopathic medicine to traditional for skin disorders, whereas traditional medicine was the choice of their less educated, economically backward and non-Christian counterparts (Satimia *et al*. 1998). In contrast, in a study in Mumbai, India, women with higher levels of education were more likely to choose TCAM as their primary recourse for the treatment of gynaecological disorders compared with women with lower levels of education (Mazumdar and Gupta 2007). Siddha clinics for Human Immunodeficiency Virus (HIV) treatment set up in villages in Tamil Nadu were found to be popular for their affordability, and the positive physical health outcomes of the patients, as well as the comfort that the patients felt in interacting with the Siddha practitioners (Torri 2012). Sorsdahl *et al*. (2009) reported, from a systematic review, that people with HIV gravitate towards TCAM practitioners, based on a shared sociocultural background, and the attention given by such practitioners to patients' social and spiritual needs in addition to physical. Besides these socioeconomic determinants of the choice among therapies, a major influence is social relations: patients choosing TCAM frequently report being advised or encouraged (Tovey *et al*. 2005; Nisula 2006; Mazumdar and Gupta 2007), or even constrained (Broom *et al*. 2009) to seek TCAM care by members of their social network. Besides this choice among diverse therapeutic modalities is the reality, at the individual level, of the acceptance and adoption of multiple systems to obtain relief of suffering, regardless of the epistemological and ideological similarities and disagreements among the systems (Sujatha and Abraham 2012).

Operational and ethical problems and solutions

Bringing together various systems of medicine involves some problematic examinations of conceptually diverse bodies of knowledge, expertise and impact (Torri 2012). Policies for integration set the stage for the delivery of a diverse set of health-care services. However, the criteria and procedures for the inclusion of various therapeutic systems, the definition of legitimacy of systems, the protocol specified for the interaction among practitioners and often the lack of a clear protocol for the delivery of health care in facilities where practitioners of different medical systems are collocated lead to numerous lacunae in the implementation of true integration of different systems of medicine for public health. An illustration from a high-income country is the practice of CAM in Canada. Universal health care in Canada includes very few systems of CAM; the other CAM systems are restricted to the private sector. Hollenberg's (2006) study on an integrated practice reported that weekly doctors' meetings included only biomedical doctors, not CAM. Weekly practitioner rounds were not attended by CAM doctors, who were not authorized to make notes in patient charts that were used by all biomedical and paramedical practitioners. Only biomedical doctors were authorized to order laboratory tests. CAM practitioners were not allowed to view patient charts without prior permission from patients. Observation of the location of the various offices and consulting rooms within the facility indicated a 'geographical dominance' of biomedical doctors' offices over CAM doctors'. The practitioners were observed to exercise exclusion via the adoption of terminology peculiar to their own system of medicine, and creating barriers of esoteric knowledge mystique. CAM practitioners in Canada reported supporting one another in integrated practices, discussing cases, and referring patients among themselves. Certain skills, such as counselling, nutrition advice, meditation and acupuncture, which form part of the repertoire of CAM modalities, were found to have been incorporated into the biomedical practice, thereby edging out CAM practitioners further: this finding finds a reflection in the 2010 study by Pirotta *et al*. (2010), in Australia, of general practitioners prescribing herbal and other medical products, but not identifying themselves as Integrative Medicine practitioners, probably because the medical products in question were by then considered mainstream by virtue of wide use in society. On a larger scale, the South Korean endeavour to integrate herbal and modern medicine, including the training of allopathic doctors in herbal medicine, led to some power conflicts, with allopaths trained in herbal medicine dominating the medical field, and diminishing the status of herbal specialists (Bodeker 2001). These findings of power relations favouring allopathic practitioners have echoes in the observations of Addicott and Ferlie (2007) of the biomedical dominance, and particularly biomedical specialist dominance, in policy making and implementation in health-care networks

(which included managerial and clinical personnel, although no TCAM providers) for cancer care in England.

Beyond administrative and operational issues in the smooth integration of various systems of medicine are the interpersonal and ethical transactions among the players in this endeavour: Hollenberg's (2006) study of an integrated practice in Canada draws attention to certain unfavourable attitudes in allopathic doctors working with CAM practitioners, such as condescension, and lack of interest and attention paid to communication from CAM practitioners. Broom and Tovey (2007) found in an examination of the integration of CAM in two distinct health-care settings in England, specifically a cancer hospital, and a hospice that CAM provision was facilitated without legitimation of the systems of CAM via arrangements that excluded formal referral to TCAM, and precluded internal funding for CAM provision. The researchers also noted disparate, and unfavourable to CAM, standards of adherence to evidence-based medicine for TCAM and biomedicine. The extent of integration of CAM into biomedicine also varied by the biomedical specialty in question, with palliative care providers proffering more acceptance to CAM than hospital oncologists, a phenomenon probably explained by the philosophical proximity of palliative care to the holistic principles of CAM. A study conducted in India found several notions of tension, mistrust and dichotomy (rational/irrational, physical/metaphysical, traditional/modern), as well as some inconsistencies in practice, and stated values, regarding biomedicine and TCAM, among oncologists (Broom *et al*. 2009).

An assessment of the mainstreaming of AYUSH in Rajasthan, India [Society for Economic Development and Environmental Management (SEDEM) n.d.], revealed that AYUSH is popular and regularly accessed by the community. Cross-referrals were reported to be frequent, although allopathic and AYUSH doctors did not interact much, professionally or socially, with one another, and approximately half the allopathic doctors studied reported never referring patients to AYUSH doctors. Infrastructure and supply gaps were cited, as were lacunae in role and protocol descriptions for personnel at health-care facilities. An examination of the experiences of AYUSH providers contracted to medical officer positions in primary health centres in Andhra Pradesh, India, brought to light, in addition to the lacunae cited in the study in Rajasthan, inequitable emoluments, unethical interpersonal arrangements between some AYUSH providers and their allopathic colleagues, and limited support from non-AYUSH personnel at the health facilities, all of which were felt to be demotivating and undermining the value of AYUSH (Lakshmi 2012).

Shukla and Gardner (2006), reporting on a successful cross-discipline collaboration of botanists and local folk healers, observed that collaboration is encouraged and facilitated only when epistemological and philosophical foundations match. This highlights the difficulty in generating and maintaining collaboration among different systems of medicine, which are clearly distinct epistemologically, and also the possibility that philosophies that do not match the dominant thinking at a particular time may be undermined, or worse, forever lost.

In a departure from the view that reductionist and mechanistic approaches in biomedicine oppose any mutual exploration and understanding among biomedicine and TCAM, Chaudhary and Singh (2011) see hope for philosophical dialogue and integration between biomedicine and TCAM in the gradual gravitation from a purely analytical approach to an analytical–synthetic one in biomedicine, making it a 'bio-psycho-socio-medical model'. This prospect is bolstered by the insight that the historic clashes between TCAM (specifically homoeopathy) and allopathy were more disagreements between groups of professionals competing for a circumscribed basket of profits, and the subsequent establishment of a hierarchy of medical practices incorporating the hegemony of allopathy, than a 'battle between two scientific truths' (Bloom 1995). The potential for an open and unprejudiced examination of the various systems of medicine, unrelated to market-related motivations, to yield a widespread appreciation of medical pluralism, is great.

Bodeker (2001) points out that education and training in more than one system of medicine necessitate the pruning of portions of knowledge and practice, usually from the TCAM system. Thus, integrated medical education, more often than not, comes at the cost of comprehensive training in TCAM. Furthermore, practice by health-care providers trained in TCAM as well as biomedicine may demonstrate some loss of the integrity of the TCAM system (Chung *et al*. 2011). Such cursory orientation to different systems of medicine, which facilitates cross-referral, may, however, be preferable to the risk of cross-practice that stems from more in-depth training in systems other than the one being specialized in (Chung *et al*. 2011). Popular perceptions of TCAM are marred by observations of TCAM-trained practitioners practising allopathic medicine, which they may not be licensed to do (Singh and Raje 1996). Sharma (2001) noted that exposure of doctors to systems of medicine other than their own, especially in those health conditions which represent treatment lacunae in allopathic medicine, in an effort to integrate various systems of medicine in a complementary manner, opens up the risk of cross-practice, and even quackery, by both allopaths and TCAM practitioners.

An illustrative case of cross-practice comes from a hospital-based study conducted in urban India (Gawde *et al*. 2013), which found that around 70% of the 100 allopathic practitioners surveyed reported prescribing branded Ayurvedic medications, although they did not profess familiarity with the concepts of Ayurveda. Notably, over 90% of the respondents opined that Ayurvedic medications needed more 'scientific' testing before use. In a demonstration of dissonance, the majority did not refer patients to their Ayurvedic colleagues, or seek Ayurvedic treatment for themselves either. Most respondents felt that integrating Ayurveda into their practice would enhance the appeal of their practice as well as improve patient outcomes. Legalizing cross-practice however was a much more contested issue, with the majority of practitioners against it (Gawde *et al*. 2013). These findings typify the oft-encountered stance of many allopathic practitioners and health-care governance bodies whose express intention to promote various systems of medicine for improved public health usually takes the course of including selected aspects of TCAM, sans the philosophy of the respective TCAM systems, in the health-care mainstream. Concerns about cross-practice usually emphasize the illegal practice of allopathic medicine by TCAM practitioners, often ignoring the practice of aspects of TCAM by

allopathic practitioners. Practitioners of various TCAM systems however decry the appropriation of selected therapeutic techniques or medications from their systems into the mainstream medical practitioner's repertoire with little training in the technique itself, and none in the concepts of the TCAM system (House of Lords 2000). An example is the controversy surrounding 'dry needling' and its high correspondence with acupuncture, with acupuncturists objecting to the adoption of the use of needles (sans the concepts of the discipline of acupuncture) by therapists trained in other disciplines, and non-acupuncturist providers using 'dry needling' claiming dissimilarity between it and acupuncture (Morris 2011). A preponderant concern related to the assumption of selected TCAM techniques and medications by allopathic practitioners is the diminution of the comparative appeal of TCAM practitioners in the health-care arena with the growing overlap of the scope of practitioners of TCAM disciplines and allopathic practitioners. Another concern related to the adoption of TCAM techniques and medications, highlighted by Spedding (2012), is that the stringent regulation that allopathic medical products are subject to is not applied to TCAM products, whose safety and efficacy, therefore, are not supported by extensive biomedical evidence.

Interaction among the different systems of medicine, and particularly among practitioners of different systems of medicine, within health-care facilities where different systems are collocated, or where they are not collocated but are administered under a health policy that recognizes and regulates the different systems, is found to be influenced greatly by the referral and communication protocols set in place. Chung *et al*. (2011) reported, from a study in Hong Kong, that biomedical practitioners, although culturally accustomed to the prevalence of TCM, and possessing positive personal experience of using TCM, did not refer patients to certain systems of TCAM. They theorize, in explanation of this discord between cultural familiarity and clinical behaviour, that the British occupation with its emphasis on biomedicine as the mainstream health-care option, and the widespread understanding of biomedicine as scientific in contrast to TCAM, may inhibit biomedical doctors from referring patients to TCAM.

Strategies recommended for equitable and people-centred medical pluralism

Observations, insights and advocacy from the studies reviewed offer the following approaches to bear in mind in the development of an equitable medically plural society. To truly include the diversity of traditional and contemporary healing practices in the health-care mainstream, it is essential to explore the nature of local therapeutic practices to obtain a nuanced understanding, and to formulate ways to accredit and license practitioners that are not skewed to textual knowledge, but take into account performance expertise (Lambert 2012).

Gaps in knowledge of TCAM, demonstrated in allopathic practitioners who either subscribe, or do not, to the concept of 'integrative medicine' (Pirotta *et al*. 2010), are clearly a point for intervention to spread awareness of TCAM and to initiate rational referral and practice of integrated medicine (House of Lords 2000). Pirotta *et al*. (2010) recommend the inclusion of TCAM in education programmes to address the gaps in knowledge of biomedical practitioners, with the immediate pragmatic goal of timely identification of safety issues associated with the contemporaneous use of allopathic and TCAM products. The cross-discipline multidirectional information transfer endeavour reported on by Shukla and Gardner (2006) offers a procedure for community knowledge to be transmitted to the scientific community, in addition to the more usual training that flows from academia to the community.

Wangchuk *et al*. (2007) allude to important managerial lessons offered by the juxtaposition and collaboration of conceptually distinct systems within a single administrative and policy unit, such as a ministry. The administration of diverse systems of medicine by a single department, of AYUSH, in the health ministry in India may pose similar challenges.

Hollenberg's (2006) findings of attitudinal barriers among biomedical and TCAM practitioners highlight the need to examine patterns of professional interaction besides documented policy in the integration of different systems of medicine. Chung *et al*. (2011) from their observations of low referral from biomedicine to TCAM, despite the cultural consistency of the biomedical practitioner and the TCAM system, underscore the importance of clearly articulated and enforced procedures of referral in an integrated medical establishment. They urge the removal of structural barriers to cross-referral among TCAM and biomedical practitioners, and highlight the imperative of political will and provision to overcome the inertia that has set in the health-care environment with respect to a pluralistic medical society.

Conclusion

This review, of the experiences in the integration of traditional, complementary and alternative systems of medicine in the health-care mainstream of LMIC, describes some general trends in the development of medical pluralism and formal integration of diverse systems of medicine, particularly in a post-colonial society. The typical trajectory is one of the de facto practice of indigenous and adopted therapeutic systems, until the official political establishment of biomedicine as the mainstream system of health care, followed by either the rejection of all TCAM systems, or the legitimation of certain TCAM systems, particularly those with powerful advocates, and the placement of government-supported TCAM systems on par with, or subordinated to, the biomedical mainstream system. Furthermore, the wide range of non-allopathic systems is often lumped together as one group, erroneously treated as homogenous, despite numerous differences in the epistemologies, training modalities and practice of these systems.

The majority of the global population, particularly in developing countries, is known to use one or more of the TCAM systems for health care. It is important to note that this is not always based on the lack of availability of allopathic health care, but often on choice even in a medically plural society. However, popular choice notwithstanding, a hierarchy of systems of medicine, whether or not acknowledged, is exercised in most societies, with biomedicine at the top, certain TCAM systems next and local healing traditions last. This hegemony of biomedicine is promoted by the positive feedback of a

biomedical theoretical basis of the evaluation of the efficacy of various TCAM systems, which tends to alienate philosophies of healing that demonstrate an epistemological mismatch with allopathy. History is witness to the reality of the danger of suppression, undermining or even disappearance of philosophies—medical and others—that do not match the dominant thinking of the time. Systems that endure usually have had powerful advocates at critical junctures and are often interpreted through a political or communal lens. The contemporary legitimation of a TCAM system usually takes the route of evaluation using biomedical criteria, accreditation of educational institutions and licensing of practitioners, generally based on demonstration of theoretical knowledge. This procedure often alienates therapeutic systems distant from allopathic philosophy, and based on expertise in performance rather than theoretical knowledge.

Even as TCAM systems express their distinction from biomedicine in theory and practice, the tools employed by practitioners of these systems in diagnosis, research, pharmacy, marketing and education and training are seen to increasingly emulate those of allopathy. While these tools may serve to enhance the popular image of some TCAM systems and aid them to achieve easier acceptance in society, they are sometimes inappropriate for use in therapeutic systems with widely divergent epistemologies, which call for distinct research paradigms.

The drive towards elimination of all TCAM systems from official recognition has given way to an acknowledgement of the cultural consonance, popularity, appositeness to prevalent health conditions and, often, low cost of TCAM practices, which has led to efforts to incorporate TCAM into the health-care mainstream. Health policy, at national and state levels, details the standards and procedures for such integration. The rationale for the inclusion of TCAM providers in the public health workforce ranges from the need for personnel to address the disease burden borne by the public health system, to the desirability of providing patients with a choice of therapeutic modalities for their health care, and the nurturing of local culture. Integration, although mostly described as a phenomenon to juxtapose different systems of medical practice, is often implemented as a system of establishing personnel with certification in different medical systems, in predominantly allopathic health-care facilities, to practise allopathic medicine. These arrangements that bring practitioners of different systems under a common administration, with varying degrees of authority and autonomy, engender numerous problematic interpersonal and ethical transactions, particularly in situations where the official communication channels among allopathic and TCAM personnel, including reporting and cross-referral, are not clearly specified. Several studies describe knowledge gaps, and structural and attitudinal barriers among allopathic and TCAM practitioners working in integrated facilities. Observations have also been made of the dissonance that biomedical practitioners express between their cultural familiarity with TCAM systems and their clinical behaviour that eschews TCAM use or even referral to TCAM practitioners. In summary, the integration of TCAM into the public health system in LMIC is charged with tensions related to the coexistence of philosophically disparate, often opposed, disciplines, with distinct and unaligned notions of evidence and efficacy, and of political and cultural vicissitudes. The design and sustenance of a medically plural society that facilitate the thriving of each system of medicine, and respectful and gainful co-operation among different systems to promote improved public health, requires a great deal of insight, sensitivity and administrative skill.

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References

Addicott R, Ferlie E. 2007. Understanding power relationships in health care networks. *Journal of Health Organization and Management* **21**: 393–405.

Appelbaum D, Kligler B, Barrett B *et al.* 2006. Natural and traditional medicine in Cuba: lessons for U.S. medical education. *Academic Medicine* **81**: 1098–103.

Ariyasena UMG. 1989. *Involvement of Traditional Medical Practitioners in Primary Health Care*. Colombo: Post Graduate Institute of Medicine. http://dl.nsf.ac.lk/ohs/index.php/record/view/17670, accessed 7 January 2013.

Bloom H. 1995. *The Lucifer Principle: A Scientific Expedition into the Forces of History*. New York: The Atlantic Monthly Press.

Bodeker G. 2001. Lessons on integration from the developing world's experience. *British Medical Journal* **322**: 164–7.

Boon H, Verhoef M, O'Hara D, Findlay B. 2004. From parallel practice to integrative health care: a conceptual framework. *BMC Health Services Research* **4**: 15.

Brink J. 1982. Traditional birth attendants among the Annang of Nigeria. *Social Science and Medicine* **16**: 1883–92.

Broom A, Doron A, Tovey P. 2009. The inequalities of medical pluralism: hierarchies of health, the politics of tradition and the economies of care in Indian oncology. *Social Science and Medicine* **69**: 698–706.

Broom A, Tovey P. 2007. Therapeutic pluralism? Evidence, power and legitimacy in UK cancer services. *Sociology of Health and Illness* **29**: 551–69.

Chattopadhyay S. 2007. Religion, spirituality, health and medicine: why should Indian physicians care? *Journal of Postgraduate Medicine* **53**: 262–6.

Chaudhary A, Singh N. 2011. Contribution of world health organization in the global acceptance of Ayurveda. *Journal of Ayurveda and Integrative Medicine* **2**: 179–86.

Chung VC, Hillier S, Lau CH *et al.* 2011. Referral to and attitude towards traditional Chinese medicine amongst western medical doctors in postcolonial Hong Kong. *Social Science and Medicine* **72**: 247–55.

Fisher P, van Haselen R, Hardy K, Berkovitz S, McCarney R. 2004. Effectiveness gaps: a new concept for evaluating health service and

research needs applied to complementary and alternative medicine. *The Journal of Alternative and Complementary Medicine* **10**: 627–32.

Gawde SR, Shetty YC, Pawar DB. 2013. Knowledge, attitude, and practices toward ayurvedic medicine use among allopathic resident doctors: a cross-sectional study at a tertiary care hospital in India. *Perspectives in Clinical Research* **4**: 175–80.

Gill C. 2011. Can traditional birth attendants be trained to reduce neonatal mortality rate? Lessons from Lufwanyama Neonatal Survival Project. *British Medical Journal* **342**: d346.

Hardiman D. 2009. Indian medical indigeneity: from nationalist assertion to the global market. *Social History* **34**: 263–283.

Hausman GJ. 2002. Making medicine indigenous: homeopathy in South India. *Social History of Medicine* **15**: 303–22.

Hollenberg D. 2006. Uncharted ground: patterns of professional interaction among complementary/alternative and biomedical practitioners in integrative health care settings. *Social Science and Medicine* **62**: 731–44.

House of Lords. 2000. *Select Committee on Science and Technology - Sixth Report, Session 1999-2000*. http://www.parliament.the-stationery-office.co.uk/pa/ld199900/ldselect/ldsctech/123/12301.htm.

Jeffery R. 1982. Policies towards indigenous healers in independent India. *Social Science and Medicine* **16**: 1835–41.

Jingfeng C. 1988. Integration of traditional Chinese medicine with Western medicine—right or wrong? *Social Science and Medicine* **27**: 521–9.

Lakshmi JK. 2012. Less equal than others? Experiences of AYUSH medical officers in primary health centres in Andhra Pradesh. *Indian Journal of Medical Ethics* **9**: 18–21.

Lambert H. 2012. Medical pluralism and medical marginality: bone doctors and the selective legitimation of therapeutic expertise in India. *Social Science and Medicine* **74**: 1029–36.

Lu CJ, Luo Y, Zhou H *et al.* 2010. A preliminary study on the medical expenditure of Chinese medicine and integrative medicine treatment for influenza A (H1N1) in the fever clinics. *Chinese Journal of Integrative Medicine* **16**: 493–7.

Maclean U, Bannerman RH. 1982. Utilisation of indigenous healers in national health delivery systems. *Social Science and Medicine* **16**: 1815–6.

Madhivanan P, Kumar BN, Adamson P, Krupp K. 2010. Traditional birth attendants lack basic information on HIV and safe delivery practices in rural Mysore, India. *BMC Public Health* **10**: 570.

Madhu R. 2011. Practices at an AYUSH health camp for asthma in Pendra, Chhattisgarh. *Journal of Ayurveda and Integrative Medicine* **2**: 170–3.

Mazumdar PG, Gupta K. 2007. Indian system of medicine and women's health: a client's perspective. *Journal of Biosocial Sciences* **39**: 819–84.

Morris W. 2011. Scope and standards for acupuncture: dry needling? *Acupuncture Today* **12**: 05. http://www.acupuncturetoday.com/mpacms/at/article.php?id=32399.

Nisula T. 2006. In the presence of biomedicine: ayurveda, medical integration and health seeking in Mysore, South India. *Anthropology and Medicine* **13**: 207–24.

Peltzer K, Mngqundaniso N, Petros G. 2006. A controlled study of an HIV/AIDS/STI/TB intervention with traditional healers in KwaZulu-Natal, South Africa. *AIDS and Behavior* **10**: 683–90.

Pirotta M, Kotsirilos V, Brown J *et al.* 2010. Complementary medicine in general practice—a national survey of GP attitudes and knowledge. *Australian Family Physician* **39**: 946–50.

Poudyal AK, Jimba M, Murakami I *et al.* 2003. A traditional healers' training model in rural Nepal: strengthening their roles in community health. *Tropical Medicine and International Health* **8**: 956–60.

Priya R, Shweta AS. 2010. *Status and Role of AYUSH and Local Health Traditions under the National Rural Health Mission, Report of a Study*. http://nhsrcindia.org/download.php?downloadname=pdf_files/resources_thematic/Public_Health_Planning/NHSRC_Contribution/103.pdf, accessed 17 May 2013.

Satimia FT, McBride SR, Leppard B. 1998. Prevalence of skin disease in rural Tanzania and factors influencing the choice of health care, modern or traditional. *Archives of Dermatology* **134**: 1363–6.

Schuster TL, Dobson M, Jauregui M, Blanks RH. 2004a. Wellness lifestyles I: a theoretical framework linking wellness, health lifestyles, and complementary and alternative medicine. *The Journal of Alternative and Complementary Medicine* **10**: 349–56.

Schuster TL, Dobson M, Jauregui M, Blanks RH. 2004b. Wellness lifestyles II: modeling the dynamic of wellness, health lifestyle practices, and network spinal analysis™. *The Journal of Alternative and Complementary Medicine* **10**: 357–67.

Society for Economic Development and Environmental Management (SEDEM). n.d. *Assessment of AYUSH in Rajasthan after Mainstreaming*. http://indianmedicine.nic.in/writereaddata/linkimages/0629039883-S%20E%20D%20E%20M%20Report%20Delhi.pdf, accessed 17 May 2013.

Sharma DC. 2001. India to promote integration of traditional and modern medicine. *The Lancet* **358**: 1524.

Sheikh K, Nambiar D. 2011. Government policies for traditional, complementary and alternative medical services in India: from assimilation to integration? *National Medical Journal of India* **24**: 245–6.

Shukla S, Gardner J. 2006. Local knowledge in community-based approaches to medicinal plant conservation: lessons from India. *Journal of Ethnobiology and Ethnomedicine* **2**: 20.

Singh J, Raje N. 1996. The rise of western medicine in India. *The Lancet* **348**: 1598.

Son AH. 1999. Modernization of medical care in Korea (1876-1990). *Social Science and Medicine* **49**: 543–50.

Sorsdahl K, Ipser JC, Stein DJ. 2009. Interventions for educating traditional healers about STD and HIV medicine. *Cochrane Database of Systematic Reviews* CD007190.

Spector RE. 2002. Cultural diversity in health and illness. *Journal of Transcultural Nursing* **13**: 197–9.

Spedding SJ. 2012. Regulation of conventional and complementary medicine—it is all in the evidence. *Medical Journal of Australia* **196**: 682–3.

Srinivasan P. 1995. National health policy for traditional medicine in India. *World Health Forum* **16**: 190–3.

Sujatha V, Abraham L. 2009. Medicine, state, and society. *Economic and Political Weekly* **44**: 35–43.

Sujatha V, Abraham L. 2012. *Medical Pluralism in Contemporary India*. New Delhi: Orient Blackswan.

Torri MC. 2012. Perceptions of the use of complementary therapy and Siddha medicine among rural patients with HIV/AIDS: a case study from India. *The International Journal of Health Planning and Management* **28**: 63–84.

Tovey P, Chatwin J, Ahmad S. 2005. Toward an understanding of decision making on complementary and alternative medicine use in poorer countries: the case of cancer care in Pakistan. *Integrative Cancer Therapies* **4**: 236–41.

Wangchuk P, Wangchuk D, Aagaard-Hansen J. 2007. Traditional Bhutanese medicine (gSo-BA Rig-PA): an integrated part of the formal health care services. *Southeast Asian Journal of Tropical Medicine and Public Health* **38**: 161–7.

World Health Organization. 2002. *WHO Traditional Medicine Strategy 2002-2005*. http://whqlibdoc.who.int/hq/2002/who_edm_trm_2002.1.pdf, accessed 12 October 2012.