

The Health Information Resource Network

A Perspective Report

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0. The Backdrop

IF we very broadly view the medical profession in action, it seems comprising programmes of medical education, research, and delivery of Health Care (including patient care) and the nurses are the sheet anchor of our total health care delivery system.

The concept of Nursing has expanded over the years and it is no longer confined to the hospitals and patient care alone. The President of India, Mr. R. Venkataraman, while inaugurating the National Convention of Nurses at New Delhi on August 20, 1988, said; "If in the past, 'hospital nurses' have functioned as assistants at hand, in our Primary Health Centres (PHC) they are today called upon to play a much more positive role. They have to do data-gathering to aid govt. programmes, have to evoke individual and family participation in health programmes and have to serve as medium for providing health information to the public. They have to work alongside teachers and extension workers. In providing health counsel on health care services and family welfare services to individuals and families directly, she will be playing a role of steadily increasing relevance."¹

This enhanced role is besides calling of the profession to make themselves more skilful and knowledgeable in view of the advances made in the medical profession due to stepped up research and increased specialities. This obviously demands a tremendous change in the syllabi of the courses of Nursing Education of all the levels. Training in the use of computers to store, edit and retrieve information must form part of their curriculum.

Talking about the projected need of nurses by 2000 A.D. the President said; "With the expansion of health programme we shall need over 9 lakh nurses by the Year 2000 A.D., our target date for achieving the goal of Health for All. Their present strength is above 2 lakhs only."²

1. Nursing Education and Explosion of Knowledge

Any information passed on to the nurses/health workers, howsoever it may be latest, cannot remain useful to them for all times to come. It needs quick updating. Besides, attending of workshops from time to time in their areas of interest and specialities by the nurses, libraries can serve as a mainstay to keep them abreast of the latest information. In any case traditional library and that too from its own resources alone will not be able to cope with the information explosion.

¹The author is Librarian, Thapar Institute of Engineering and Technology (Deemed University), Patiala.

Today, the influx of literature is so much in every field that searching a relevant piece of information is like searching a needle from a hay stack. An expert needs help to separate the chaff from the grain and provide him only the relevant in anticipation and on demand with minimum loss of time.

2. Health Science Libraries

If we have a look on the number of Health Science Colleges and Schools, Hospitals and Dispensaries, Health Science Institutions and Agencies, and Health Manpower in India (Appendix I), we will find the number of health science libraries too meagre. M.K. Bhatt³ in his study put the total number of health science libraries, both small and big, at 633. According to the same study, only 1 per cent of libraries subscribe to above 2000 titles of current periodicals and have a book collection of above 200,000 volumes. Fortyfive per cent of libraries subscribe upto 100 titles of periodicals and possess less than 5000 volumes.

—The health science libraries in India are institutionalised. There are no free-standing medical libraries to serve non-institutional users.

—There is a dearth of trained library manpower specially oriented to handle medical libraries.

—Health workers of all categories stationed in the far flung areas and even away from cosmopolitan cities are deprived of library services.

—There is a great deficiency of the libraries attached to the hospitals for doctors and paramedical staff.

—There is absence of libraries for patients.

3. National Medical Research Infrastructure

It does not mean that we did not make any strides in this area. The Directorate General of Health Services Library, Delhi, which was housed in one room in 1959 started functioning as a Central Medical Library since 1961 and is now known as National Medical Library since April, 1966 and housed in a four floor building with a carpet area of 22,127 square meters, with a book stock of over 200,000 manned by an over 80 person strong staff. By the side of it is the B.B. Dikshit Library, another good library of the All India Institute of Medical Sciences New Delhi.

We have over 350 Research Institutions, Associations and Societies, Directorates of Health Medical Services/Education, Research, Family Welfare, Central Government, Deptt. of Health/Medical/Family Welfare Services. To mention a few, Research Institutes of national importance which provide library

and information services are :

1. National Institute of Nutrition, Hyderabad;
2. National Institute of Health and Family Welfare (NIHFW) and its National Documentation Centre, New Delhi;
3. National Institute of Medical Health and Neuro Sciences, Bangalore;
4. National Institute of Virology, Pune;
5. National Institute of Communicable Diseases, Delhi;
6. National Environmental Engineering Research Institute, Nagpur;
7. National Institute of Immunology, New Delhi;
8. National Institute of Ayurveda, Jaipur;
9. National Institute of Homoeopathy, Calcutta;
10. Central Institute of Psychiatry, Ranchi;
11. Central Council for Research in Ayurveda and Siddha and its Documentation Centre, New Delhi;
12. Central Council for Research in Homoeopathy, New Delhi;
13. Central Council for Research in Unani, New Delhi;
14. Central Drug Research Institute, Lucknow and its National Information Centre for Drugs and Pharmaceuticals (NICDAP);
15. Central Food Technology Research Institute;
16. All India Institute of Hygiene and Public Health;
17. Industrial & Toxicology Research Centre, etc.

Some post-graduate institutes of medical education and research which are actively pursuing their library and information services programmes are at Calcutta, Chandigarh, Madras, Pondicherry and Varanasi. All India Institute of Medical Sciences, New Delhi is also doing well in this direction.

The health science library system (HSL system) is gradually taking the following shape :⁴

- I Level : National Medical Library (NML)
- II Level : Proposal for six Regional Medical Libraries (RML)
- III Level : Resource Libraries (RL)
- IV Level : Peripheral Libraries attached to medical colleges, hospitals, etc.

It is at this point of Level IV that the College of Nursing at the Christian Medical College (C.M.C.), Ludhiana, viewing the changing role of Nursing Education in Primary Health Care by 2000 A.D. has a proposal to have an Integrated Computer-based Health Information Resource Centre in C.M.C.

Before discussing anything about the proposed Resource Centre it would be appropriate to study the various aspects of Primary Health Care (PHC) and the existing Resource Centres and their services at international, regional and national levels.

4. Primary Health Care (PHC)

Very broadly defining, minus specialities everything left over in health services is Primary Health

Care. Specifically speaking, it encompasses immunization programme, nutrition, health education, preventive health services, school health services, health services for the aged, geriatrics, rehabilitation of arthritis, rheumatoid, blind, education of mentally retarded, supply of softwater, maternal and child care, family planning, communicable diseases control, environmental health and what not. In other words, it covers a very wide spectrum of public health delivery services.

5. Major International Information Services

It is felt that the information given below about the international, regional and national services will help in more than one way for the proposed Information Resource Centre at C.M.C. :

1. Would enable to know what is already available and what are the gaps, if any.
2. May help in avoiding duplication of labour.
3. May provide inputs for the proposed centre.
4. Experience of the organisations at work may serve as a guide.

5.1 : *Index Medicus* is the gigantic indexing service which is published by the National Library of Medicine, U.S.A. and covers nearly all the 20,000 important bio-medical journals published all over the world. Abstracts of articles are not printed in the Index but supplied on demand. Nearly 3,200 of these have been included in their computerised database, the MEDLINE.

5.1.1 : *Cumulative Index to Nursing Literature and Dental Abstracts* are specialised listings taken out of the *Index Medicus*.

5.2 : *Excerpta Medica* brought out from Amsterdam, Netherlands, is the most comprehensive service brought out in 43 sections on different areas covering almost the entire biomedical specialities. It covers over 4,000 biomedical and chemical journals, screening about 400,000 articles annually. More than 75 abstracting serials cover it. *Excerpta Medica Bio-medical Storage and Retrieval System* offers computer-based selective dissemination and retrieval services for the biomedical sciences and environmental health.

5.3 : *Abstracts of World Medicine* brought out by the British Medical Association is quite selective and covers approximately 1500 journals containing over 5000 articles annually.

5.4 : *The Index Catalogue of the Library of the Surgeon-General's Office, United States Army* is a dictionary catalogue in many volumes and is supplemented by the National Library of Medicine's *Author Catalog* and a *Current List of Medical Literature*.

5.5 : *Bulletin Signaletique* based in Paris.

5.6 : *Referatovy* in Prague

5.7 : *Zentralblatt* in Berlin

5.8 : *Biological Abstracts* in United States

5.9 : *Referativnyi Zhurnal* in Moscow

5.10 : *Chemical Abstracts* in United States

5.11 : *Science Citation Index* which covers over

3000 serials, includes a large number of biomedical journals.

5.12 : *Current Contents : The Life Sciences* is a current awareness service which reproduces table of contents of 1,040 journals.

All these services (except at 5.4 above) have their own established computerised data bases and are available as well for no-line rapid searches.

Some important indexing/abstracting services available on specialised areas are :

5.13 : Tropical Diseases Bulletin

5.14 : Ophthalmic Literature Abstracts

5.15 : Abstracts on Hygiene and Communicable Diseases

5.16 : Current Clinical Chemistry

It has been observed that the international information services cover most of the literature produced in the advanced countries, and the coverage of Indian journals is very meagre. "For instance, ...*Current Contents: The Life Science* covers just 8 Indian journals out of a total of 1,040 and the *Clinical Practice* does not cover even a single medical journal although it scans as many as 740 journals annually. In the *Biological Abstracts* the average coverage of articles originating from India has never exceeded a 3 percent as against over 20 percent of the United States. The *Science Citation Index* (1978) listed only 30 journals from India among the 3,100 covered."⁵ So much so the representation of literature produced in South East Asian Region is also very poor.

6. Regional Information Services

6.1 : *Health Literature, Library and Information Services (HELLIS)* : HELLIS is a WHO-sponsored network of Health Science Libraries in the South East Asia (SEA) Region, with its Headquarters at WHO House, I.P. Estate, New Delhi-110002. The number of participating libraries in the HELLIS network is shown here countrywise:⁶ 1. Bangladesh 71, 2. Bhutan 4, 3. Burma 7, 4. India 102, 5. Indonesia 44, 6. Mongolia 9, 7. Nepal 10, 8. Sri Lanka 17, 9. Thailand 10. : Total 275.

The objective of HELLIS was to improve access to the health literature/information and enhancing the skills of the librarians and increasing the capabilities of the health science libraries in the countries of WHO South East Asia Region. The HELLIS is a flexible, open, regional and national network functioning on the principle of resource sharing, with the maximum possible country focal points. The WHO South East Asia Regional Office as the Regional Focal Point links and co-ordinates the National Focal Points (NFP) and serves as a liaison with the International Agencies and other bodies!

Several regional and national level workshops⁷ were conducted under the programme to enhance the capabilities of the library personnel in the SEA region and generated a lot many reports and publications.⁸

6.11 : *Free MEDLINE Searches and Photocopies* : As a part of HELLIS activities the WHO, SEA Re-

gional Office provides free of charge MEDLARS/MEDLINE searches and photocopies of references which are not available in the countries from where the request originates. Only those requests for MEDLINE Searches are processed which are received through the HELLIS NFP's. MEDLINE Searches in India are processed through the National Informatics Centre, CGO complex, A Block, Lodhi Road, New Delhi, whereas the requests for photocopies are processed through the National Medical Library, New Delhi being the NFP of India.

6.12 : *Assistance and Subsidies* : SEARO provides assistance/subsidy to member-countries for :

"1. Organisation of training course for health science librarians and providing fellowships to study library/information science in other countries;

2. Preparation of bibliographies/indexes of material published in the countries;

3. Publication of newsletters/bulletins;

4. Compilation of directories of health science libraries in countries;

5. Workshops/National meetings of health science libraries to plan and implement HELLIS activities;

6. Preparation of union lists of serial holdings of health and biomedical periodicals in the countries."⁹

6.13 : *Publications of the HELLIS*

6.13.1 : *Index Medicus WHO South East Asia Region (IMSEAR)* : WHO/SEARO Library conducted a study in 1973 involving 266 periodicals published in the countries of the region. "It was found that almost ninety percent of the literature, produced in the countries of the region, was not covered by the *Index Medicus* on which MEDLARS/MEDLINE services are based. Followup studies undertaken in 1979, 1981 and 1983, evinced that coverage of the health literature from the SEAR in the *Index Medicus* has come down from 10.5 percent in 1973-74 to 7.03 percent in 1983."¹⁰ After confirmation of the scanty coverage of the literature of the region, WHO/SEARO in collaboration with the HELLIS NFP's, with an idea to effect bibliographical control of the regional literature, started publishing IMSEAR and brought out vol. 1 covering the year 1980-81 and volume 3 in two parts. The Regional Office has indexed the literature upto the year 1986 but not yet printed.

6.13.2 : *HELLIS Newsletter* : The Regional Office brings it out twice a year in order to inform the NFP's and the participating libraries about the activities undertaken at the national and regional levels in the field of health science librarianship. It gives news about workshops, meetings, seminars, training programmes, publications like directories of libraries, indices and bibliographies of health literature, forthcoming national and international meetings, and the developments taking place in the area of health science librarianship.

6.2 : *International Diarrhoeal Diseases Information Service* : International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR) with the financial assistance of International Development Research

Centre (IDRC), Canada established the International Diarrhoeal Diseases Information Service and Documentation Centre (DISC)¹¹ which started functioning in 1982. The ICDDR is committed to the dissemination of information and knowledge related to diarrhoeal diseases particularly to developing countries. The DISC has a library; provides question and answer service, bibliographical services, both on demand and in anticipation; survey of on-going research projects is regularly conducted and brief summaries of the projects published in its newsletter 'Glimpse'; it publishes a quarterly *Journal of Diarrhoeal Disease Research* since 1982.

6.3 : ESCAP Population Division : Clearing House and Information Section : The Economic and Social Commission for Asia and the Pacific (ESCAP)¹² is the regional arm of the United Nations, with headquarters at Thailand. The Asian and Pacific population programme is implemented by the Population Division of the ESCAP Secretariat. ESCAP Population Division recommends close cooperation and collaboration in regional efforts to solve the problems of population, poverty, health and nutrition, and to accelerate the social and economic well-being of population in member states.

The ESCAP Population Division has a *Clearing House and Information Section* which in turn has a *Regional Population Data Bank*. The Data Bank has computerised information and retrieval system which is designed to provide population related information to researchers and policy-makers for designing and directing Family Planning Programmes. On-line and off-line search is available with ESCAP bibliographic file. Off-line search is available with other databases such as POPLINE, DIALOG, Population Bibliographies.

6.4 : South-East Asian Medical Information Centre (SEAMIC)¹³ is one of the major projects of the International Medical Foundation of Japan (IMFJ). At present the SEAMIC participating countries are excepting Japan—Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

The most fundamental requirement for developing countries is to determine what facilities they need most and to work out an effective plan for their construction and management. A pre-requisite to this planning process is the accessibility to the use of relevant data and information and it is in this area that SEAMIC is striving to assist health planners in the South East Asia Region. SEAMIC gives priority to the subjects of infectious diseases and primary health care, placing emphasis on oral communication (seminars, workshops, symposia, consultation sessions). It has its various activities and publications.

7. National Information Services

7.1 : National Medical Library (NML) : The Documentation Centre¹⁴ of the NML is providing many services.

7.11 : Chetna is a quarterly journal of current awareness service started in 1982. It informs the users about articles, books and reports in the areas

of primary health care; health planning and administration; medical education and training; and hospital care. Information about the forthcoming meetings, conferences, training courses, in health sciences and new medical journals, is also included in it.

7.12 : Index to Indian Medical Periodicals is a half yearly publication started in 1959 which indexes more than 250 Indian Medical Periodicals. Being in a transitional period of its computerisation it is behind schedule at the moment.

7.13 : Selective Dissemination of Information is a mimeographed fortnightly service, focusing upon current literature on health sciences and was started in 1982 to inform the policy-makers, planners and health administrators about the current developments.

7.14 : Library Bulletin is a bimonthly service, reporting upon the acquisitions of the NML, arranged in a classified order with a subject index.

7.15 : Union Catalogue of Medical Periodicals in India : To encourage resource sharing among libraries, NML is regularly preparing the Union Catalogue which has already run into 6 editions.

7.16 : National Focal Point : NML functions as a NFP of India to participate in the HELLIS programme of the WHO'S/SEARO. Requests for photocopies, for the material not available in India, made to WHO, SEARO are processed through NML. MEDILINE Searches, which were provided free of charge through NML, are now processed through the National Informatics Centre, New Delhi.

7.17 : Reference Enquiries received by post are answered manually or with the assistance of computer.

7.18 : Seminars & Workshops. With assistance from WHO, NML has arranged several seminars and workshops since 1980 for the development of medical library and information services and the library personnel.

7.19 : Training Programme: NML has been offering 5 week Training Course in Health Science Librarianship since 1980 to orient working librarians in the area of health sciences in order to meet the fast changing needs of information and documentation. The training course programme includes lectures on history of medicine, medical terminology, abstracting and indexing, reprography, computerisation of information, national and international information systems and programmes.

7.2 : National Institute of Health and Family Welfare has its National Documentation Centre and established a *Primary Health Care Information Resource Centre*.

7.3 : WHO/SEARO has envisaged to establish Primary Health Care Information Clearing Houses in each member country.

8. Integrated Computer-based Health Information Resource Centre at C.M.C.

8.1 : Conventional Library Vs Resource Centre : A conventional library which procures documents, classifies and shelves them after cataloguing and

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supplies when demanded is not the one which can merit the name of a resource centre. A resource centre has to study precisely the information needs of its clientele, anticipate their demands and procure documents accordingly. Its catalogue will not be a mere list of the documents but an index of the pieces of information contained in the documents, so that information may be provided promptly on demand and its users may be constantly kept informed about what is being added and what may be of interest to them through Current Awareness Service (CAS) and Selective Dissemination of Information (SDI) bulletins.

8.11 : Library Inputs : For playing such a role the Resource Centre will have to be made strong by having a good collection of bibliographies, indexes of journals, catalogues of theses, conference proceedings for retrospective searches and a good number of indexing and abstracting periodicals relating to the fields concerned for current searches. Directories of the Institutes generating information and the catalogues of the periodical holdings of the various libraries for resource sharing are a necessity. Collection of up-to-date statistical sources and who's who of the experts will also be essential.

For indexing it should choose a well established subject headings list like MESH (Medical Subject Headings) annotated alphabetical list, used by the Index Medicus which is kept up-to-date.

8.12 : Training of Library Personnel : Above all, a knowledgeable librarian and its staff, who know about the various organisations generating and disseminating information are absolutely essential. For speed and efficiency training of the library staff in the use of computer for storing, editing and retrieving is a pre-requisite. A practical training in the application of the techniques of indexing for library staff is a *sine-qua non*. NML and National Institute of Health and Family Welfare, New Delhi conduct such trainings for orienting the working medical library staff. Use of the workshops and seminars organised by the WHO/SEARO, NML and NISSAT may be made to develop the library staff. The British Council and American Centres also occasionally conduct such training courses. These courses can be designed and conducted locally also with the help of invited faculty. The course content of NML may be adopted.

Outlining of the proposed integrated computer-based health information resource centre at C.M.C., a lot many questions have to be answered regarding its scope, database, computer facility available, software and manpower etc.

8.2 : Scope

8.21 : Users : Scope in terms of users and coverage of sources has to be determined and among the two, users first because users in turn will determine the sources.

1. Will the users of the Resource Centre be doctors/nurses/technicians/managers/health workers ?

2. Will it be for one of the above categories of users or for all the categories ?

3. If for one of the categories, say nurses, will they be the undergraduate, graduate or post-graduate?

4. If for all the categories or even for individual category of users, will they require information for medical education or research or practice or delivery of health care services alone or for all combined ?

5. Will the users be from medical educational institutions or the practising professionals from hospitals or from both ?

6. Will it cater to the needs of the Christian Nursing, College Ludhiana alone or include the Christian Medical College, Ludhiana or even other Christian Missionary Hospitals also ?

8.22 : Coverage

1. Will it cover periodical articles, research reports, conference proceedings, fugitive* literature, newspapers, or even books?

2. Will it cover Indian documents alone or include foreign ones as well ?

3. Will it cover literature in English language alone or in regional languages also ?

8.3 : Computerisation : Does the Centre envisage to computerise even the house-keeping functions like acquisition, serials control, circulation etc. or information retrieval alone ?

8.4 : Database : There are various optionals open regarding database :

1. May purchase the whole Medlars database on CD-RDM (Condensed Disc-Read only Memory).

2. May purchase the Medlars database on CD-RCM for selected areas of specialization.

3. May get a few databases and prepare own package.

4. May prepare one's own indigenous database.

5. Search MEDILINE through National Information Centre, New Delhi as and when needed.

6. Utilise the services of some information broker like M/S Informatics (India) Pvt. Ltd., Bangalore to search some database.

8.5 : Computer Facility and Software : Decision for computer system to be installed can be taken in the light of the amount of the data to be handled which can be anywhere from PC (Personal Computer) to Mainframe with various configurations. For smaller information resource centre IBM compatible PC/XT/AT with hard-disc-drive will do. All the computers available in India from HCL, PCL, SIVA, WIPRO, DCM Data Products etc are IBM compatible, but none of them is compatible to take CD-ROM for which CD-ROM drive would be required.

Regarding software, many readymade packages for libraries and information retrieval systems are available and every software package has its own specific hardware requirements. A few of them are stated below :

* Which goes unreported, say, material cyclostyled and distributed among participants of a seminar, experiences of doctors, nurses, health workers, case histories of patients, etc.

<i>Name of the Software</i>	<i>Hardware/other software requirements</i>	<i>Vendor's address</i>
ACS (L.M.) (Australian Card Service)	Fujitsu-co EE MISOLLAD CS-OSIV/PA or VSAM	KORRY Webb, Asst. Div. ADp National Library of Australia, Parkes Place, Camborra, ACT-2600, Australia.
AMRS (L.M.) (Australian Marc Record Service)	IBM, IBM 370/148 OS-ob/VSI : RMS	-do-
CAN/SDI (I.R.) (Canadian Service for the selective dissemination of Information)	IBM 360, 370, 30XX OS-IBM O.S.	Giamalaolo del Bigio, Deputy Chief Divn. of UNESCO Library, Archives and Documentation Services., 7-Place de Fontenoy, 75700 Paris, France.
CDS/ISIS (IR, LM, DBM, SIM) (Computerised Documentation System/ Integrated Set of Information System)	IBM (all models) OS-IBM OS/(MFT, MVT, VCI, MVS) CICS (For conversation/ program) PLI-computer : VSAM	-do-
CDS/ISIS (IR, LM, DM, SIM) (Mini Microversion)	PDP-II Series IBM PC-XI & PC-AT	-do-
COMPAIS IIA (IR, LM, DBM) Computer Assisted Information System)	Sperry Univac, Unibac 90/30 OS-IMS/90, RMSIS	Dr. Uraula G. Picavhe, Dean Institute of Library Science, University of Phillipines Diliman, Quecon city, Phillapines.
IV+V (IR, LM, DBM) Information vermittlung und verafutung, (In English- Information Dissemination & Processing)	Any micro, or mini computer, OS with macro assembler and debugger	Please see UNESCO address Serial No. 3.

Among them CDS/ISIS may prove more useful, as suggested by Mr. Chintamani Dabral, Deputy Director, NML, New Delhi. Alternatively many Indian companies are there who prepare software packages according to specific needs, but that may prove to be quite expensive. CDS/ISIS may be available free of charge from UNESCO.

8.51 : *Costs* : The following is an approximate cost idea based on current market prices including customs duty etc.) and should serve the purpose of budgeting.

1. Microcomputer (IBM compatible PC/XT with 640 KB, 20-30 MB, Hard disc and standard 200 cps, 132. column printer, a colour monitor). Colour Monitor is not a must but recommended.

Rs. 70,000/-

2.1 : CD-ROM Drive (Single Drive System) (inclusive of duty at 98% and shipment incidentals)

Rs. 50,000/-

2.2 : CD-ROM Drive (Multiple drive systems)

Rs. 1,00,000/- to 10,00,000/-

3. CD-ROM discs (databases) —depends on the databases.

Rs. 5,000/- to 1,00,000/-

9. Multi-disciplinary Team

For the content part of the resource centre, participation of practising doctors, teacher doctors, nurses and teachers of nursing, medical administrators and librarians would be essential and for setting up the centre, the help of System Analyst, Computer Experts and librarians would be required. Alternatively, the services of a firm offering consultancy services like M/S Informatics (INDIA) Pvt. Ltd., 87 II Floor, 11th cross, Mallashavaram, Bangalore-560 003 and M/S Systems and Services, Post Box No. 333, 84, 6th Cross, Bangalore-560 003 may be commissioned.

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Appendix-I

No. of Health Science Colleges and School in India

Type	Number
Medical Colleges (Allopathy)	106
Dental Colleges	36 BDS
Dental Colleges	20 MDS
Pharmacy	189 as in 1985
Nurses General/General Nurses	
Midwives/Male nurses	374 -do-
Aux. Nurse Midwives/Health Workers (F)	382 -do-
Midwives	288 -do-
Health Visitors	20 -do-

Type	Number
Health Waker (Male) under M.P.W.	47 -do-
Ayurveda	97 as on 1.4.85
Unani	18 -do-
Siddha	1 -do-
Homeopathy	113 -do-

No. of Hospitals and Dispensaries in India

	Hospitals	Dispensaries
Allopathy 4215 Govt.		
3549 Pvt.	7,764	25,871
Ayurvedic as on 1.4.1985	1,460	12,111
Unani	100	867
Siddha	165	316
Homoeopathic	127	2,296
Nature Care	8	17
Yoga	4	5
Primary Health Centres		14,145) as on
Primary Health Centre (Upgraded)		31.3.87
Sub-Centres		945)
		98,987)

Health Manpower in India

Allopathy	3,06,966 (registered with Medical council of India as on 31.12.1985)
Ayurvedic	2,51,071
Unani	28,382
Siddha	11,532
Naturopathy	97
Homoeopathy	1,23,852
Dentists	9,9,725 as in 1996
Nurses	1,97,735 as on 31.12.1985
Midwives	1,71,590
Auxi. Nurse Midwives	98,543
Health Visitors	12,411
Village Health Guides	3,94,038

Projected Population

Assumption	1981	1991	2001
High	685,159.0	841,677.9	1,021,888.4
Medium	685,159.0	837,249.4	986,098.6
Low	685,159.0	834,770.5	966,574.8

Source: Health Information of India, 1987, India, Central Bureau of Health Intelligence, Directorate General of Health Services, Ministry of Health & Family Welfare, 1987.