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Study of skin diseases and medicinal uses of plants in Rewa district Madhya Pradesh

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Abstract
Skin diseases remain a low priority for many health authorities, despite the large demand for services. Addressing the potential for controlling skin problems by means of simple and effective public health measures should be a realistic target for alleviating a common and solvable source of ill health. Traditionally, *Ageratum conyzoides* has been used in various parts of the world like Africa, Asia and South America as folk medicine. The whole plant produces volatile strong smelled oil which also possesses various biological activities. It is used for wound dressing, curing various skin diseases, ophthalmic, colic, ulcers treatment, as purgative and febrifuge. *Bidens pilosa* is also used to treat infections in stomach illness malaria and liver disorders and diabetes. The *Bidens pilosa* have been claimed to possess anti-inflammatory, immunosuppressive, anti-bacterial and antimalarial functions. During present investigation both plants are also used in study sites for various ailments along with skin diseases.

Keywords: skin diseases, medicinal, plants, Rewa

1. Introduction
Assessing the impact of skin disease on the quality of life in comparison with that of chronic non-dermatological diseases is difficult; however, the study by Mallon *et al.* (1999) [1], which was not carried out in a developing country, compares the common skin disease acne with chronic disorders such as asthma, diabetes, and arthritis and finds comparable deficits in objective measurements of life quality. Skin disease related to HIV, which may constitute an important component of the skin disease burden in developing countries, particularly in Sub-Saharan Africa, leads to a similar impact on life quality compared with non-HIV-related skin problems, although the use of antiretroviral therapy significantly improves quality of life (Mirmirani *et al.* 2002) [2]. Those findings indicate that skin diseases have a significant impact on quality of life.
Although mortality rates are generally lower than for other conditions, people's needs for effective remedies for skin conditions should be met for a number of important reasons.

- First, skin diseases are so common and patients present in such large numbers in primary care settings that ignoring them is not a viable option. Children, in particular, tend to be affected, adding to the burden of disease among an already vulnerable group.
- Second, morbidity is significant through disfigurement, disability, or symptoms such as intractable itch, as is the reduction in quality of life. For instance, the morbidity from secondary cellulitis in lymphatic filariasis, which may lead to progressive limb enlargement, is severe, and subsequent immobility contributes to social isolation.
- Third, the relative economic cost to families of treating even trivial skin complaints limits the uptake of therapies. Generally, families must meet such costs from an overstretched household budget, and such expenses in turn reduce the capacity to purchase such items as essential foods (Hay *et al.* 1994) [3].
- Fourth, screening the skin for signs of disease is an important strategy for a wide range of illnesses, such as leprosy, yet a basic knowledge of the simple features of disease whose presenting signs occur in the skin is often lacking at the primary care level.

A shortage of elementary skills in the management of skin diseases is a further confounding problem. A number of studies assessing success in the management of skin diseases in primary care settings in the developing world find that treatment failure rates of more than 80 percent are common (Figueroa *et al*. 1998; Hiletework 1998) [4-5]. An additional point, often overlooked, is that skin diseases in the developing world are often transmissible and contagious but are readily treatable (Mahé, *et al*. 2003) [6].

2. Material and methods
The Rewa district is located between 81-15. East longitude and 24-42 North latitude and is situated on the Vindhya Plateau at the height of 318 m above MSL.
Rewa is synonyms of holy river Narmada. Narmada flows in a larger part of Rewa-Khand hence the name Rewa was adopted. The town is situated on the confluence of Bihar and Bichhia river. Rewa is connected by National Highway 7 and many other state highways pass through the town. The town in connected from Satna through railway link. It has got a small air strip at Chorahata. It is connected by road with Allahabad (127 km.), Nagpur (495 km.), Satna (52 km.), Sidhi (100 km.) and Shahdol (161 km.).
For gathering information about these medicinal plants four procedures were followed. In one, the knowledgeable informations, the 'Baidyaraajs' were requested to accompany to the field and the use of the plants as given by these informants were recorded. Other way used was to collect all the plants surrounding the study sites and potentially

ethnobotanically important appearing plants were showed one by one to the informants about the plants used for a particular ailment, such as for bone fracture or for Jaundice, i.e. identification of plants pertaining to a disease was done. The fourth method employed was to interview the common inhabitants for potential ethnomedicinally important information about many ordinary diseases like headache, stomach troubles etc. Some times for complicated ailments also some herbals remedies were obtained from these people.

One another equally important method employed was to record information's based on personal or own observations during field work.

The collections brought to the laboratory were properly dried with the help of blotting papers. Preservation was done in the alcoholic saturated solution of mercuric chloride ($HgCl_2$). The plants were again placed in dryer and pressed till they got completely dried and the roaster mounting on herbarium sheets was done. The plants so collected were carefully and critically studied after identification in the laboratory.

3. Results and discussion

A number of common diseases account for the vast majority of the skin disease burden; therefore implementing effective treatments targeted at those conditions results in significant gains for both personal and public health. Even where eradication is impossible, control measures may be important in reducing the burden of illness; yet few systematic attempts have been made to validate control programs for skin diseases as public health interventions. There are certain common skin diseases viz. scabies, bacterial skin infection, fungal infection, ringworm etc. are found in human beings.

Scabies

Scabies is a common ectoparasitic infestation caused by *Sarcoptes scabei*, a human-specific mite that is highly prevalent in some areas of the developing world. Scabies is transmitted by direct contact. In industrial societies, it is usually seen in sexually active adults, although it may also appear in the form of clusters of cases among the elderly in residential homes. Peaks of infection in communities may be cyclical. The ease of transmission appears to depend, in part, on the parasitic load, and some patients, including the elderly, may have large numbers of parasites present. By contrast, in healthy adults, the total parasite load may be low, but they, nonetheless, may suffer from highly itchy lesions. The organisms can also reach high densities in patients suffering from a severe depression of immunological responses, as in HIV infection. In this crusted or Norwegian form of scabies, lesions may present with atypical crusted lesions that itch little.

Bacterial skin infection

Bacterial skin infections or pyoderma are common in most developing countries (Mahé, *et al.* 2003) [6]. Generally these infections arise as primary infections of the skin known as impetigo or as secondary infections of other lesions such as scabies or insect bites. The usual bacterial causes are Group A streptococci or *Staphylococcus aureus*. Bacterial infections are common in communities. In many cases, no bacteriological confirmation is available from cultures, but surveys show that Group A streptococci account for a substantial number of cases (Carapetis, *et al.* 1999; Taplin *et al.* 1973) [7-8], which is not often the case in similar infections in temperate climates, where *S. aureus* dominates. This finding carries implications for the selection of treatment options. The reasons for this finding are not clear, although humidity and heat are associated with increased risk of bacterial skin infection.

In addition to these superficial infections, *S. aureus* also causes folliculitis, or hair follicle infections and abscesses. Rarer causes of skin infection in developing countries include cutaneous diphtheria and anthrax, as well as necrotizing infection caused by *Vibrio vulnificus.* Bacterial infection causes irritation and some discomfort. In some cases, the infection penetrates deep down through the epidermis, causing a necrotic ulcer-a condition known as ecthyma. However, some evidence suggests that streptococcal infection may cause additional long-term damage through the development of prolonged proteinuria, as described earlier in relation to scabies.

Fungal infection

Fungal infections that affect the skin and adjacent structures are common in all environments. They include infections such as ringworm or dermatophytosis; superficial candidosis and infections caused by lipophilic yeasts and *Malassezia* species; and some other common causes of foot infection, such as *Scytalidium.* The clinical and social impact of fungal infections on individuals varies with local conditions. For instance, tinea pedis is a treatable condition that causes cracking and inflammation with itching between the toes. It is generally viewed as a nuisance that only marginally affects the quality of life; however, under certain conditions its significance is far greater. For example, fungal infections of the web spaces and toenails in diabetics provide a portal of entry for *S. aureus*, an event closely related to the development of serious foot complications in patients with peripheral vascular disease and neuropathy. Similarly, foot infections originally caused by dermatophytes can develop into more serious disabling infections through secondary Gram-negative bacterial infection among certain occupational groups in the tropics, such as workers in heavy industry, the police, or the armed forces. Wearing heavy footwear is a risk factor for the emergence of this problem.

Ringworm

In many parts of the developing world, tinea imbricata is an exotic and unusual infection, with isolated foci occurring in remote areas of Brazil, India, Indonesia, Malaysia, Mexico, and the western Pacific. However, in some specific locations, it is common and endemic, reaching prevalence rates of more than 30 percent in some communities in the western Pacific. For example, extrapolating from a school survey in Goodenough Island, Papua New Guinea, Hay *et al.* (1994) [3] estimate that more than 7,000 people out of a population of about 20,000 were infected.

The disease presents in the form of widespread scaling, often arranged in concentric rings or with large sheets of desquamation. The infection may develop early in life and persist into old age without the development of effective immunity. Tinea imbricata often affects wide areas of the

body, sparing only body folds and scalp skin. In those areas where it is endemic, it can be a significant problem occupying much of the time of health aid post staff.

Medicinal plants

Medicinal plants have been used for centuries as remedies for human diseases and other organisms because they contain certain components of therapeutic value. There are more than 35000 plant species being used in various human cultures around the world for medicinal purposes (Philip *et al*. 2009) [9]. According to World Health Organization medicinal plants would be the best source to obtain a variety of drugs. About 80% of individuals from developed countries use traditional medicine. Therefore, such plants should be investigated to better understand their properties, safety and efficiency. Recently some higher plant products have attracted the interest of microbiologist and pharmacologist to search for phytochemicals for their use as antimicrobials. Such plant products would be biodegradable and safe to human health (Wang *et al.*, 2010 and Kumar *et al*. 2008) [10-11]. In recent years, pharmaceutical companies have spent substantial time and money in developing therapeutics based upon natural products extracted from plants (Ben Sassi *et al*. 2007) [12]. The *Ageratum conyzoides* and *Bidens pilosa* both are highly medicinally important specially used for skin diseases in Rewa region.

1. *Ageratum conyzoides* L.

Ageratum conyzoides is an annual herb with a long history of traditional medicinal uses in many countries in the world, especially in the tropical and subtropical regions. A wide range of chemical compounds including alkaloids, flavonoids, chromenes, benzofurans and terpenoids have been isolated from this species. Extracts and metabolites from this plant have been found to possess pharmacological and insecticidal activities (Okunade 2002) [13]. *A. conyzoides* is widely utilized in traditional medicine by various cultures worldwide, although applications vary by region. In Central Africa it is used to treat pneumonia, but the most common use is to cure wounds and burns (Durodola 1977, in Ming 1999) [14-15]. Traditional communities in India use this species as a bacteriocide, antidysenteric, and antilithic (Ming 1999) [15].

A crude material isolated from the leaves of *A. conyzoides*, a herb widely used by traditional medicine men for wound healing, is shown to exhibit antibacterial activity against *Staphylococcus aureus in vitro* (Durodola 1977) [14].

It has been found that ingesting *A. conyzoides* can cause liver lesions and tumors. The plant contains the pyrrolizidine alkaloids lycopsamine and echinatine.

2. *Bidens pilosa* L.

In sub-Saharan Africa, the fresh or dried tender shoots and young leaves are used as a leaf vegetable especially in times of food scarcity. It is an ingredient of sauces accompanying the staple food. The leaves are, fresh or after parboiling, dried in the sun and stored as powder for the dry season. In Uganda, the leaves are boiled in sour milk. Old leaves are not suitable for consumption because they have a bitter astringent taste.

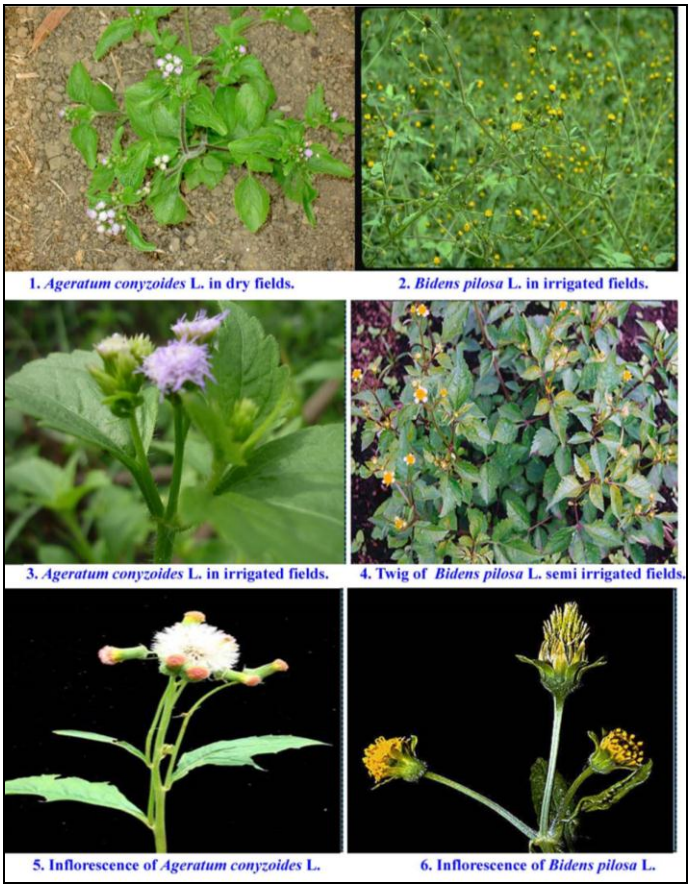

Fig 1

Bidens pilosa is used as a medicinal plant in many regions of Africa, Asia and tropical America. Roots, leaves and seed have been reported to possess antibacterial, antidysenteric, anti-inflammatory, antimicrobial, antimalarial, diuretic, hepato-protective and hypotensive activities. In Uganda, five different medicinal uses are known: the sap from crushed leaves is used to speed up clotting of blood in fresh wounds; a leaf decoction is used for treating headache; sap from the plant is put in the ear to treat ear infection; a decoction of leaf powder is used to treat kidney problems; and a herbal tea made from the plant decreases flatulence. Extracts of *Bidens pilosa* are used in southern Africa to cure malaria. The Manyika people in the eastern highlands of Zimbabwe retain the first water used for cooking *Bidens pilosa* foliage for later use as a medicinal drink to cure stomach and mouth ulcers, diarrhoea, headaches and hangover. The Zulu in South Africa use a suspension of powdered leaves as an enema for abdominal trouble, whereas in Congo a concoction made from the whole plant is taken as a poison antidote, or to ease child delivery and to relieve the pain from hernia. In South Africa, strong decoctions of the leaf taken in large doses have been reported to be helpful in treating arthritis. In Côte d'Ivoire, the plant is used for treating jaundice and dysentery. The plant sap is applied to burns in Tanzania. In Nigeria, the powder or ash from the seed is used as a local anaesthetic and rubbed into cuts. The Giriama tribe from the coastal areas of Kenya use a leaf extract to treat swollen spleens in children. This tribe also uses a mixture of the dried and ground leaves of *Bidens pilosa*, soap and hot pepper as an insecticide for the control of leaf miners and other insects.

In Nanyuki, Kenya, *Bidens pilosa* is collected for the extraction of natural dyes. Among the Efe of the DR Congo the root is washed and dried, then used as a painting brush. Livestock browses on the plants and in South Africa *Bidens pilosa* has been used as a fodder for pigs. However, dairy cattle are discouraged from browsing on it because the aromatic oil present in the plant has an objectionable smell that can taint milk. Chicken feed on the seed. In Uganda and in Mexico, the leaves are used as an invigorating or stimulant substitute for tea; while in the Philippines the flowers are used in the preparation of a kind of wine. The flowers are a good source of nectar for honeybees. The paste of leaves of *Ageratum conyzoides* and *Bindens pilosa* is also used in skin diseases. The juice these plants leaves is also applied during fungal infection and ringworm.

4. Conclusion

Despite the logic of developing community-focused services for dermatology, such services have seldom been achieved (Hay, *et al.*1994) [3]. Skin diseases remain a low priority for many health authorities, despite the large demand for services. Addressing the potential for controlling skin problems by means of simple and effective public health measures should be a realistic target for alleviating a common and solvable source of ill health. An effective plan, team, and basic dermatological formulary can do much to improve matters (Estrada *et al.* 2000) [16]. This chapter outlines some of the challenges for such programs and some of the deficiencies of current provision.

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