DEVELOPMENT OF A RURAL COMMUNITY HEALTH CARE MODEL BASED ON INDIAN INDIGENOUS SYSTEM OF MEDICINE

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ABSTRACT: Based on the principles of primary health care as outlined by WHO at the Alma Ata Conference in 1978, many voluntary organizations in India have been formulating, organizing and experimenting with the comprehensive rural community health Schemes. The goal is to identify the felt needs at both individual and community levels and facilitate direct participation in decision making, develop suitable alternative, ecologically Sound indigenous models for socioeconomic well-being. In this context the Indian system of medicine has a useful and complementary role to play in the preventive and curative aspects of primary health care programmes. With the above objectives in mind the investigators undertook a brief survey of a “comprehensive rural health” project. The primary aim of this project is to develop a community health care model using innovative alternative methods using Indian indigenous system of medicine and participatory research techniques to improve rural health services of the surrounding under privileged villages. Many gaps exist in the assessment, however, a birds eye-view is presented here.

Introduction

Based on the principles of primary health care as outlined by WHO/UNICEF at the Alma Ata Conference in Soviet Union, 1978, many developing countries including India, have been formulating, organizing and experimenting with primary health care programmes. Both in public and private voluntary sectors. In many developing countries, geographical, Quantitative, economic, political and cultural barriers still pose a problem affecting rural Health care delivery services in terms of accessibility, availability, acceptability and effective utilization.

So far in India, Government’s centralized health care services using modern medicine and PHC approaches have been faced with many administrative and bureaucratic weaknesses in implementation and unable to meet the
modern health care services are largely hospital or clinic-based, expensive, doctor oriented, basically urban-foreign, often imported, and disease-oriented. They are inaccessible to a large rural population. Adapting health policies to rural population. Adapting health policies to rural social reality pose many challenges.

Many voluntary organization in India prefer development of new alternative indigenous designs of community-based health care at grass roots level through developing strategies based on principles of self-reliance, direct participation, felt needs and priorities and indigenous technology. Any health care system to be really meaningful and effective must be culturally, socially, politically and environmentally close to the masses of People. In this context, the Indian indigenous system of medicine is seen to offer a useful and vital complementary role in the preventive and curative aspects of primary health care programmes.

With the above objectives in mind, the investigators undertook a brief survey of a “comprehensive rural health project at the invitation of Aryavaidyan Rama Varier Educational Foundation of Ayurveda (AVREFA)—a private Indian Indigenous medicine/health organization established in 1943, to promote and offer services of Ayurvedic health care systems to the public in all parts of India (2). The project started in April 1984 in a village 25kms from Coimbatore, Tamil Nadu, South India, is comprised of a Rural Health Centre (RHC) and an Ayurvedic medical college established in 1978. The RHC is jointly financed by USAID (75%) and Ayurveda Foundation (AVREFA) 25% approved under a central government scheme for providing financial assistance to private voluntary organizations in health sector (3,p.3). The project has multiple objectives:

1. RHC has formulated a comprehensive integrated health system model where education, training, participatory and clinical research will stem from RHC and the college, and will be linked through the establishment of satellite units and village posts, in the regional/local setting, acting as nuclei for social health movements. The participants and beneficiaries will be the surrounding underprivileged, underserved, deprived, neglected and often exploited peripheral rural and tribal (hills) communities with a combined population of 152,000 in 22 villages.

2. RHC is developing innovative alternative methods using the popular Indian indigenous system of medicine (IM) namely Ayurveda and siddha within the framework of the PHC model. This involves identifying, classifying, simplifying
and integrating relevant materials from IM principles, formulas and treatment into a PHC model as well as development of appropriate instructional materials for education, training and research. The other related objective is to promote clinical research and drug standardization at the RHC.

(3) To introduce a geographic survey of distribution of medicinal plants, and to provide protection, conversion, utilization and systematic cultivation of forest and medicinal plants of value for the use of local village communities, and mobilization and maximum utilization of local human and physical resources of the area.

(4) To develop community self – reliance in health services to achieve a need-oriented, people – based, research – oriented and an ecologically sound, preventive and rehabilitative health care model that is acceptable to the community which will also be involved in decision – making, planning, implementation, management and control of the programmes. It would also include the guidance of RHC organizers, the college, International Institute of Ayurveda, and indigenous practitioners. Group leadership, village committee formation, participatory methods and commitment in development work will be introduced through community workers programmes.

RURAL COMMUNITY HEALTH CARE

Before, analyzing the model set out by the project, it is necessary to review briefly in Indian context, the need for alternative rural – based community health care service model as opposed to the Government sponsored community – oriented/ directed model from above.

Modern medicine -- failures to reach rural populations

In recent years, many writers have become disillusioned with ineffectiveness of centralized approach to health care delivery to rural populations. Centralization means the hierarchy from the central ministry to the villages in more or less prefixed curricula of what people have to learn about their health (4, p.51). Promotion of health by government employed health workers is often not accepted by people or practiced regularly of effectively.

MODERN MEDICINE VS TRADITIONAL MEDICINE

The political and social organization of medical care based on western medical care based on western medical care based on western medical ideology and technology see health and illness as predominantly biological, and pathophysiology of disease is emphasized. Curative remedies are given. It continues to ignore the socio-cultural – political
environment of rural Communities on the other hand, Indigenous medicine like Ayurveda embraces both cure and prevention. It is holistic in approach and psychosomatic (5,6). Appendix 1 illustrates the importance of Ayurveda. As it is often expressed by many writers on Indian medicine, that “the choice of a medical technology be it modern, Ayurveda acupuncture or any other natural or man made technology’s efficacy for a particular disease in question, its immediate availability, cost effectiveness and psychosocial acceptance” (7, p. 191). Both the modern, scientific and traditional forms of health care systems are officially recognized and supported by the Government of India, training programmes for traditional systems of medicine (namely, Ayurveda, Siddha and Unani) are offered by officially recognized institutions. Government health institutional systems (since 1980’s) provide a link for (integrating) traditional medicine through incorporating it in selected primary health care centers in many development in (1, p.210).

If health care services are to be provided to all people of the world by the year 2000 (WHO, Alma Ata Conference) it is quite clear that alternative approaches have to be developed and supported to meet the basic health needs of rural people. The WHO Assembly’s resolution in 1976 and 1977, urged member states to give adequate importance (development and use of) to traditional systems of medicine with appropriate regulations suited to national health system. Traditional medicine consists of a variety of technologies and techniques which are not fully comprehended or understood by modern medicine. It is mostly local/regional, patient –centered and more importantly noniatrogenic. However, in India there is no practical Ayurveda theory in general and its preventive views in particular in all their depths, seems to be impossible task for ordinary and poor people”, and often illiterate rural communities, i.e. the old Ayurveda regiments are far from being in accordance with today’s living and working conditions (4,p.50).

Primary Health Care – some principles, perspectives and shortcomings

Primary Health Care is seen as a total concept. Modern medicine treatment is curative and disease –illness oriented. PHC is seen as positive, holistic in approach, emphasizing prevention. If primary health care (PHC) efforts are to be successful, the following general principles should serve and felt needs of the community; (ii) an integral part of the national health system where technical supply, supervisory and referral supports to peripheral level are essential; (iii) part of an integrated community development activities such as agriculture, education, housing, public works, communication, etc; (iv) fill involvement of local population in the formulation, implementation and control of health care activities, based on local needs and priorities; continuing dialogue between
the people and services in decision – making is necessary; (v) an integral approach of preventive, promotive, curative and rehabilitative services for the individual, the family and the community. The balance between these services should vary according to community needs and may well change over time; (vi) placing a maximum reliance on available community resources, especially those which have hitherto remained untapped, and should remain within stringent cost limitations that are present in each country. (vii) including health workers trained for performing most of its activities at the grass roots level.

India has established PHCs since 1952 in each of its development block with a population coverage of 80,000 per center. Though many PHCs and sub centers have been established throughout India and impressive in quantitative terms, very little progress was made over the last 3 decades in qualitative terms of effective utilization of its services. The list of shortcomings is long: (1,p .211; 8,p.70): (a) limited sphere of its services (within average 2.5 miles radius) under their jurisdiction; (b) newly built hospitals and upgraded hospitals have been mostly located in urban areas. But for rural areas, one out of every four PHCs was upgraded to a 30 bed rural hospital, thereby reducing the number of PHCs. (c) the failure of administration to provide adequate diagnostic and laboratory facilities and referral systems; (d) reluctance of health department to decentralize administration, supervision and control; (e) other difficulties are related to medical personnel and technical staff problems; their non – availability to implement the programme effectively; and their reluctance to live in interior places with poor or inadequate transportation, communication, housing and other infrastructural facilities and basic amenities. In addition many persons posted to the situation

Prevailing in the rural areas and thus fail to identify themselves with providing medical relief through drugs and ignore the social and preventative aspect, especially environment sanitation, hygiene, nutrition and health education. Since the causes and prevention of illness, disease and death vary in rural and urban areas, it is essential to know the causes that are connected with rural life and the appropriate/consequent methods of prevention. Medical education needs reform. New curriculum for medical education to produce doctors for medical education to produce doctors for rural areas needs to be designed. “The trained personnel should not only learn the local problems and socio – cultural patterns, but also identify themselves with the people into confidence and involve them in planning and implementation through their active participation in spite of recognizing its need. This concept still needs functional support. As Seal (8,p. 73) notes in his assessment of India’s PHCs programme.
that “in the question of involving people, NGOs and voluntary organizations have a long history of active involving in the promotion of community well – being. They exhibit a special capacity, often a commitment to work within the community in response to its expressed needs, and then they can also serve as liaison between the community and the government. They also support the view that the promotion of PHC must be closely tied to a concern for total human development, i.e. the holistic view of health encompassing social, mental and spiritual well – being”. It is argued by Ghoshal (1) that medical profession by virtue of their cultural background and training, and aspirations cannot understand or function effectively in the context of village health problems. The only effective supervision of health workers must come from the community itself. The community must become fully aware of their health problem and understand the roles of various workers who will be responsible to them. “The public as well as the medical profession confuse illness with health, which are diametrically opposite. The ancient belief that health is a positive stage of physical, mental and social well being which is so well emphasized in our indigenous system of medicine must be revived” (1, P. 214).

RURAL COMMUNITY HEALTH PROJECT
The Study Area
The project activities hope to cover an area of ........, in two administrative development block with a total population of approximately 1,52, 000 (Fig. 1) living 22 village settlements with a Population size, varying from 100 to 8000. The pilot area consists of four villages. Veerapandi, With a sizeable tribal (4853) population living in hills, Nanjundapuram (population – 6000) and Thakkampatti (population --- 7551) are both interior villages and Narasimmanaickenpalayam (population --- 4,843) and periyanaiickenpalayam (12, 200) are towns comparatively industrialized.

Physical features:
All the sample working villages are along the foothills and valleys of western Ghats – with altitudes varying from 1500’ to 1900’, the highest point being Thadagam village at 6070 feet. The average rainfall of the region varies from 75cms in the plains to 200 cms in the hilltops. Most of them are dry point settlements whose livelihood is based on seasonal monsoon rainfall. Due to scarcity of water the predominant crop is sorghum. Other crops grown are rice, pulses, oilseeds groundnuts, cotton and sugar. Comprehensive and detailed data, and information on land use survey, land capability survey, soil and mineral and water resources are still incomplete.

Demographic and socio – economic characteristics:
Demographic data (age, sex, occupation, religious composition) for all project villages is still not complete. A survey of employment structure in one village, Thakkampatti, shows agricultural labourers as a predominant occupation. Nearly
10.7% of the population of the project area are industrial labourers. Most of the people in the villages have acquired primary education. The major industrial activities are textile mills, manufacturing of mill machines, rice mills, machine tools, flour mills, bricks, lime kilns, etc.

Public amenities and services:
In the entire project region, there are two mother and child welfare (MCW) centre’s, one at Thakkampatti, and the other at Thadagam. Periyanaiickenpalayam has one hospital and a health centre with 6 beds. Every village has a post office. A few houses are electrified. Water is mostly supplied from wells. Maintenance of bore wells is poor. Trade, commerce, banking facilities and industry are located in periyanaiickenpalayam. Here, there is only one bank, two agricultural credit society.

Accessibility:
Industrial development, health facilities, and other economic activities have to a great extent focused on a narrow strip of land on either side of the highway on the eastern side (Fig. 1) of the project area. Farther away to the northern, southern and western sides of the project area lacks transportation facilities. Uneven land, hills and mountain ranges (western and northern side) and underdeveloped economy have compounded the problems. All the scattered villages are interconnected by foot paths and unmetalled roads.

Development problems: some perspectives
The villages in the study area exhibit common characteristics of social poverty and economic under development, a combination of hunger, malnutrition, low resistance, poor health status of women and children, high infant morality, low life expectancy, poor housing, poor sanitation, water scarcity, ill health, water-born and air – borne diseases, land – lessness, indebtedness, unemployment, illiteracy, ignorance, “social apathy “ such as lack of will and initiative to make changes for the better. The major health problems are poverty induced diseases due to malnutrition and other nutritional deficiencies. The common communicable diseases are scabies, diarrhoea, tuber, culosis, worm infestation, jaundice, leprosy; non – communicable diseases include bronchial problems, respiratory, anemia, skin diseases (3,p.56) etc. There are industry related health problems besides the industrial hazard.
One of the major problems (other than shortage of food and acute water scarcity) faced by the community is that the infrastructural facilities are either inaccessible or too far away to be of real use to their needs.
It is recognized the determinants of health and illness are founded in the human environment with its socio-economic-political factors of development. The government so far has not succeeded in overcoming the poverty and under-development of these peripheral village
settlements. As with most government programmes, there are no systematic surveys or evaluation to assess the actual implementation of its schemes or plans. Government officers have not taken much interest, especially in tribal village development. The very few existing health services are working at a grossly low level of efficiency which has led to considerable underutilization. There is no basic data on villages – socio-economic conditions to work with. Thus adapting rural health policies to socio-economic realities of villages poses tremendous challenges.

It has been pointed out by several writers (10, 11, 12, 13) in recent years, that despite the efforts made by the Indian government (since 1952 – constitution and special laws demeanouring to uplift the scheduled tribes) in developing special development programmes tailored to the tribal problems (9, p.40), failure of government programmes are identified as many: including corruption, mismanagement and diversion of development funds, poor training, lack of will, commitment, interest, indifference in understanding tribal cultures and way of life.

In recent years, marginalization process is noticed. Lack of investment in tribal agriculture and health services, gradual alienation and encroachment of tribal lands by non – tribals for private industrial and government’s reserve forest area and military camps. Money lenders, landlords, traders, local panchayat councils, development and revenue officers, local administrators and magistrates all seem to have some dominant and powerful role or other to play in circumventing laws and regulations in tribal disfavor. Many kinds of restrictions are being imposed on tribal and other rural people (e.g. in collection of firewood or other forest resources by the state forest department). Out migration of the young is common.

Jones in his study observed that “Government development programmes, transferred without modification from the culturally and environmentally different plain areas and because their implementation has been left to poorly trained and culturally prejudiced non-tribals officers, failed. They have not involved the tribals in their own development” (9). Development is seen as something to ‘uplift’, done to tribals by non-tribals and not a process in which the tribals are actively involved and in control (9, p.47). This holds true for this project area too. It is also found in general that the funds allocated for tribal and peripheral villages development have been totally inadequate for the immense task of providing the necessary infrastructure and inputs. “After recognition of title to land, the maintenance and problems of health standards is the second fundamental prerequisite to the tribes survival” (9). For example, indigenous medicine in tribal and adjoining rural communities has usually controlled endemic diseases and
met the needs of its society in its traditional habitat. Therefore, the object of health measures within the context of development is to foster existing therapies and to avoid the introduction of unfamiliar diseases and conditions that might disrupt existing standards of health (e.g. abrupt or rapid social change and stress, modifications, etc.) (12, 13, p. 21). The social resources that help tribal members manage and cope with change are limited. As a principal, it should be recognized that the village society should have the rights to the resources of its traditional environment and what role the people play in the exploration of the resources they have. Tribals receive few benefits from the resource development decisions made by the distant bureaucrats in the state capitals (13, p.20). Four fundamental needs of “tribal societies” and their survival are identified (13, pp. 11-13): (i) recognition of territorial rights; (ii) protection from introduced disease; (iii) time to adapt to the national society, and (iv) self – determination i.e retention of cultural, social and ethnic autonomy – continued control over their resources and institutions, customs, beliefs, language and means of subsistence or production. The study area faces similar issues to be tackled.

Objectives
On the basis of above observations of development status of the study area, some of the basic principle and objectives as laid out in the project proposal are derived (refer p. 4 for already stated objectives). The long term objective is to improve the health and quality of living environment of rural communities. Overall, in long term, the project model hope to achieve an environment in which a decentralized, decommercialized, debureaucratized, and a democratic participatory system through community self – reliance in health practices, appropriate indigenous medical technology with continued research and evaluation, as well as protection and conservation of forest and plant resources of value to the local settlements will be instituted. The project hopes to improve the quality, effectiveness, accessibility and availability of traditional medicine. Even through the initial objectives is to develop a good health care model, it is hoped to coordinate health sector activities of the locality (e.g. dry farming techniques, improving food production, irrigation and water resource development). Traditional way of life is more or less modified in accordance with the preferences of the population itself. Participatory approach to evolve a community – based social health development system model involves at least four basic principles (14, p. 148; 15; 16;) (1) to bring about organized community action by first using health as a major objective; (2) to increase popular participation in decision – making processes; (3) to inculcate self reliance to bring about maximum utilization of existing resources; (4) to create awareness of structures that hinder human development.
THE FUNCTIONAL ORGANIZATION OF THE PROJECT

The structure
The organizational structure to date consists of a Rural Health Centre (RHC) and an Ayurvedic College at the foothills of the Western Ghats at Patanjali puri (30 Kms away from Coimbatore). This will serve as a base camp from which many activities will originate for nearby village which are backward and sensitive to any king of outside action. The project centre (RHC and the college) presents a refreshing and ideal research site with natural scenic beauty surrounded by hills, roaming elephants, panthers, etc. The complex hopes to provide a training ground for undertaking rural health development activities in villages in a comprehensive manner.

The Ayurvedic college was established in 1978 with several objectives even before the Rural Health project was envisaged (Table 1). The College is in need of an innovative curriculum in the teaching and training program of Ayurveda relating to medical, geographical and epidemiological aspects of diseases; environmental relations, as well as appropriate methods of designing locational and spatial considerations in developing health care centres and networks in the region.

The rural health centre (RHC) is located close to the College because of the innovations envisaged (3, p. 36). The program in its initial stage is flexible in its implementation. Patterns of coverage and services of RHC and its satellite units and village posts are outlined below (Figure 2):

Rural health center
RHC is located Patanjali puri in the working village veerapandi, the Rural Health Center will coordinate the programs. The Center will have many components. (Figure 2).

Satellite units
Four satellite units will be established to cover an initial population of 26,000 of which one will be established in the tribal area, another in a predominantly industrial area and two others in interior villages to provide basic health services.

Mobile units
A team of physicians and paramedical staff will visit satellite units and village
Table 1: Ayurveda College – objectives

a) To adopt village and take up health oriented development programs within the framework of Ayurveda and Siddha system
b) To institute study of art and science of Ayurveda and Siddha.
c) To organise and run undergraduate, post – graduate and doctoral courses in various disciplines of principles and practice of Ayurveda and Siddha.
d) To institute Fellowships.
e) To encourage theoretical and applied research in various disciplines of Ayurveda and Sidha.
f) To publish research papers, periodicals, other literatures and textbooks.
g) To unearth catalogue and document in substantial quantity of ancient literature available in different parts of the country.
h) To encourage and support the study of Sanskrit as the vehicle to study and research in Ayurveda.
i) To study socio – economic problems facing the community and to undertake development program for community health.
j) To equip students to be health- care- takers of the community.
k) To train para- medical and auxiliary person engaged in health care delivery.
l) To provide vocational training facility to traditional physicians.
m) Standardisation of all aspects of methodology including diagnostic tests, identification criteria etc. in order to promote comparability of data between Ayurvedic and Allopathic systems of medicine.
n) Education of people in basic health problem and their remedy so that the control program may be more effective.
o) Bio – chemical research to increase knowledge and better understanding of drugs action and interaction.
p) Development of rural welfare with a view to rehabilitating chronic sufferers.
q) Co – operation with national and international organisations of common objectives.
Health posts to assist in the implementation of specific programs at frequent intervals.

**Village health posts**

These would act as the peripheral service units for and supported by the RHC and its satellites. The definition of their functions would be based on the experience in the pilot area. They would be staffed primarily by the health promoter and an auxiliary nurse midwife, if required, under the supervision of the community. The patients who are found to be beyond the capacity of RHC would be referred to the Arya Vaidya chikitsalayam and Research Institute, 20 kms. Away, kasturba Gandhi Memorial Siddha and Ayurveda Hospital and Research Center 30 kms. Away and the Coimbatore Medical College Hospital 17 kms. Away.

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**PROCESS OF THE WORK OF THE PROJECT**

**Workshop on traditional medicine and PHC**

Before the project started functioning, a workshop on traditional medicine and primary health care was sponsored and organized by the A.V.R.
Educational Foundation of Ayurveda at their college campus for 6 days. Fifty participants (scholars, voluntary organizations, research scientists, health educators, community health workers, Ayurvedic and siddha practitioners, etc) from different states of India with a wide background of professional interests in indigenous medicine shared their views and ideas. The objective of the conference was (1) to formulate strategies and programmes for developing a model that would integrate indigenous medical system, Ayurveda and Siddha in PHC; (2) to identify areas for developing appropriate instructional materials for educational training, teaching and research.

The discussion generated wide-ranging viewpoints. Many recommendations were made by the participants on ways of adopting an Indian medicine system, principally Ayurvedic principles, set guidelines and practices in a PHC model. Many practical suggestions were given (3, pp. 11-19). Eight elements of PHC principles were adopted as a base upon which to build the model (3, pp. 15-19): health education; nutrition; immunization; mother and child health; environmental sanitation and control of common diseases, chronic diseases, injuries and essential drugs; mental health, and research and development. Figure 3 illustrates some of the components.

**Medicinal plants and their utilization:**
The traditional system utilize medicinal plants for their medicines. Nearly three–fourths of the drugs mentioned in the various pharmacopeia are grown in India in their natural state. Even though a lot of work and research has been given to organized cultivation. The primary sources have been in the uncultivated growth, mostly from the forests (17, pp. 262 – 263). The collectors of the medicinal plants have been predominantly the tribals for whom it is a major source of income. They may often be exploited by the middle men and traders and receive only a paltry sum for their hard work.

The escalating cost along with the depletion of the medicinal plant wealth, the lack of proper assessment of the potential, and research has compounded the problem of Practitioners of indigenous medicine as well as rural and tribal folks who by tradition utilized many of these plants. In India medicinal plant use has been
limited to a select few items which are considered to be of economic importance, primarily for export or urban – based markets. For example, the priority for internal demand has been assessed on the basis of the requirements of the large, modern pharmaceutical industries involved in the production of Ayurvedic formulations and other plant – based products (18). The demand of the conventional Ayurvedic pharmaceutical units using traditional modes of production, the community level indigenous practitioners, nor the common man’s traditional home remedies have been of much concern among Policy makers or modern scientists, Several guidelines are set forth in this regard;

i) A survey of geographic location and distribution of medicinal plants grown in and around villages;

ii) Cultivation of required and important medicinal plants for PHCs with due regard for ecological factors;

iii) Identification of local plants with their medicinal value;

iv) Collection and preservation of plants;

v) Distribution of selected medicinal plants to the villagers to grow them in their backyard to meet common health problems (day –to – day);

vi) A detailed note regarding the usage of plants for different ailments will also be given to the villagers in the form of small illustrated booklets written in local languages; and

vii) Simplification and standardization of treatment procedures and offerings them through the local practitioners of traditional medicine.

Common ailments and Ayurvedic formulations:
Scientific research in medicinal plants is usually carried out in the government and private research institutions, agricultural universities and pharmaceutical companies or on a single compound formulation studied chemically or clinically against a particular disease. Ayurvedic treatment is suitable for common ailments of PHC and is usually very effective without any side effects.

On the other hand, the project hopes to identify most commonly used formulations in the treatment of common ailments, based on easily available local resources, and the number of drugs for each ailment will be kept to a minimum and the number ingredients are to be identified and standardized along with the
formulations are established, and they will be included in a well-conceived medical kit along with manuals which will be given to local traditional practitioners (16, p. 27). For example, such manuals might contain information on: (1) symptoms of common ailments for easy and early diagnosis; (2) drugs (single formulations) that can be administered for such ailments; (3) the method of ingredients; and (4) the method of manufacture of the common formulations.

Clinical research and drug standardization:
So far no work is available on the formulations selected for the present project covering all aspects of standardization, i.e. botanical, clinical, chemical, along with the allied aspects, shelf period, preservation, storage, in the context of PHC. The project has just set up a mini-pharmacy-cum herbal depot for a model to be developed for the preparation of standard Ayurvedic and siddha medicines and other simple remedies with the help of initial data on availability of medicinal plants, ideal sources of collection, collection seasons, stock positions, different shelf-life period for different types of formulations, proper time of collection, storage, manufacturing and distribution schedules (3, p. 46). Ayurvedic classics, providing guides for standardization aspects of Ayurvedic drugs will be used for this purpose.

Functional linkages --- from RCH to villages based on participatory health care processes:
The project organizers reject the idea of the current three-tier health system with its rigid structure of policy makers on one end, and at the other end the implementors in the middle. A two-tier system is preferable where policy makers are implementers in direct action (18, p. 101). The final objective is to develop a decentralized, democratic functioning and a much needed lower level of village decision-making process. Models now take into account a much closer relationship with the people themselves. The traditional way of life of the communities are more or less to be modified in accordance with the preference of the population itself (3, p.4); i.e. felt needs both at the individual and community level are taken into account by evolving a community-based evaluation technique in which active community participation is expected and demanded. Figure 3 illustrates the components of a community-based social health system (18 pp. 100 – 101).

Education, training and research
The project’s success depends on the special training and education of not just the villagers but the staff themselves in participatory research techniques at community levels which is a new area of research and an action-oriented models (19, 20). Both the Ayurvedic college and
RHC are actively involved in this program. Community health workers (CHWs) will form the backbone of the basic guidelines set by the project are:

---CHWs will be selected from the villages by the villagers themselves on the basis of personal leadership abilities, literacy and their interest and willingness to serve their particular villages;

---CHWs are asked to conduct preliminary surveys in their communities prior to their training, the results of which could provide them with some baseline data for the first training period (14).

---CHWs are required to create work in their own village, to share their knowledge with their respective communities, to encourage community participation and to develop committees for various tasks to improve their environment; CHWs will provide first aid and referral service.

---CHWs are required to conduct regular meetings to discuss health concerns, economic issues and local development activities (e.g. water and irrigation problems, usury, low agricultural wages, unemployment, etc). Generally communities are more interested in discussing social, marital problems, etc. than local development activities. General meetings are to be held monthly to access problems and accomplishments.

The community organizers are generally college graduates and professionals with experience and commitment to the participatory research movement. The residential training is for all staff at RHC and emphasizes discussions, field trips, demonstrations, dialogues and questions. The students at the college are also involved in the extension programmes in order to obtain a practical experience from the area. Being involved in all Practical activities of the center, they hope to develop sound judgement and understanding of the programme and the social reality of the area. The following account of our preliminary field observation illustrates the evolution of the participatory process at work in the project area:

(1) Direct participation of the people in decision – making. Judgement is now being given by the (project) villagers and tribals themselves in identifying their problems, finding and applying solutions. As for example in a tribal village at china Thadagam, people themselves invited the project organizers to open a health center in the temple. As the temple (Matt) was previously used by derelicts, deviants and drunkards for gambling, villagers decided to use the place for a village health post based on siddha medicine and free it from the wrongful activity of gambling and alcoholism. At the
same time it is the tribals themselves who opted to donate land or collect and procure herbs of medicinal value and instead of selling them to contractors they preferred selling them to the RHC complex. In the same way the meetings that are held, when they are held, who will attend and what will be discussed.

(2) Involvement of people. The method adopted by the project officials to involve people is a slow, and persistent steady persuasion technique. It is taking place by talking place by talking to the villagers or community on all topics in which they take interest, and actively participate in their cultural activities like singing and dancing with them, listening to and the invitation to the women to come to it as well as its importance to them was all passed on to the people while singing and dancing with them by the project health organizers. Community organizers also use regular, routine demonstrations, field actions, and frequent meetings to create critical awareness, consciousness, confidence and trust in participating in RHC projects.

Information strategies field survey and methods

For a successful formulation of plan and programmes and their implementation. A full assessment of physical, economic, social, cultural, demographic and political characteristics of the area are essential. The project consists of an initial preparatory phase followed by an intervention phase. Initial preparatory phase is still being worked out. It includes a situational analysis survey consisting of: (1) comprehensive base line survey (2) spot light survey using sounding techniques and (3) assessment (3, p. 44).

(1) Comprehensive base line survey is highly complex and time consuming, yet many critical geographical issues are to be identified and understood. An intensive assessment of the area remains to be taken. There is a need to improve the agricultural and economic status, and find a solution to the severe soil erosion and flooding during the rainy season. Biologists, botanists, geographers, and water resources technologists are needed to assess and map the physical and human resource technologists are needed to assess and map the physical and human resources of the region. Linkages with other academic institutions and private research centers for further consultation and work are envisaged. Due to lack of information in the above
elements, numerous problems and difficulties were and are even now encountered in the process of establishing the identity of the project.

(2) Spot light survey using sounding techniques are used (3, p. 45) to avoid delays until baseline data are collected for quick and clear appraisal. One can begin on the basis of what may seem very inadequate information and use the data it generates as it goes along i.e. “learning by doing” (Rapid reconnaissance). Several methods are being tried in this regard: (1) identification of key indicators; (ii) quota sampling and cluster sampling (smaller=stratified occupying and economic group in the selected villages; and (iii) using of exiting data from secondary sources - records/reports, service data, health and economic data, if any. (iv) field methods initiated so far: direct observations of living conditions, environmental hygiene, clues, symptoms as evidence of underlying problems; listening and asking, group interviews, felt needs, lay reporting, simple community surveys etc.

Initially for proper assessment of the area and the people, a door – to – door household survey concerning number of people, age, sex, family characteristics such as marital status, education, income, occupation, health conditions and problem was conducted. All the houses had to be first numbered by the project workers with the cooperation of the village leaders.

The third line of survey method being used by the project is to try to develop methods where by local village institutions will partake in observation and experimentation and improve their own performance and capacity.

(3) The intervention phase (at RHC) has the following steps through participatory action and research: (3, pp. 46-47): identification of tasks, manpower requirements, training, allocation and distribution of task and resources to manpower, material requirements, funds, local resources, techniques, technologies; and monitoring of progress, resources, evaluation at every phased stage.

THE SCOPE OF THE PROJECT: SOME REFLECTIONS

Since the project is just a beginning of an experimentation model there is lot of scope for further upgrading, extension of innovative services and implementation to other areas both around the project and new areas. Perhaps the people of other villages and other areas might start services in their villages if visible success
is observed. For example, in one of the villages, namely chinna Thadagam, the people themselves have requested the project organizers to dispense medical and educational services in their villages and are willing to participate in a comprehensive development plan.

--- project demonstrates its ability to create a working process from within the system, starting from grass roots (at individual and community level) giving scope for potential of and utilization of indigenous medical technology, its principles, concepts and practices.

--- It has modest capital investment; it aims at low cost effectiveness simplicity and maximum utility.

--- A wide scope has been given first to assess felt needs and devise suitable approach to satisfy needs.

--- Data collected directly from the participants are likely to be more accurate than if obtained by a random survey of villagers. Since most of the data are collected in groups, exaggerated responses can be checked and avoided.

--- RHC concept hopes to develop an integrated health system model where health services, education and training and research in medicinal plants of local value and drug effectiveness can be provided using appropriate technology, concepts and principles.

--- The existence of Ayurvedic college facilities involvement of students to get a thorough practical experience from the area. With the completion of the courses they will turn out to be not only good Ayurvedic and siddha practitioners but as capable social planners and administrators of not only health sector alone but the total rural and tribal area development. At the same time they will also be free to choose a career of their own as pharmacists, planners and community leaders etc. New form of curriculum and syllabus, encouraging active participation of students in the developmental activities of people, will certainly raise the quality and standard of education and deviate from the monotonous and stereotype type of formal education.

There are also many other advantages of creating new voluntary organizations, as RHC concept of this project (Refer tables 2 and 3):
| --- define functions to cover project | --- training can be expensive as indigenous instructors are used |
| --- introduce participatory based research – techniques and generate a sense of involvement of all | --- language problem is eased assuming that the instructors are fluent in the local language |
| --- create new channels for interaction and dialogue with rural people | --- training is very specific to the need of the project |
| --- create new channels for interaction and dialogue with rural people | --- training is very specific to the need of the project |
| ---motivate individuals, communities and dialogue with rural people | There is no interruption of the work schedule as trainee continues to perform his routine tasks (e.g. CHWs) |
| --- can focus on specific issues or problems | --- technicians are given low profile in the beginning than managers, organizers and planners- “instruct than perform goal” first |
| --- responsive to local needs and priorities | --- allow long term participant training |
| ---bring relevant disciplines and expertise to bear on problems | Build individual and group capacity |
| Can generate multidisciplinary focus | Build grass organizational capacity i.e., capacity building role model is planned |
| ---can select groups or individuals to specific tasks | --- not interested in visible short term results yet field demonstrations are carried out |
| --- value an independent viewpoint | --- field team has a permanent base close to the area |
| --- allow some freedom for individual judgement in assigning work | --- link to reach network can improve qualities of development studies programme to implementers |
| --- require sharing of information and staff interaction; team approach ; open discussions/meeting; mutual respect and understanding among team members | --- aim to transfer ownership of the programme to implementers |
| ---encourage informal work groups and communication channels; and social events are used by field mangers to guide the implementation process | --- create a flexible environmental that supports innovative problem-solving rater than routine application of predetermined solutions |
| ---Simplify funding procedures | --- can work with both public and private agencies |
| ---may save costs by reducing personnel needs | Source: Morss and Gow (21, ch. 2& 5) and pagaduan and Ferrer (14)
Table 3: Conventional social science research VS participatory Research for community - based participatory rural health development programmes

| Conventional social science research in development projects | Community - based participatory research – a process approach to development |
|-------------------------------------------------------------|--------------------------------------------------------------------------------|
| ---involves community-directed and community –oriented approach | ---involves full active participation of the community in the entire process of planning, decision making design, implementation, control and management |
| ---object-subject separation is emphasized | ---a subject-subject relationship is advanced |
| ---researchers dominate and initiate research process | ---partnership is a prerequisite: unity of equal person goal emphasised |
| ---urban educated, urban-based professionals lead the way | ---researcher is seen as a facilitator and co-ordinator |
| ---elicits answers from people | ---provokes people into thinking; persuade them to ask more questions |
| ---understanding of researchers increase | ---a better understanding of their own situation |
| ---community participation occurs in implementation phase only | ---raise collective level of consciousness |
| ---learning experience of community is limited to only carrying out the tasks already planned for them | ---researchers are seen as equal partners on the same level as people; all are involved as learners/participants in the process |
| ---sample surveys and random surveys are common, often designed and planned by outsiders | ---shares views and experiences |
| ---quick visible results on funding justification and a favourable image is expected | As a learning process on both sides |
| ---goals, strategies and techniques are based on empirically verified technologies | Localized, more scope for massive and organized community activities |
| ---A tendency to assume project will be accepted By the community once explained and demonstrated | ---an accurate and authentic analysis of social reality is presented |
| ---sees new technical innovations as better for the communities than old ways of doing things | ---a phased community-based evaluation system is built into the process in a continuous and participatory manner by those who are involved |
| ---sees innovations as holding no risks, and confident that new technologies will help people overcome underdevelopment | ---people learn by observation and experimentation |
| Creates a paternalistic and dependency pattern | ---leadership formation, training and attitude is given more importance |
| ---findings are useful to distant policy makers, technocrats, planners and academics, etc | ---inclusion is to move slowly to ensure that villagers understand the purpose and goals of the project before implementation |

---emphasizes people themselves see technology’s value, utility, affordability, etc. |
---claim that an action research framework will be used and that priorities were to be established after identification of critical areas, i.e., based on felt needs. Priorities and external/internal constraints |
---recognizes that the process approach to change is not easy and is based on people observing the project in action and experiencing some success with it |
---sees that old ways are often the best as they are consistent with the past experience, culture and values, social norms, and social realities of communities |
---people living at subsistence level do face risk in accepting externally induced/dependent innovations in a short period of time and do not respond or accept them easily |
---aims to build a self governing, self learning, self determining and self reliant community |
---decentralization of power structures |

Source: pagauan and Ferrer (14) and Morss and Gow (21,, ch. 2)
SOME CONSTRAINTS AND LIMITATIONS
FACED BY NEW VOLUNTRY ORGANIZATIONS

This section explores some of the constraints faced in the initial stages of building participatory research model of PHC using Indian indigenous medicine and community-based evaluation techniques. Many disadvantages are still to be overcome or anticipated (Table 4):

---To find appropriate techniques and methods in participatory research model at village level.
---Success depends upon the community responses and willingness to participate regularly and the active role they can play with long term commitment. Considerable social will, humility, persistence, sacrifice and consistent hard work is needed on the part of the community.

| Table 4: New voluntary organization in rural development project-some constraints |
| ---may not have official status | ---may increase implementation costs |
| ---may lack authority to effect policy | ---budget sources are often limited and uncertain after project funding stops |
| ---access to information or resources may be limited | ---project recurrent costs are unclear once foreign assistance terminates |
| ---must establish linkages | ---no academic credentials are accorded to the trainee like CHWs, so that the trainee does not directly benefit in obtaining promotion or increased responsibility |
| ---initially not familiar with local cultural norms and needs | ---difficult to evaluate |
| ---may be perceived by rural communities as being manipulated by outsiders | ---may be sensitive to age-sex differentials |
| ---difficult to institutionalize | ---as the aim is to keep costs low, limited support services are provided |
| ---temporary nature may create personnel/management problems | ---generating financial resources is another long term problem envisaged |
| ---frequently not linked to resources from governmental agencies | ---overall project success depends on type of resource commitment by funding agencies, yet strive to accentuation of dependency and paternalism |
| ---difficult and time consuming to train and organize staff | ---local and institutional capacity – building process takes time, i.e., to improve the ability of local people to deal with their own problems |
| ---can be perceived as threat to government agencies | ---local initiative does not take place as scheduled |
| ---bureaucratic resistance may exist or emerge | ---ambiguity of goals set by implementing agencies |
| ---costs are associated with setting up special units | ---project, with multiple objectives and limited resources though try to concentrate on a distinct set of priorities, do not give clear statement that goal A is more important than goal B; thus no hard choices are seen to be made yet |

Compiled from: Morss and Gow (21, ch. 2 & 5).
Organizers to mobilize people into education and action. Similar sacrifices are demanded of the people in the process.

---Phillipine’s experience (13, p. 156) indicates that: many programmes sought to bring about awareness of situation in which existing structures were preventing the attainment of basic human needs. This above concept of development is clearly understood by organizers, staff, board and CHWs of the project. But the majority of people in the village are unable to understand/or relate health problems to political, socio-economic and cultural structures. In a Phillipine case study, it is pointed out that the villagers “fail to see how economic system determines social relationships, and how and why political structures enhance strengthen the power of one class” (14, p. 156). Similar situation is observed in this project area at this phase of implementation where urban-born, urban-educated project workers with their enthusiasm, ideology and commitment vs social behavior of their situation interact. Problems do conflict in a maze of struggling communication skills between the two groups trying to compromise but not fully understanding each other’s difficulties in the process.

---There is always the danger of community organizers assuming a dominant, demanding authoritarian role in their frustration to get people involved in a short span of time in their plans. Careful training and sensitization to such issues are needed right in the field in organizing and administering the programme (20).

---Training, time, place, content, expectations, meetings schedules, attendance and responsibilities are all to be sorted out efficiently and clearly and managed properly in this process. It is not an easy task.

---Leadership development is still another problem. It will be influenced by the quality of training, leadership capability and participation.

---Other gaps need to be given equal attention. It has already been pointed out that incomplete assessment of geographic/resource capabilities of land use, water, forest and medicinal and other bionic resources of the area and socio-economic, epidemiological and infrastructural needs of project area can pose severe difficulties and ambiguities on implementation.

---A quick assessment of resource potential and socio-economic demographic characteristics of the area is essential.

---Due to lack of coordination and cooperation between the project and other health organizations, future development depends on several factors: type of resource commitment by funding agencies; capacity to develop income generating activities to produce income on a regular basis to cover operating costs of ongoing activities and to finance new ones. All these have not been given full attention in project planning so far. Financial incentives are needed for participation and yet external resource should be kept to a minimum to encourage self reliance and prevent accentuation of paternalism and
dependency. What is important is that the participants control how the locally generated resources are allocated and used. These resources can play a critical role in achieving organizational sustain - ability (21). It takes time to create a viable beneficiary organization for rural community development.

Some activities require a longer commitment than others as they take long time to complete than others. World Bank and USAID experiences in many rural projects indicate that “traditional five year project cycle are simply inadequate. Ten years is probably a minimum time span for a project with a significant institutional development component” (21, p. 103).

CONCLUSION
The project attempts a synthesis of theory and practice of participatory research and action in community-based participatory health development. Through the project has identified its development philosophy, its definition of role in rural health community development, the process is faced with many ambiguities and inconsistencies: (1) incomplete information and strategies in the initial phase of implementation; (ii) in trying to achieve multiple objectives, especially those related to incomplete geographic/resource assessment, and socio-economic and demographic characteristics of the area; (iii) the difficult task of raising the people critical awareness, consciousness and action; and (iv) the CHW’s role, function and performance in relation to institution building at RHC and to local capacity building and the task of restructuring community’s socio-economic order. As in the philippine case, the project demonstrates similar concerns: although the project believes “in the interrelatedness of economic political and cultural aspects of health care delivery system with the larger social structures, it lacked a sufficiently deep understanding of such relationships to be able to promote a restructure of the social order”. Long term programme efforts to find definite solutions to problems may become trapped in short sighted solution to community health problems (14, p. 159).

The programme still in its infancy in its attempt to synthesize and advance people’s perception of their own problems and situation in a holistic way. So far only scattered views and needs can be collected. Again philippine experimental study experience is very relevant to the current project’s dilemma: “to be able to apply this methodology, to make research more participative, evocative and of the integration of facilitators and researchers with the participants is of great importance. This refers not simply to physical integration but rather to social, identification with the interests of the people….. What is needed is an ability to assess the people’s knowledge and ways and feed them back at their own level of political awareness. For this to occur, (continuous) involvement with the people is
required, in the work, problems and way of life” (14, p. 158).

In practice more time should be allowed to carrying out a community- based evaluation system with the people. In the long term, it might be the only effective way to achieve the goals of development of small scattered rural communities.

Existing governmental organizations have their own limitations in rural community development. They are often unrepresentative of target populations; They lack and/or are often indifferent to local problems solving skills and technical capabilities. On the other hand process approach to development is a general, evolutionary process in which both project organizers alternatives, discard them when they prove unworkable and try others (21). This type of approach assumes considerable uncertainty and is characterized by “an openness to redesign and adaptation to changing circumstances” (21. P. 124). This approach rejects the blue print concept of project design and implementation (22, p. 134). Given the complexity of the problems to be solved, the designers and implementers are willing to admit they still have much to learn. But the approach implies, that they are dynamic, living theory of knowledge that requires to show new facts to the world (21, p. 124). It is also recognized that “the process of eliminating rural poverty is a long term proposition. However, this process is both a social and political act, social because it involves classes of people and the resolution of conflicts that ensure from their clash of basic interests, and political because it entails the utilization and harnessing of power by people to bring about the social restructuring needed” (14, p. 146). Thus it is reaffirmed that any attempt to fundamentally alter the pattern of inequality in health requires a total restructuring of the economic, political and cultural aspects of health care delivery system (21).

As regards the scope of indigenous medical system as playing a complementary role in PHC programmes, many biases have to be overcome: bias against traditional system of medicine among scientists and administrators; bias in favour of research and development promoting specialization and sophistication in modern western-style, urban-based health care; and the biases of government’s indifference and reluctance to extend generous assistance and facilities to private voluntary health institutions.

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APPENDIX 1
PRIMARY HEALTH CARE CONCEPT AND PRINCIPLES
BY THE AYURVEDA SYSTEM OF MEDICINE AND
HEALTH CARE

It is argued by many writers of Indian indigenous medicine that specific characteristics of Ayurvedic system of medicine (as described in ancient texts) favor its adoption as a means to provide primary health care for villages of India. Ayurveda is one of the three well recognized indigenous systems of medicine developed in India as early as the 5th century B.C. Many of its concepts, philosophies and principles are written in very many well-known ancient Hindu texts and writings. Its guide-lines are found synonymous with the principles of Primary Health care outlined by World Health Organization (WHO).

Ayurveda literally means not only the science of life but is a guide to perfect life. The system lays emphasis both on prevention and care of diseases and primarily on promotion of positive health.

Positive health according to Ayurveda

Charaka begins the book on Ayurvedic treatment (Chikitsa) with the following lines:

Bheshajam dwividham cha that

Swasthasya Oorjaskaram Kinchith Kinchith Aarthisya roganuth (1-1-4)

Treatment is divided into two parts. The first part is to make the healthy man feel vigorous, that is, positively healthy and the other part is to destroy sickness (Roganuth).

In Ayurveda, health (Swasthasya) is defined as that perfect condition of the whole man.

Who has a happy combination of thought, action and speech (Mano Vaak Karma Sukhaanu Bandam)

Who has his mind under perfect control of the Aatma (the soul) (satwam Vidheyam),

Who has his intellect clear (Visadaacha Buddhih).

Who possesses knowledge of the soul (Jnaanam),

Who is devoted to (Tapas)-austerities and spiritual practices (Yoya).

That man is never subjected to any disease. (Charaka Vimana 4)

In other words, one who has suitable food and habits who always acts after proper reflexion (sameekshya karee), who does not entangle himself in the objects of his senses (Vishayeshu asaktah).
Who behaves equally towards all living creatures (samah),

Who is devoted to truth (Sathyaparah)
Who is forgiving (Kshamaavaan),
Who serves with humility all those, who are wise (Aaptopasevee),
Such a man is never subjected to any disease (Charaka Vimana 4). (6,p.438)

The preventative measures of Ayurveda includes personal and social hygiene’ the use of rejuvenating agents – primarily herbs to improve memory, intelligence and immunity to disease, and the increase of strength and longevity through yoga exercises and meditation. Specific action in five vital areas are recommended: purity of environment (Desa Suddhi); purity of body (Deha Suddhi) and purity of mind (Mano Suddhi).

The system of treatment in Ayurveda gives the greatest importance to the study of constitution ad personality of man, his mental state (Satwan), his habits (Saatmyam). His natural aptitude (Prakritt), his strength (Bala), age, season, nature of food in detail. By this method, Ayurveda attempts to study the ill-balance in condition of the cells, tissues and debris (Dosha Dhaatu, Sammoochanam) and to restore equilibrium (Dosha saamyatha).

For curative purposes, Ayurveda employs a variety of diets and diet restrictions for different types of patients, diseases; daily routine and seasonal routine is laid out. “

No medicine is required for a man who strictly observes the rules of diet…” Ayurvedic medicines are supplementaries – medicinal eatables produced on local soil and are given to fortify their diet deficiency and are able to cure the disease from its roots. It is well tried under Indian environmental and social conditions.

Materia medica of Ayurveda is copious it as its own pharmacology.

All food materials and drugs are classified according to their (1) physical properties (Guna); (2) taste (Rasa); (3) heating and cooling properties (Virya); (4) ultimate action after digestion (vipaka), and (5) specific action (Prabhara). This classification has been found to be most useful clinically by the practicing physicians (6) Practitioner of Ayurveda medicines are called Vaidyas, More scope should be given to them in PHC they live among the villagers and command their respect and confidence. They know their community very well. There is a need to upgrade their quality and efficacy of the practice.

Ayurveda has also set guidelines for health education, participation, critical awareness, consciousness, action and self-reliance building. Its teaching disciplines every man, woman and child to develop self -control and avoid harmful habits which are responsible for most of the diseases. It attempts to prevent disease by self-control (Aatma Nigraha); self-reliance (Aatma Viswaasa); self-denial (Aatma Tyaaga); self-
help (swayam Sahaaya); sanitary and health consciousness of the villagers can be awakened through its teachings and set guidelines. People should first awaken themselves and develop an intense desire for positive health.

Ayurvedic system of healing care has managed to survive and persist in the Indian scene today. It now receives full patronage of the Government of India at four administrative levels; (1) the Centre (e.g., identification and standardization of drugs and herbs of genuine quality; (2) the state-one or two colleges affiliated with one or two universities, graduate training and research institutes are set up on a modest scale; (4) The District-offered through PHC. Diploma and apprenticeship training is permitted; (4) the village level-registration schemes for vaidyas with eight years or more practice; training and upgrading them to a

minimum standard for PHC programmes.

Research in Ayurveda has several branches of specialization-literacy pharmacological and religious aspects. There are not yet many organized centres for high pharmacy training in Ayurveda or proper registration procedures enforced. Directorate of Indian Medicines has been established by several state governments for developing teaching training research, production of medicines and pharmacies, PHCs and stat medicinal farms.

Source

Lakshmipathy (6); Narayanaswamy (5); Kurup, P.N.V., The science of Life-Ayurveda. World Health, 12-15 November (1977).

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