

Integrated care and leprosy in India: a role for Indian systems of medicine and traditional health practice in the eradication of leprosy

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The benefits of an integrated approach in the future of leprosy control in India are discussed, by involving professionals from different systems of medicine and coordinated by dermatologists working in the field of community dermatology. The low level of education amongst traditional healers has led to misdiagnosis and inappropriate treatment, thus emphasizing the importance of health education for patients, families and local practitioners to enable prompt and appropriate treatment. The Indian systems of medicine though supportive do not have the required rehabilitation services. Traditional health practitioners demonstrated an improved knowledge of leprosy on completion of training, and were able to detect and refer suspect cases with only early signs of disease.

Keywords: Community dermatology, integrative medicine, leprosy, traditional health practice.

Introduction

THIS article considers the role of Indian systems of medicine and the Indian Government policy in the future of leprosy control in the country. The benefits of an integrated approach are discussed; one which draws together the expertise of professionals from different systems of medicine and is coordinated by dermatologists working in the field of community dermatology. Leprosy is a stigmatizing and disabling disease caused by infection with *Mycobacterium leprae*, followed by a persistent inflammatory immune attack against the bacterial antigen. The global prevalence of leprosy has reduced significantly; however, transmission of the disease continues unabated with more than 200,000 new cases of leprosy reported each year. In 2013, India alone accounted for 59% of the global leprosy burden. Dermatology is considered the most suitable profession to lead management in general health services, as the profession has much to offer as a resource for diagnosis and education. However, most dermatologists are bound to their private, urban-based

practice. To build on human resources at the village level, the small but enthusiastic branch of community dermatology may be the solution to India's leprosy with traditional practitioners as partners.

There is great potential for India's many systems of medicine to be utilized in an integrated approach to the management of leprosy. More than 402,079 Ayurveda graduates are providing health services across India, and 279 Ayurveda medical colleges provide undergraduate training. Ayurveda offers a different perspective on leprosy and its management strategies may be complementary to those of biomedicine, especially when dealing with complications, wound care and leprosy reactions. Populations in India rely heavily on such Indian systems of medicine and traditional health practitioners (THPs) to meet their basic healthcare needs; engaging THPs and providing training in leprosy can support early diagnosis and treatment.

The elimination programme

Leprosy was once widely distributed in Europe and Asia, but is now mostly confined to resource-poor countries in tropical regions. Fourteen countries accounted for 96% of the new leprosy cases detected in 2013 (ref. 1). When making an assessment of the successful reduction in leprosy, it is noted that many countries like those in Europe saw the disappearance of the disease before World War II, attributed to better nutrition and housing without the intervention of effective drugs.

In 2005, India achieved 'elimination' of leprosy at a national level; that is, it achieved the arbitrary target set by WHO of prevalence less than one case per 10,000 population. Small pockets of higher prevalence were known to exist. This lessened the need for a separate vertical leprosy programme, with full-time experts in leprosy at all levels of the health service. The vertical programme was decentralized and leprosy services were integrated into the general health system. In the previous vertical programme there was considerable expertise at all levels, but much of this was in an ageing service. This expertise is now largely lost and insufficient to strengthen the general health services.

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Human resources from a younger age group must now be found and trained in order to fill this gap. The Remaining leprosy experts in specialist (non-government) hospitals today are a valuable resource. Specialist leprosy services are valued by patients as evidenced by the continued presentation post-integration in Nepal² and Sri Lanka³.

Role of dermatology in leprosy control

The burden of skin diseases in developing countries such as India far outstrips dermatological manpower, especially in rural areas. Dermatologists are concentrated in the cities and large towns, and mostly do not want to travel outside their private practice clinic. However, most of the population lives in rural areas where access to skin care is limited. Community dermatology, such as schemes piloted by Kaur and Singh in India⁴, represents a public health approach to skin diseases, and aims to promote 'Skin Care for All'⁵. Community dermatology, represented by a minority group, has as its target the commonest skin conditions; those that affect millions of people worldwide and many of which (have the potential to) cause disability. An example is scabies, a parasitic infection which can become secondarily infected by streptococcal bacteria leading to complications of glomerulonephritis and rheumatic heart disease⁶. Skin care is required for neglected tropical diseases such as leprosy, leishmaniasis, lymphatic filariasis, onchocerciasis and Buruli ulcer (scabies has now been added), and this has long been an important focus in global dermatology. The expectation is high that the dermatology profession will support leprosy-related activities and community dermatology has been suggested as a potential solution.

Community dermatology offers to leprosy control an attractive approach based on reversing skin failure of function (www.skincareforall.org). The Community Dermatology Society of India, inaugurated in 2015, is strongly supportive and will become a resource for training of family practitioners in the management of leprosy for a number of reasons. Its self-help interventions are low-cost and appropriate to the needs of those affected, who often have very limited resources^{7,8}; It focuses on the strengthening of general health services, at the primary care level, thereby improving access to appropriate advice and treatment for patients. It collaborates with other relevant health professionals and forms teams which integrate with other systems of medicine, for example, Ayurveda.

The dermatology profession has strengthened the capacity for leprosy-control activities globally through the provision of education and training. Indian textbooks on dermatology cover leprosy competently and generously, and dermatology journals regularly publish research articles on leprosy.

Indian systems of medicine and traditional health practice

Integrated medicine

Populations worldwide rely heavily on complementary and alternative medicine (CAM) remedies to meet their healthcare needs, especially for chronic diseases. In many communities THPs are a valuable resource – they are numerous, highly respected, easy to access, affordable and often a preferred source of healthcare. Many patients understand and explain leprosy in terms of traditional beliefs and concepts, and many THPs will use traditional methods, without referring to leprosy services. In a study in Nigeria 59% of leprosy patients were found to first consult folk medicine⁹. The services provided by THPs vary widely and include herbals, acupuncture, massage and spiritual therapies. Scarification is frequently used to let the bad out. Wong and Subramaniam¹⁰ explored the role of THPs in a study on 'Socio-cultural issues in leprosy control and management'. They referred to the 'harmonious' co-existence of modern health-care workers and traditional and religious leaders in Botswana¹¹ and Tanzania¹² in providing care to leprosy patients.

Many of the traditional medicine therapies are available to people with skin diseases. What is needed is robust clinical evaluation of these interventions. Research and policy interest in this area has been lacking, although some progress is being made. Traditional herbal preparations have been shown to provide benefits in the treatment of common skin conditions, including fungal infections and eczema¹³. Additionally, an integrated approach combining modern dermatology, Ayurveda, Homeopathy and Yoga therapy has been used successfully at the Institute of Applied Dermatology in Kasaragod, Kerala, for the treatment of vitiligo and lymphoedema¹⁴. The use of an integrated approach in the management of leprosy has not yet been assessed. Integrated medicine refers to the practice of combining biomedicine with other systems of traditional medicine and ancient healing¹⁵. There are many systems of traditional medicine in India; however, Ayurveda, Yoga, Unani, Siddha and Homeopathy (AYUSH) are the only ones to be taught in universities or colleges. AYUSH systems outnumber biomedical systems, especially at the village level. Ayurveda is the most widely used.

Ayurveda

There is a big difference in approach between a dermatologist and an Ayurvedic physician. It relates to skin screening. The dermatologist demands that the skin is closely examined, clothes are removed and a name derived from Latin is applied for skin lesions. Furthermore, a biopsy of the skin is often the study tool of

dermatology. None of this is so essential to any other profession. Such screening is socially invasive, and privacy versus display is a problem in Indian culture. The task force for community dermatology is inclined to agree that at the horizontal level some of this is not necessary and can be substituted by other processes. At the top vertical level with most expertise, it becomes essential. While biomedicine relies on chemistry, many Asian systems describe processes that are energy-based. For leprosy it is more likely to recognize the constitutional imbalance, often from a careful interrogation, than to study the hypopigmented lesion and feel for local nerve thickening.

Treatment modalities in Ayurvedic medicine include meditation, dietary and lifestyle changes, the use of herbs and spices and *Panchakarma* (purification therapy by emesis and purgation). Using Ayurveda with biomedicine in an integrated approach could be beneficial for patients with leprosy, as demonstrated for other skin diseases¹⁴. However, Ayurveda alone may be insufficient for the management of leprosy. Assessment of the individual in Ayurvedic medicine is holistic and based on the overall pathologic presentation; but this approach may not be sufficient to detect and manage nerve function impairment. Nerve function impairment might respond to Ayurvedic treatment that restores the patient's constitution; however, the assessment and monitoring of nerve function would be inadequate, compared with biomedicine. Also, Ayurveda does not have in its practice sufficient disability management.

In Sri Lanka, it was shown that patients with nerve function impairment presenting to an Ayurvedic practitioner experienced greater delay before seeking care with leprosy services¹⁶. Ayurvedic practitioners provided patients with an Ayurvedic diagnosis and were reluctant to refer them without first trying their own treatments and allowing time for them to take effect. An integrated approach, coordinated by a regional dermatologist, would facilitate positive contributions from Ayurvedic practitioners and other relevant health professionals; for example, neurologists in the case of nerve damage.

More than 25,000 single or polyherbal formulations are used by the tribal and rural population of India, with a less than accurate system of measurement¹⁷. Dosage may rely on the size of a spoon or flask. Most treatment formulations in Ayurvedic medicine are used for specific diseases, although some are used within a defined disease group; for example, the use of *Acacia catechu* (*khadira*) for skin diseases. Chaulmoogra oil, extracted from the seeds of the chaulmoogra or kalaw tree (genus *Hydnocarpus*), has been used for hundreds of years for the treatment of leprosy and other skin disorders^{18,19}. This painful injection was the standard treatment for leprosy before the development of dapsone. Sahoo *et al.*¹⁹ have recently shown that extracts from species of the genus *Hydnocarpus* have anti-bacterial and anti-leprotic

activity. They suggest that this is due to cyclopentenyl fatty acids present in the seed oil¹⁹. Gautam *et al.*²⁰ highlight the enormous chemical diversity of the plant kingdom and provide detailed information on 255 plant species that have demonstrated antimycobacterial activity. Of the 255 species discussed, 35 have been reported in Ayurveda for use against leprosy. The correlation between traditional knowledge of plants used for leprosy and the results of modern antimycobacterial testing is encouraging for research to develop new antimycobacterial drugs. Ayurvedic universities are funded with the expectation of more such studies.

Traditional medicine formulations involving non-plant materials have been used against leprosy and include copper sulphate, lime water, cow's urine, milk, butter and ghee²¹. The curative effect of cow's urine is recorded in *Charaka Samhita* and other Ayurvedic texts. Making an assessment of such treatments requires considerable relaxation in evidence-based approaches and must take into account natural healing and the placebo response. There are attempts to find a genetic basis for the different constitutions in Ayurveda that may eventually provide chemical clues for the exact role of some plant constituents²².

There is limited evidence on the use of other systems of traditional medicine, without written tradition. Siddha treatments have been used for leprosy and type-2 reactions with good effect²³. The fact that leprosy reactions are self-limiting might partly explain the apparent effectiveness of these treatments, which include praying and psychotherapy.

Traditional health practitioners

Nerve damage from leprosy and its complications (leprosy reactions) can cause disability if not treated early. It is important therefore that patients are referred early for appropriate treatment. Several studies conducted in different African countries have shown a relationship between high rates of disability at presentation and late reporting to modern (biomedical) health facilities²⁴. The long distance between patients' homes and the specialist treatment facilities is a fact rather than a preference used to explain delay in appropriate treatment, with patients instead choosing to seek treatment from the nearest health provider (the ubiquitous traditional healers). The low level of education amongst traditional healers has led to misdiagnosis and inappropriate treatment. A pilot study conducted in Kolkata by John *et al.*²⁵ supports these findings, showing that local practitioners' knowledge of how to diagnose leprosy is poor and many of them treat within their own system of medicine; for example, Homeopathy or Ayurveda. Among the 29 practitioners interviewed in the study, 6 were referring patients to hospitals and only one was treating with MDT. The study highlights the

need to engage with local practitioners to promote early referral to specialist centres where patients can be diagnosed and receive appropriate treatment. Raffé *et al.*² evaluated the diagnosis and treatment of leprosy reactions in integrated services in Nepal and found that there was an average delay of 2.9 months between onset of symptoms and treatment being commenced. Patients presenting directly to specialist services were 6.6 times more likely to receive appropriate treatment than those presenting elsewhere (10% presented to a traditional health practitioner). These findings emphasize the importance of health education for patients, families and local practitioners to enable prompt and appropriate treatment. In Africa, attribution of disability to witchcraft also probably contributes to delay in specialist management.

Community-based health workers can be trained to identify skin problems and provide basic skin care. Kaur *et al.*²⁶ showed that THPs could be trained to detect the early signs of leprosy. Traditional health practitioners demonstrated an improved knowledge of leprosy on completion of training and were able to detect and refer suspect cases with only early signs of disease. A study conducted in Nepal showed that THPs could be integrated into primary care and increase referrals to leprosy services²⁷. Furthermore, Ezenduka *et al.*²⁸ showed that the addition of THPs to routine strategies in Nigeria was a cost-effective method of increasing case detection. Traditional health practitioners are present in most communities; therefore, engaging and working with them could boost manpower and provide an opportunity for enhancing the early detection of new leprosy cases and reactions. This is not happening yet and the Indian Association of Leprologist's textbook on leprosy (which is the recommended Bible) makes no mention of such an intervention.

Referral

There is a need for care homes for those with disability who are unable to look after themselves. India is a country well-endowed with Christian and Hindu religion-based charitable services providing leprosy care centres. A few Jain and Sikh religion-based charities also exist. Government regulations request the services 'should not be overtly religious'. They are mostly caring, not always expert, and if well-funded, many have a priority for supporting the soul rather than the body. Some centres favour close links of the patient with the religious order, rather than complete integration within their village or peri-urban communities.

There need to be highly expert centres to which patients can be referred for confirmation of diagnosis, with support from histopathology, ophthalmology, neurology and surgical (tendon transplant) services. Long-term management of foot ulcers and subsequent amputation

adds the need for skills in the provision of footwear and prostheses. Good management of foot ulcers will mostly avoid the need for amputation. The past vertical service often had the necessary management skills to provide these. The epidemic of obesity and diabetes also contributes to the pool of persons requiring footwear and amalgamation is desirable. It may be noted that the middle-class obese woman with diabetic foot ulcers is wealthier than the average patient with leprosy. Furthermore, the professional beggar raises issues of management well known to carers of leprosy, but less familiar to the diabetes managers or the Indian systems of medicine provider.

Conclusion

An integrated approach holds promise for sustaining (and enhancing) leprosy-related activities in India, without which we will be unable to control this ancient disease. Indian systems of medicine, though supportive, do not have the required rehabilitation services. There are additional issues, including whether leprosy should be treated by a team of experts only, or whether it is better for such teams to take on more than one disease; for example, lymphatic filariasis and diabetic foot ulcers in India, and tuberculosis and Buruli ulcer in Ghana. The Task Force for Community Dermatology believes in a basic course of therapy for restoration of function that is not confined to only one disease and recruits experts from many disciplines. Interventions should be straightforward, effective, inexpensive and available in places where they are needed most. Ayurvedic treatments may be beneficial in the case leprosy and should be included as part of a multidisciplinary approach to management.

In the WHO Goodwill Ambassador's Newsletter for the Elimination of Leprosy, October 2014, the editors draw attention to the importance of an integrated approach in the fight against leprosy²⁹. They highlight the views expressed by the Leprosy Mission on the need for THPs to receive training in the disease, and the potential for traditional birth attendants to provide leprosy education to women.

There is an alarming decline in leprosy research, which must be addressed. While the move from vertical to horizontal has taken place, we still need the equivalent of vertical at the top with young, well-qualified and passionate experts in the field. To support the horizontal programme at the bottom, integrated medicine is the best. The reluctance to employ all systems of medicine in the battle for eradication makes the promise of success still decades away. First, it is necessary to achieve diagnosis as early as possible. Then there is management of the injury done by bacteria versus that done by the immune response. Left behind and needing care are all those with permanent disability. Hopefully, there will be a vertical programme

at the top that ensures that lower levels of caregivers have the necessary expertise. The human resources will be larger when integrated medicine is fully appreciated.

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