

Final Report of the Project
**PRIORITY SETTING IN MEDICAL RESEARCH IN
INDIA – A BIBLIOMETRIC STUDY**

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**PRIORITY SETTING IN MEDICAL RESEARCH IN INDIA –
A BIBLIOMETRIC STUDY**

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INTRODUCTION

The project, entitled "Priority setting in medical research in India – A bibliometric study" was sanctioned by the NSTMIS, DST, New Delhi for a period of 18 months w.e.f. 1/4/2001 to Dr K. Satyanarayana, DDG (SG) (P&I), Indian Council of Medical Research, New Delhi as the PI and Dr. N. C. Jain, Dy. Director-General, ICMR as the Co-PI.

This Project could be started in August 2001 as staff could be recruited only by then, which constituted the Phase I (12 month's duration) of the project. In the Phase II (spanning over 6 months), essentially the final report has been prepared.

In order to monitor the progress of the project, a Local Project Advisory Committee (LPAC) for the Project has been constituted. The composition of the LPAC is as under;

Chairperson

- Dr V. Muthuswamy
Sr.DDG (BMS), ICMR, New Delhi.

Members

- Dr K. Satyanarayana.....*Principal Investigator*
DDG (SG), ICMR, New Delhi.
- Sh. Rakesh Chetal..... *DST nominee*
Scientist, NSTMIS, DST, New Delhi.
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- Dr N. C. Jain.....*Co- PI*
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The LPAC met once during the Phase I of the Project and appreciated the progress made.

In any area of science and technology, a process of rigorous exercise goes into setting research agenda to select areas and investigators for financial support towards fulfilling research objectives set out. Understandably, this process of sharp focusing envisages prioritization through a process of shifting the more important from less important once. This process essentially depends on a country's priorities and needs at that point of time. It is therefore expected that research, especially carried out through governmental support, would broadly reflect the nation's interest, priorities and needs. Medical research perhaps represents the most important sector where major support should ideally be provided to solve the most urgent health problems of the country by some amount of basic 'blue sky' research would also find favour.

According to the DST (R& D Statistics 1996-97), an estimated 8 % of the overall national spending on R& D goes to 'Development of Health Services.' This has not shown much rise in recent times although the list of health related problems continues to be on the rise. Some policy makers believe that additional inputs into R & D would hasten the process of lifting the overall health status of the Indian population which, according to the latest World Health Report 2000, is languishing at 112, below Bangladesh. There are many reasons for these situations such as very low per capita spending on health care as also less allocation to medical research. Less than 5 per cent of overall health budget is allocated to biomedical research. In addition it is not clear whether even this money is 'well spent' in terms of addressing the most important health problems.

While there are several ways of examining this question, looking at the overall research endeavour in terms of publication output provides one established method. This output of research can be correlated with such health problems that can be solved through new R & D. A few attempts have been made to address this issue. One such major study has concluded that medical research done in India is not relevant to our need as many papers are being published in areas outside our national needs with even major funding agencies like the ICMR are not supporting research areas top on the nation's health agenda [S. Arunachalam. *Curr Sci* 72 (1997) 912-22]. Such analysis was carried out basing on papers published in databases like Science Citation Index (SCI) and / or Index Medicus. These publication-journal indices were correlated with morbidity and mortality statistics resulting in sweeping generalization and erroneous conclusions. These databases are inadequate for this kind of analysis of biomedical research in developing countries as the coverage of tropical diseases research is poor. Conclusions drawn from such studies which are not sharply focused are likely to give a rather lopsided picture of the role of medical and health research in solving the nation's health problems [M.S. Valiathan. *Curr Sci* 72 (1997) 911]. This in depth study aims to reexamine the issue of whether Govt. supported research done in India addresses the issues top on the nation's health agenda by sharply focusing on some important communicable diseases.

1. Bibliometry is being widely used as a tool to evaluate the performance in research. It is used to identify the relevant research areas in various fields of S&T including the medical field. The question of relevance is especially important in a developing country where scarce resources have to be used judiciously. Therefore bibliometric study is useful in determining the utilisation of Govt. aided funds in various fields of medicine. As pointed out by Hicks, 'it is important that health research priority setting be developed in tandem with existing research capacity.' This underlines the importance of assessing the amount and nature of available expertise and positioning research output, both in the national health needs, and the international science research contexts.' [Hicks EK, Cabo PG, Rikken F. Knowledge and policy. *The International Journal of Knowledge Transfer and Utilisation* 1995; 6(3 and 4):79-98.]

For the formation of effective health policy a surveillance system that monitors national research output, bibliometric studies can be used by health and research policy makers to prioritize research areas.

With this back drop, the present study has been carried out for five communicable diseases viz., HIV/AIDS, diarrhoea, filaria, malaria and tuberculosis, for three countries viz., India, USA and People's Republic of China. The research papers i.e., output have been mapped out in three international databases viz., MEDLINE, Science Citation Index and *Tropical Diseases Bulletin*, for a period of ten (1990-99) calendar / disk years. The study essentially aimed to find out any mismatch, if any, between the share of burden of the disease and the share of research efforts.

Data from India have been compared with a developed country like USA primarily to compare the quantum of research output even while infectious diseases do not figure top on their agenda. Chinese experiences/expertise is also being looked into, to the extent possible

as both the countries have a lot of similarities like they constitute the top two populous countries of the world, have almost identical disease profile in terms of morbidity, mortality as also came into existence at the same time [i.e., India in 1947 and People's Republic of in People's Republic of China 1949]

Major Objectives of the Project

- i) To map medical research in India supported by national funding agencies as well as done by the individual investigators (with no support) in some selected preventable diseases which form the major disease burden in India. Five diseases viz., diarrhoeal diseases, tuberculosis, HIV/AIDS, malaria and filariasis will be taken representative of the communicable diseases. A directory of research personnel in India in these five preventable diseases will be prepared.
- ii) To map the relative contribution of Govt. funded R&D institutes/centers will be compared with papers published by scientists/ teachers based in medical colleges and similar academic institutions. These academic institution-based researchers, primarily engaged in teaching would work in their areas of expertise/ interest irrespective of whether they figure in nation's health agenda or not.
- iii) To map the distribution of the publication output from India segregated as intramural (institutional) and extramural (investigator-initiated) in these areas from three databases, *MEDLARS*, *SCI* and *Tropical Diseases Bulletin* and to match with the diseases chosen.
- iv) To map the disease profile in terms of morbidity, mortality as also the present state of knowledge in their control programmes. And also to investigate, if there is a mismatch in terms of the quantum of research in the priority areas chosen and the funding support by the agencies of Govt. of India especially under the Ministry of Health & Family Welfare like the ICMR.
- v) To build a database covering regional and temporal variations in the present analysis.

With numerous ongoing global initiatives are actively tackling the menace of these five diseases, the number is still increasing. It has been noted that nearly 3.5 million people in India are infected with TB. The prevalence of sputum positive (culture positive) cases ranges between 2 and 8 per thousand persons, and the incidence rate of fresh cases is 1.3 per thousand per year. The Joint Tuberculosis Programme Review (JTPR) carried out by the Govt. of India and WHO in 2000 had observed that approximately, 10 million persons could die of TB in India over the next 20 years. According to WHO, India has the highest incidence of TB (about 1.83 million cases in 1998), and accounts for 23 % of the world's cases. A report from the National Tuberculosis Institute, Bangalore, states that India accounts for nearly 30 % of all TB cases in the World. People's Republic of China is a close second with about 1.41 million or 17% of the world's cases.

A UNAIDS report, warns that AIDS incidence is accelerating in People's Republic of China, India and parts of eastern Europe and central Asia. About 70 million people are already infected with HIV/AIDS and more than 20 million dead. In India the National AIDS Control Organization (NACO) estimates about 3.97 million cases of infection in 2001. However, the US intelligence agencies project figures of 25 million cases by 2010, a growth rate which is not borne out by any reasonable procedure for making realistic estimates. The research on this field is also increasing with 125,000 papers related to HIV and AIDS are catalogued in the PubMed database of the National Library of Medicine. [Balaram P. The Science and politics of AIDS. *Current Science* 2003; 85(2):117-8

For example, major global initiatives for tackling the menace of these diseases are: **UNAIDS**, the joint United Nations Programme on HIV/AIDS (UNAIDS) is the leading advocate

for global action on HIV/AIDS. It bring together seven UN agencies in a common effort to fight the epidemic: the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), United Nations Population Fund (UNFPA), The United Nation International Drug Control Programme (UNDCP), The International Labour Organization (ILO), The United Nation Educational, Scientific and Cultural Organisation (UNESCO), The World Health Organization (WHO) and the World Bank. UNAIDS both mobilizes the responses to the epidemic of its eight co-sponsoring organizations and supplements these efforts with special initiatives. Its purpose is to lead and assist an expansion of the International response to HIV on all fronts: medical, public health, social, economic, cultural, political and human rights. UNAIDS works with a broad range of partners- governmental and NGO, business, scientific and lay- to share knowledge, skills and best practice across boundaries. The other equally important initiative is the **Global Fund for AIDS, Tuberculosis and Malaria (GFATM)**. Similarly, for malaria various global initiatives are: Multilateral Initiative on Malaria (MIM) ;Malaria Vaccine Initiative(MVI);Medicines for Malaria Venture (MMV) ;*P. falciparum* Genome Sequencing Consortium ;Roll back Malaria (RBM);Mapping Malaria Risk in Africa (MARA); ACTMalaria- Asia (ACTMalaria);Regional Malaria Control Program in Cambodia, Laos & Vietnam; Malaria Research & Reference Reagent Resource Centre (MR-4) ;and Global Fund for AIDS, Tuberculosis and Malaria (GFATM). The **Global Alliance on Tuberculosis Drug Development**, which came into being on 10 October 2000, is combining the resources of charitable foundations (such as the Gates and Rockefeller Foundations and the Wellcome Trust), international organizations (such as WHO, World Bank and UNDP), academia and the pharmaceutical industry to fund projects aimed at discovering new drugs for tuberculosis, that are affordable to the developing world. The **Stop TB initiative** inaugurated in 1998 is trying to put TB at the agenda for politicians and health services.

METHODOLOGY

This study has been carried out by mapping the research papers for five communicable diseases viz., *AIDS, diarrhoea, filaria, malaria* and *tuberculosis*, for three countries viz., *India, USA and People's Republic of China* as appeared in three international databases viz., *MEDLINE, Science Citation Index and Tropical Disease Bulletin* for a period of ten (1990-99) calendar / disk years.

MEDLINE

Data for the three countries were downloaded from the *MEDLINE CD ROM* (on SilverPlatter Inc. USA, 2000 Ed.) available freely at the ICMR Head Quarters Library, New Delhi for ten disk years 1990 – 1999. *MEDLINE CD* (2000 Ed.) was used for data capturing for disk years 1990 – 98. However, *MEDLINE CD* (2002 Ed.) was used for downloading the records for the disk year 1999 for all the three countries, as provided complete coverage.

SilverPlatter *MEDLINE(R) on CD*, used in the present study is a version of the bibliographic database of the National Library of Medicine, USA providing information from the biomedical literature, containing references to articles from more than 3700 journals. *MEDLINE(R)* is the computerized counterpart of "Index Medicus," the "Index to Dental Literature," and the "International Nursing Index". It includes such topics as microbiology, delivery of health care, nutrition, pharmacology, and environmental health. The categories covered in the database include anatomy, organisms, diseases, chemicals and drugs, techniques and equipment, psychiatry and psychology, biological sciences, physical sciences, social sciences and education, technology, agriculture, food, industry, humanities, information science and communications, and health care.

Briefly, records for three countries had been captured by searching the country name in the address field of author. Similarly papers for the five diseases were captured by searching the key words corresponding to each disease in the title (TI), abstract (AB) and medical subject heading (MeSH) fields available in the *MEDLINE CD*.

Procedures for collection of data

The *MEDLINE CDs* (2000 and 2002 editions) were used for capturing total records from three countries for disk years 1990 – 99 by employing the following search strategy. Names of the country were searched in the address field of author of research papers. This strategy provided most of the relevant records wherever country name was given in the address field.

In order to capture those records where country name was **not** given, another search strategy was adopted. A list of 238 cities (actively involved in research & development) in India (Table 1), 22 Provinces and 8 Autonomous Regions in China (Table 2), 51 States and 6 Outlying Territories in USA (Table 3) were prepared. Each of these city/ Province/ State was searched in the address field of authors. These new records thus added to the contribution of the respective countries, as captured by country name.

Specifically, the search strategy to capture such new records from India was like this:

INDIA in AD * = X number of records
 CITY in AD NOT INDIA in AD = Y number of records
 Total Indian contribution = (X + Y) number of records

*AD = Author's address field

Data thus obtained for the three countries were further searched for the five communicable diseases viz., AIDS/HIV, diarrhoea, filaria, malaria and tuberculosis. The corresponding key words, listed below, were searched in the title field (TI), abstract (AB) and medical subject headings (MeSH).

DISEASE	KEY WORDS
AIDS	(Acquired immunodeficiency syndrome or HIV) in TI, AB, MeSH
DIARRHOEA	(Diarrh* or Rotavirus or Vibrio*) in TI, AB, MeSH
FILARIA	(Dipetalonema or Dirofilaria or elephantiasis or loiasis or mansonelliasis or onchocerciasis or setariasis or filari* or bancrofti) in TI, AB, MeSH
MALARIA	(Malar* or Plasmodium or Anopheles* or culex*) in TI, AB, MeSH
TUBERCULOSIS	(Tubercul*) in TI, AB, MeSH

The downloaded bibliographic data were converted to database format. A group of programmes were developed in Visual FoxPro 6.0

1. Data conversion programme

The programme read the data from text file and converted it in to FoxPro tabular form. Download record option does not provide any delimiter separated records. So it is not possible to convert it directly to any database table. The downloaded option by WinSPIRS provides only text format as shown below:

TI: Spectrum of renovascular hypertension in the young in north India: a hospital based study on occurrence and clinical features.

AU: Sharma-BK; Sagar-S; Chugh-KS; Sakhuja-V; Rajachandran-A; Malik-N

SO: Angiology. 1985 Jun; 36(6): 370-8

ISSN: 0003-3197

PY: 1985

LA: ENGLISH

CP: UNITED-STATES

AB: Occurrence of renovascular hypertension and its etiology is described in this work as seen in north India. Out of 2395 young hypertensives admitted for evaluation during the years 1978-1983, 91 patients (3.8%) were found to be having renovascular hypertension. In all patients suspected diagnosis of RVH was confirmed by the angiography of aorta and main vessels. Idiopathic aortoarteritis, diagnosed in 54 patients (59.4%) was the commonest cause of renovascular hypertension. In this group renal arterial involvement was found to be bilateral in 26 patients. Twenty-eight patients had isolated renal artery stenosis of unknown etiology. Six had fibromuscular dysplasia, 2 had polyarteritis and one had renal artery aneurysm. Twenty-three patients underwent surgery which included autotransplantation, arterial by-pass

and nephrectomy with improved blood pressure control in 15. It is concluded that aortoarteritis seems to be the major cause of renovascular hypertension in the young in this part of the world.

MESH: Adolescence-; Adult-; Aneurysm-surgery; Aortitis-epidemiology; Blood-Pressure; Cardiomegaly-etiology; Child-; Child,-Preschool; Hypertension,-Renovascular-pathology; Hypertension,-Renovascular-therapy; India-; Kidney-transplantation; Kidney-Transplantation; Middle-Age; Ophthalmoscopy-; Outcome-and-Process-Assessment-Health-Care; Pulse-; Transplantation,-Autologous

MESH: *Hypertension,-Renovascular-epidemiology

TG: Female; Human; Male

PT: JOURNAL-ARTICLE

AN: 85277414

UD: 198511

The conversion of this text data to database format is carried out in two steps.

Step 1: The text file was imported to a FoxPro table which contains a single field / row. This was the first intermediate table contains all the fields of the records into a single row.

Step 2: A programme using Visual FoxPro (V 6.0) was developed which reads the data from the first intermediate table and append it to final table which contains all the separated fields. Since every record is provided with the field name, so, the programme starts reading the contents of the field whenever it encounters the field name up to the next field name. This process is repeated up to the end of the file.

2. Data retrieval programme

A number of programmes were developed to retrieve data from the FoxPro database for further analysis based on different parameters.

Data were analyzed to map the comparative study of contribution from different research institutes, in terms of research papers published. A comparative study of number of research papers dealing with the selected five diseases from the selected three countries published in different journals was also mapped out. The impact factor of the journals (1999) was also studied.

Table 1: List of Indian Cities

<u>Cities</u>			
	13	Amritsar	26
1	Agartala	14	Anand
2	Agra	15	Anantapur
3	Ahmedabad	16	Angamally
4	Ajmer	17	Anna Nagar
5	Akola	18	Annamalal
6	Aligarh	19	Annamalai Nagar
7	Alipurduar	20	Aska
8	Allahabad	21	Aurangabad
9	Alleppey/ Alappuzha	22	Avikanagar
10	Amala Nagar	23	Balasore
11	Ambajogal	24	Ballia
12	Amravati / Amrawati	25	Bambolim
		26	Bangalore
		27	Bankura
		28	Bardoli
		29	Baroda/Vadodara
		30	Barpeta
		31	Belgaum
		32	Bellary
		33	Bellur
		34	Berhampur
		35	Bhagalpur
		36	Bharatpur
		37	Bharuch
		38	Bhavnagar
		39	Bhilai
		40	Bhilainagar
		41	Bhiwani
		42	Bhopal
		43	Bhubaneswar
		44	Bijapur
		45	Bikaner
		46	Bokaro
		47	Burdwan
		48	Burla
		49	Calcutta/Kolkata
		50	Calicut/Kozhikode
		51	Canchipur/Kanchipur

52	Chalakydy	96	Hisar	141	Madurai	186	Ranchi
53	Chandigarh	97	Howrah	142	Mahad Raigad	187	Rewa
54	Chandimandir	98	Hubli	143	Mahboobnagar	188	Rishikesh
55	Chatrapur	99	Hyderabad	144	Mangalagangothri	189	Rohtak
56	Chengalpattu	100	Imphal	145	Mangalore	190	Roorkee
57	Chennai/Madras	101	Indore	146	Manipal	191	Rourkela
58	Chettupattu	102	Izatnagar	147	Mathura	192	Sagar
59	Chhindwara	103	Jabalpur	148	Meerut	193	Salem
60	Cochin/Kochi	104	Jadavpur	149	Midnapore	194	Samastipur
61	Coimbatore	105	Jaipur	150	Miraj	195	Sambalpur
62	Cuttack	106	Jalore	151	Moradabad	196	Sangli
63	Dahanu	107	Jammu	152	Mukteswar	197	Santiniketan
64	Darbhangha	108	Jammu Tawi	153	Mumbai/Bombay	198	Sardar krishinagar
65	Darjeeling	109	Jamnagar	154	Muzaffarpur	199	Satara
66	Davangere	110	Jamshedpur	155	Mysore	200	Secunderabad
67	Dehradun	111	Jaunpur	156	Nadia	201	Shahadol
68	Delhi/New Delhi/ Delhi Cantt	112	Jhalda	157	Nadiad	202	Shalimar
69	Dhanbad	113	Jhansi	158	Nagarjunanagar	203	Shillong
70	Dhanvantari	114	Jodhpur	159	Nagpur	204	Shimla
71	Dharamsala	115	Jorhat	160	Nainital	205	Sikar
72	Dharwad	116	Kakinada	161	Nalbari	206	Silchar
73	Dhule	117	Kalyani	162	Nalgonda	207	Singhbhum
74	Dhulia	118	Kannur	163	Namakkai	208	Solan
75	Dibrugarh	119	Kanpur	164	Namchi	209	Solapur
76	Dindigul	120	Karad	165	Nanded	210	Srinagar(j&k)
77	Durg	121	Karamsad	166	Nashik / Nasik	211	Sullia
78	Faizabad	122	Karigiri	167	Palampur	212	Surat
79	Faridkot	123	Karnal	168	Panjim	213	Swangi
80	Gandhigram	124	Kasauli	169	Pantnagar	214	Tanda
81	Gandhinagar	125	Khammam	170	Paralakhemundri	215	Tanuku
82	Garhwal	126	Kolar	171	Patancheru	216	Tatanagar
83	Gauhati	127	Kolhapur	172	Patiala	217	Tezpur
84	Gaya	128	Koothatukulam	173	Patna	218	Thajavur
85	Ghaziabad	129	Kota	174	Perambur	219	Thane
86	Goa	130	Kotagiri	175	Perunthurai	220	Thiruvananthapuram /Trivandrum
87	Gorakhpur	131	Kottayam	176	Pilani	221	Tiruchirapalli
88	Gudchiroli	132	Kurnool	177	Pocat	222	Tirunelveli
89	Gulbarga	133	Kurukshetra	178	Pondicherry	223	Tirunveli
90	Guntur	134	Ladakh	179	Port blair	224	Tirupatl
91	Gurgoan	135	Laherisarai	180	Pune	225	Trichur
92	Gwalior	136	Latur	181	Purulia	226	Trichy
93	Haldwani	137	Loni	182	Rahuri	227	Tumkur
94	Hardwar	138	Lucknow	183	Raipur	228	Udaipur
95	Hebbal	139	Ludhiana	184	Rajamundry	229	Uttarpara
		140	Madhuban	185	Rajkot		

230	Vadodra	233	Vidisha	236	Warangal
231	Varanasi	234	Vijaywada	237	Wardha
232	Vellore	235	Visakhapatnam	238	Yavatmal

Table 2: List of Provinces and Autonomous Regions in China

<u>Provinces (22)</u>		11	Hunan	22	Zhejiang
1	Anhui	12	Jiangsu	<u>Autonomous regions(8)</u>	
2	Fujian	13	Jiangxi	1	Beijing
3	Gansu	14	Jilin	2	Guangxi zhuang
4	Guangdong	15	Liaoning	3	Inner mongolia
5	Guizhou	16	Qinghai	4	Ningxia hui
6	Hainan	17	Shaanxi	5	Shanghai
7	Hebei	18	Shandong	6	Tianjin
8	Heilongjiang	19	Shanxi	7	Tibet
9	Henan	20	Sichuan	8	Xinjiang uighur
10	Hubei	21	Yunnan		

Table 3: List of States and Other Outlying Territories in USA

<u>States (51)</u>		15	Indiana	31	New Jersey	47	Virginia
		16	Iowa	32	New Mexico	48	Washington
1	Alabama	17	Kansas	33	New York	49	West Virginia
2	Alaska	18	Kentucky	34	North Carolina	50	Wisconsin
3	Arizona	19	Louisiana	35	North Dakota	51	Wyoming
4	Arkansas	20	Maine	36	Ohio		
5	California	21	Maryland	37	Oklahoma	<u>Other Outlying Territories</u>	
6	Colorado	22	Massachusetts	38	Oregon	1	American Samoa
7	Connecticut	23	Michigan	39	Pennsylvania	2	Guam
8	Delaware	24	Minnesota	40	Rhode Island	3	Northern Mariana Islands
9	District of Columbia	25	Mississippi	41	South Carolina	4	Puerto Rico
10	Florida	26	Missouri	42	South Dakota	5	US Virgin Islands
11	Georgia	27	Montana	43	Tennessee	6	Other Pecific Territories
12	Hawaii	28	Nebraska	44	Texas		
13	Idaho	29	Nevada	45	Utah		
14	Illinois	30	New Hampshire	46	Vermont		

SCIENCE CITATION INDEX

The *Science Citation Index* (SCI) (published by the Institute for Scientific Information, Philadelphia, USA, www.isinet.com) provides access to current and retrospective bibliographic information, author abstracts and cited reference found in approximately 3700 of the world's leading scholarly science and technical journals, covering more than 100 disciplines. However, its other formats like the *Science Citation Index Expanded* covers more than 5800 journals.

Like *MEDLINE*, data for *India, China and USA* for the ten disk years (1990 – 99) from *SCI* had been downloaded on payment basis from the library of Indian National Science Academy (INSA), New Delhi. The *SCI* database was available yearly in the CDs. These CDs were put into a juke box server and the desired information for ten disk years (1990 - 99) was retrieved.

Procedures for collection

Unlike the *MEDLINE*, the *SCI* database does not have abstract or MeSH fields. Therefore, records were extracted by searching the disease key words from the title field. Possibly, quite a few records could not have been captured as the search strategy was based purely on key words in the title.

Since *SCI* provides the complete address of authors, firstly the bibliographic data for a period of ten disk years (1990 – 99) were collected by specifying the name of the country *i.e.*, *India, China* and *USA*.

Download record option provided by *SCI* search was either comma delimited or the text with field name. Since the data also contain comma in between text, so converting the comma delimited data to database table directly from the utility provided with almost every database package is not much reliable. So, first the data in text format was downloaded with the field name and converted it into a database table using programme developed in Visual FoxPro 6.0. Specifically, the downloaded format of the *SCI* database was as shown below.

AIDS IN SCI-DATABASE FOR 1990

RECORD 4332 of 10103.

Authors: Babu-PG Cherian-T Jairaj-PK Jayakumari-H John-TJ

Title: Lack of Evidence for Seroconversion to **Human-Immunodeficiency-Virus** in Recipients of Anti-D

Immunoglobulin Containing **HIV** Antibody

Source: INDIAN JOURNAL OF MEDICAL RESEARCH SECTION A-INFECTIOUS DISEASES
1990, Vol 91, Iss MAR, pp 81-83

Language: English

Document type: Article

Addresses:

CHRISTIAN MED COLL & HOSP, DEPT VIROL & IMMUNOL, VELLORE
632004, TAMIL NADU, INDIA

CHRISTIAN MED COLL & HOSP, DEPT OBSTET & GYNAECOL, VELLORE
632004, TAMIL NADU, INDIA

CHRISTIAN MED COLL & HOSP, NATL AIDS REFERENCE & SURVEILLANCE
CTR, VELLORE 632004, TAMIL NADU, INDIA

RECORD 4350 of 10103.

Authors: Mathai-R Prasad-PVS Jacob-M Babu-PG John-TJ

Title: **HIV** Seropositivity Among Patients with Sexually-
Transmitted Diseases in Vellore

Source: INDIAN JOURNAL OF MEDICAL RESEARCH SECTION A-INFECTIOUS DISEASES
1990, Vol 91, Iss JUL, pp 239-241

Language: English

Document type: Article

Addresses:

CHRISTIAN MED COLL & HOSP, DEPT DERMATOL, VELLORE 632004,
TAMIL NADU, INDIA
CHRISTIAN MED COLL & HOSP, NATL AIDS REFERENCE & SURVEILLANCE
CTR, VELLORE 632004, TAMIL NADU, INDIA

RECORD 4378 of 10103.

Authors: De-M Banerjee-D Chandra-S Bhattacharya-DK
Title: HBV and **HIV** Seropositivity in Multi-Transfused
Hemophiliacs and Thalassaemics in Eastern-India
Source: INDIAN JOURNAL OF MEDICAL RESEARCH SECTION A-INFECTIOUS DISEASES
1990, Vol 91, Iss JAN, pp 63-66
Language: English
Document type: Article
Addresses:
SOC RES HAEMATOL & BLOOD TRANSFUS, GATE 4, FLAT 20F, CORP PL,
CALCUTTA 700087, INDIA

RECORD 4799 of 10103.

Authors: Singh-YN Malaviya-AN Tripathy-SP Chaudhuri-K
Bhargava-NC Khare-SD
Title: **HIV** Serosurveillance Among Prostitutes and Patients from
a Sexually-Transmitted Diseases Clinic in Delhi, India
Source: JOURNAL OF ACQUIRED IMMUNE DEFICIENCY SYNDROMES
1990, Vol 3, Iss 3, pp 287-289
Language: English
Document type: Article
Addresses:
ALL INDIA INST MED SCI, DEPT MED, CLIN IMMUNOL SECT, NEW DELHI
110029, INDIA
SAFDARJANG HOSP, DEPT DERMATOL & VENEREOL, SEXUALLY
TRANSMITTED DIS CLIN, NEW DELHI 110016, INDIA

RECORD 8778 of 10103.

Authors: Deodhar-LP Tendolkar-UM
Title: Genital Ulcers and **HIV** Antibody
Source: LANCET
1990, Vol 336, Iss 8707, pp 112-112
Language: English
Document type: Letter
Addresses:
LOKMANYA TILAK MUNICIPAL MED COLL & HOSP, DEPT MICROBIOL,
BOMBAY 400022, INDIA

TOTAL 6 RECORDS FOR 1990

The conversion of this text data to database format is carried out in two steps.

Step 1: The text file was imported to a FoxPro table which contains a single field / row. This was the first intermediate table contains all the fields of the records into a single row.

Step 2: A programme using Visual FoxPro (V 6.0) was developed which reads the data from the first intermediate table and append it to final table which contains all the separated fields. Since every record is provided with the field name, so, the programme starts reading the contents of the field whenever it

encounters the field name up to the next field name. This process is repeated up to the end of the file.

A number of programmes were developed to retrieve data from the FoxPro database for further analysis based on different parameters. A computer program was developed which incorporated all the key words of the five diseases, which on execution feeds each record with their respective disease.

Data were extracted using the following search strings.

DISEASE	KEY WORDS
AIDS	Acquired immunodeficiency syndrome, HIV, Human immunodeficiency
DIARRHOEA	Diarrh*, Rotavirus, Vibrio*
FILARIA	Dipetalonema, Dirofilaria, Elephantiasis, Loiasis, Mansonelliasis, Onchocerciasis, Setariasis, Filari*, Bancrofti
MALARIA	Malar*, Plasmodium, Anopheles*, Culex*
TUBERCULOSIS	Tubercul*

The downloaded bibliographic data were converted to database format. The data were analyzed to map the comparative study of contribution from different research institutes, in terms of research papers published. A comparative study of number of research papers dealing with the selected five diseases from the selected three countries published in different journals was also mapped. The impact factor of the journals (1999) was also analysed.

TROPICAL DISEASES BULLETIN

Started publication in 1912, *Tropical Diseases Bulletin* (TDB) is a monthly abstracting service, which covers papers in clinical, field and laboratory studies pertaining to international human health and diseases, particularly in tropical countries. It contains approximately 4000 abstracts each year derived from the CAB HEALTH (CABI International, Wallingford, Oxon, UK, www.cabi.org) database, which is compiled from the world's scientific and technical records. It is available online through DIMDI. It indexed 935 periodicals, during 1990.

Data for *India, China and USA* were extracted for a period of 10 calendar years (1990 – 99) from the printed monthly issue of the *TDB* by scanning the issues manually as the authors address appear in the records. The issues of the *TDB* are freely available at the library, ICMR Head Quarters, New Delhi.

Data were manually mapped out and the various fields like category, journal name, and name of the institute, city and State were keyed in a database format. Data was extracted using the following search strings.

DISEASE	KEY WORDS
AIDS	AIDS, Acquired immunodeficiency syndrome, HIV
DIARRHOEA	Diarrhoea, Diarrhea, Rotavirus, Vibrio
FILARIA	Dipetaonema, Drofilaria, Elephantiasis, Loiasis, Mansonelliasis, Onchocerciasis Setariasis, Filaria, Bancrofti
MALARIA	Malaria, Plasmodium, Anopheles
TUBERCULOSIS	Tuberculosis, Mycobacterium tuberculosis

A program was developed using Visual FoxPro for retrieval of the data based on different parameters for further analysis. The data were analyzed to map the comparative study of contribution from different research institutes, in terms of research papers published. A comparative study of number of research papers dealing with the selected five diseases from the selected three countries published in different journals was also mapped. The impact factor of the journals (1999) was also analysed.

RESULTS & INTERPRETATION

- PART I :** Mapping of country wise research papers (India, People's Republic of China and USA) in the three databases (*MEDLINE*, *SCI* and *TDB*) for 1990 – 99.
- PART II:** Disease wise segregation of research papers for India, People's Republic of China and USA in the three databases (*MEDLINE*, *SCI* and *TDB*) for 1990 – 99.
- PART III :** Analysis of *AIDS* papers from India in three databases (*MEDLINE*, *SCI* and *TDB*) for 1990 – 99.
- PART IV :** Analysis of *diarrhoea* papers from India in three databases (*MEDLINE*, *SCI* and *TDB*) for 1990 – 99.
- PART V :** Analysis of *filaria* papers from India in three databases (*MEDLINE*, *SCI* and *TDB*) for 1990 – 99.
- PART VI :** Analysis of *malaria* papers from India in three databases (*MEDLINE*, *SCI* and *TDB*) for 1990 – 99.
- PART VII :** Analysis of *tuberculosis* papers from India in three databases (*MEDLINE*, *SCI* and *TDB*) for 1990 – 99.

PART – I

Mapping of Country wise Research Papers (India, People's Republic of China and USA) in three Databases (*MEDLINE*, *SCI* and *TDB*) for 1990-99

Year (1990-99)	World	India	People's Republic of China	USA
<i>MEDLINE</i> (Total)	3979775	38131	25895	1054683
<i>MEDLINE</i> (Average)	397977.5	3813.1	2589.5	105468
<i>SCI</i> (Total)	6893860	112005	100426	2520910
<i>SCI</i> (Average)	689386	11200.5	10042.6	252091
<i>TDB</i> (Total)	37092	2865	1796	5680
<i>TDB</i> (Average)	3709.2	286.5	179.6	568

PART - I

As expected, the USA topped the tally in all the three databases analyzed. Interestingly, India contributed more research papers than People's Republic of China in all the three databases during the study period 1990-99. Specifically, *SCI* covers journals from all fields of S & T, the number of research papers have been maximum amongst three databases studied. As expected USA topped the tally with a whopping 36.57% followed by India (1.62%) and People's Republic of China (1.46%) [Table I and Figure 1-3]

YEAR	WORLD	INDIA (%)	PEOPLE'S REPUBLIC OF CHINA (%)	USA (%)
Y-90	590841*	10103 (1.70)	5609 (0.94)	226023 (38.25)
Y-91	590306*	10468 (1.773)	6630 (1.123)	225050 (38.124)
Y-92	639198*	11160 (1.745)	7631 (1.193)	241146 (37.726)
Y-93	652532*	10978 (1.682)	8087 (1.239)	252660 (38.719)
Y-94	681545*	11319 (1.66)	8226 (1.20)	257896 (37.83)
Y-95	707683**	11084 (1.56)	9713 (1.37)	261687 (36.97)
Y-96	730123**	11177 (1.53)	10152 (1.39)	263485 (36.08)
Y-97	745819**	11067 (1.48)	12630 (1.69)	262372 (35.17)
Y-98	770591**	12128 (1.57)	14610 (1.89)	261826 (33.97)
Y-99	785222**	12521 (1.59)	17138 (2.18)	268765 (34.22)
TOTAL	6893860	112005(1.62)	100426(1.46)	2520910(36.57)
AVERAGE	689386	11200.5	10042.6	252091

Table I: Contribution of India, People's Republic of China and USA in *SCI* during disk years 1990-99

* Data taken from *Science Citation Index* 1995 annual guide and list of source publication, page-61

** Data taken from *Science Citation Index* 1999 annual guide and list of source publication, page-63

FIGURE 1
Contribution of India, People's Republic of China and USA in the SCI during disk years 1990-99

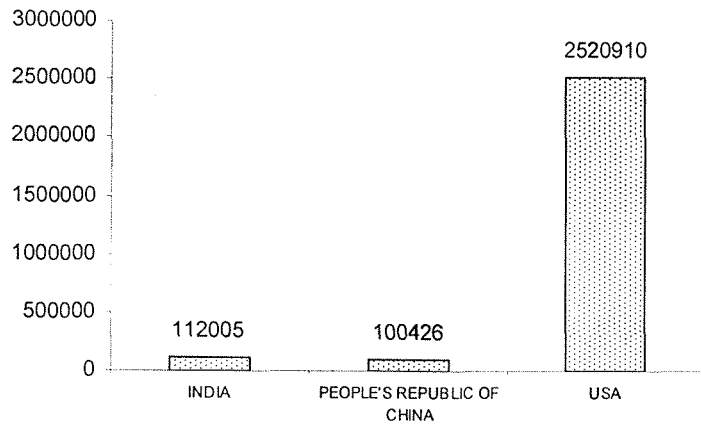
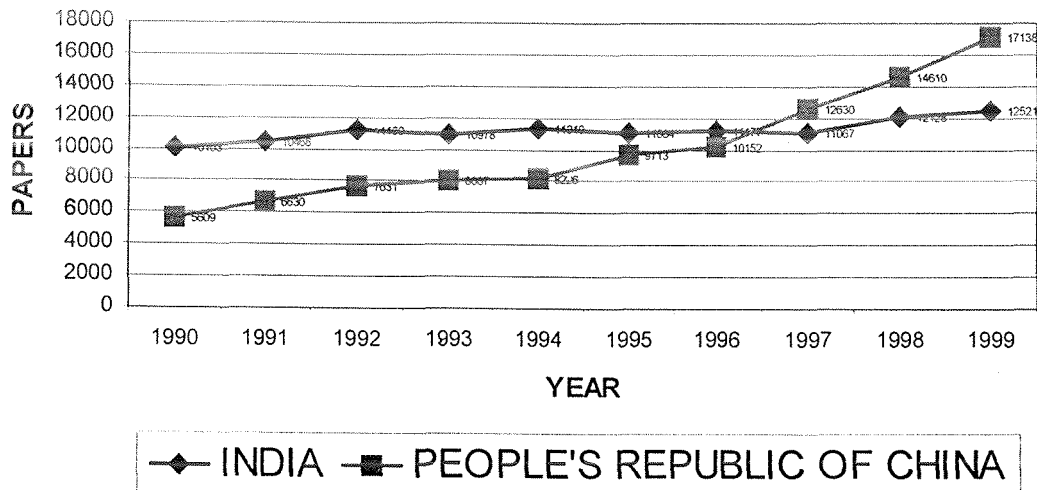
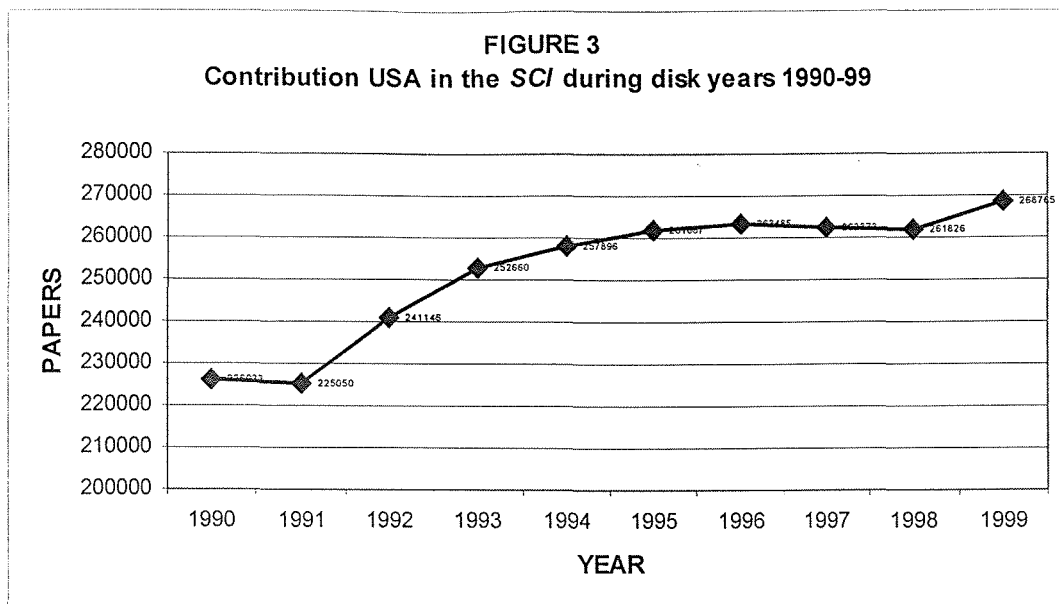


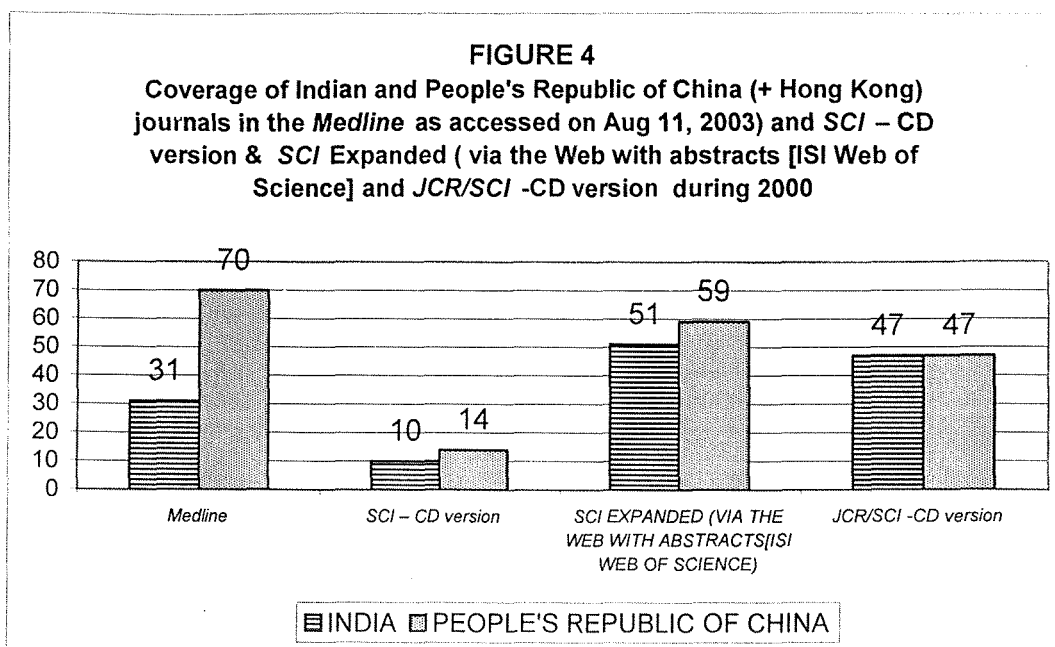
FIGURE 2
Contribution of India and People's Republic of China in the SCI during disk years 1990-99





Importantly, share of research papers from People's Republic of China has shown an increasing trend from 5609 papers in 1990 to 17,138 in 1999, *i.e.*, more than three times whereas both India and USA have shown a stabilization phase. This increase in the case of People's Republic of China could be due to schemes like **Knowledge Innovation Programme** initiated in 1998 and strengthening of its **863 Programmes** - first high tech R & D plan announced in May 1986 [*Nature* 2001 ; 410:1].

Also, in terms of number of journals in the *SCI* database, in 2000, 14 Chinese journals were included in *SCI* CD version with one journal having impact factor of one (*Acta Geologica Sinica – English Edition*) as against 10 from India with the highest impact factor of 0.625 (*Journal of Astrophysics & Astronomy*). Incidentally, both the countries have 47 journals in the *JCR/SCI*, 2000. However, the **Web of Science**, 2000 indexed 59 journals from People's Republic of China and 51 from India (Figure 4), It is heartening to note that **Web of Science** is catching up in India (Figure 4) .

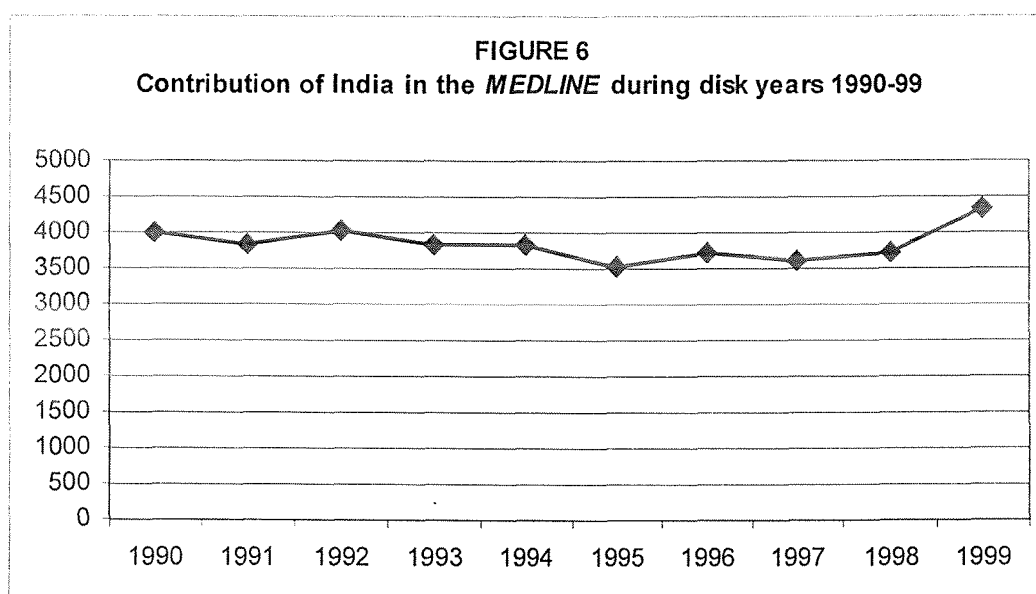
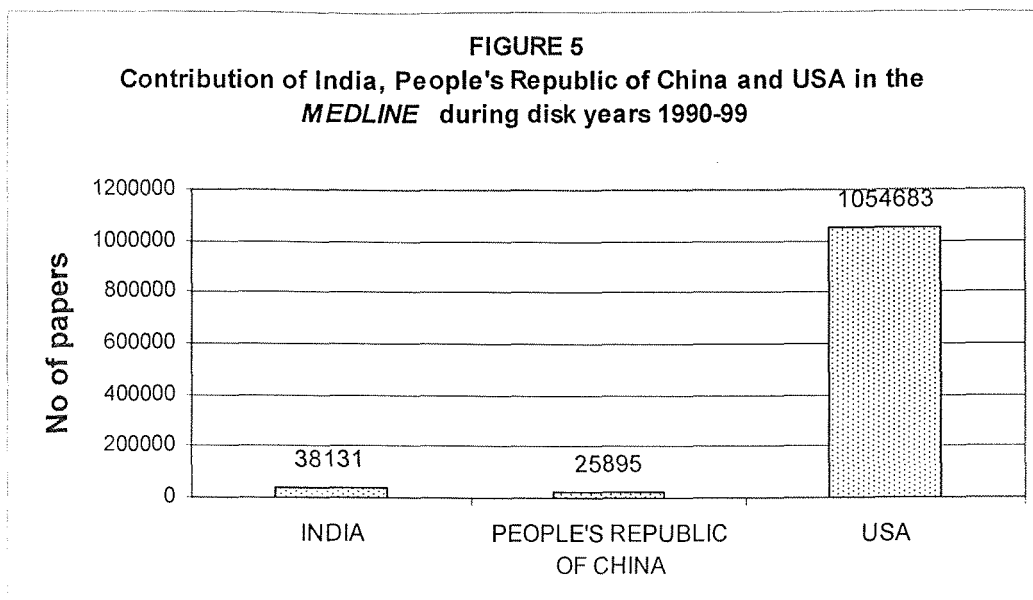


In the *Medline* database, 3979775 records were available worldwide during ten disk years 1990-99. USA topped the tally with 26.5% (1054683) followed by India and People's Republic of China (Table II & Figure 5-6).

Table II: Contribution of India, People's Republic of China and USA in Medline during disk years 1990-99

YEAR	WORLD	INDIA (%)	PEOPLE'S REPUBLIC OF CHINA (%)	USA (%)
Y-90	376710	3693 (0.98)		81790 (21.71)
Y-91	375710	3841 (1.02)		85100 (22.65)
Y-92	377527	4028 (1.06)		85017 (22.51)
Y-93	382926	3829 (0.99)		86459 (22.57)
Y-94	390173	3847 (0.98)		90855 (23.28)
Y-95	398822	3527 (0.88)		118296 (29.66)
Y-96	404549	3709 (0.91)		123364 (30.49)
Y-97	410913	3613 (0.87)		125712 (30.59)
Y-98	416561	3716 (0.89)		125564 (30.14)
Y-99	445884	4328 (0.97)		132526 (29.72)
TOTAL	3979775	38131(0.96)	25895* (0.65%)	1054683(26.50)
AVERAGE	397977.5	3813.1	2589.5*	105468.3

*Data for People's Republic of China was extracted from *PubMed* (1-1-1990 to 31-12-1999).



In terms of number of research papers, India's contribution (0.96%; 38131) was more than People's Republic of China (0.65%; 25,895). The output in a way reflects the number of domestic journals indexed in these databases, besides other factors. Interestingly, the number of journals covered in the *Medline* database was more than double (70) in the case of People's Republic of China (including Hong Kong) than India (31); majority being in Chinese (Figure 4).

In the *TDB* database, which essentially covers papers in clinical, field and laboratory studies pertaining to international human health and diseases, particularly in tropical countries, India's share was more than that of People's Republic of China and USA's contribution was still higher than India and People's Republic of China put together (Table III and Figure 7-8).

TABLE III : CONTRIBUTION OF INDIA, PEOPLE'S REPUBLIC OF CHINA AND USA IN THE TDB DURING CALENDER YEARS 1990-99

YEAR	WORLD	INDIA (%)	PEOPLE'S REPUBLIC OF CHINA (%)	USA (%)
Y-90	3588	231 (6.43)	117 (3.26)	721 (20.09)
Y-91	3466	183 (5.27)	71 (2.04)	709 (20.45)
Y-92	3698	248 (6.70)	102 (2.75)	876 (23.68)
Y-93	3297	219 (6.64)	114 (3.45)	606 (18.38)
Y-94	3217	236 (7.33)	115 (3.57)	626 (19.45)
Y-95	3602	313 (8.68)	146 (4.05)	509 (14.13)
Y-96	3601	307 (8.52)	181 (5.02)	420 (11.66)
Y-97	3657	326 (8.91)	274 (7.49)	442 (12.08)
Y-98	4460	412 (9.23)	327 (7.33)	390 (8.74)
Y-99	4506	390 (8.65)	349 (7.74)	381 (8.45)
TOTAL	37092	2865(7.72)	1796(4.84)	5680(15.31)
AVERAGE	3709.2	286.5	179.6	568

FIGURE 7
Contribution of India, People's Republic of China and USA in the TDB during calendar years 1990-99

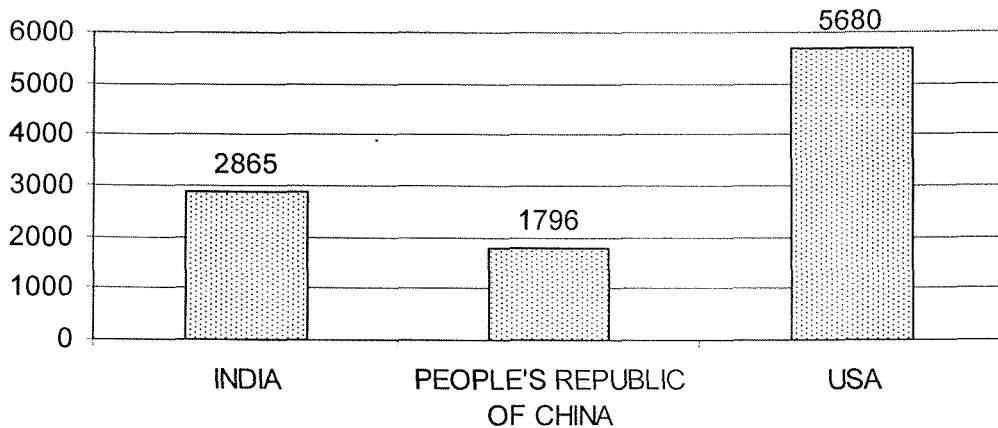
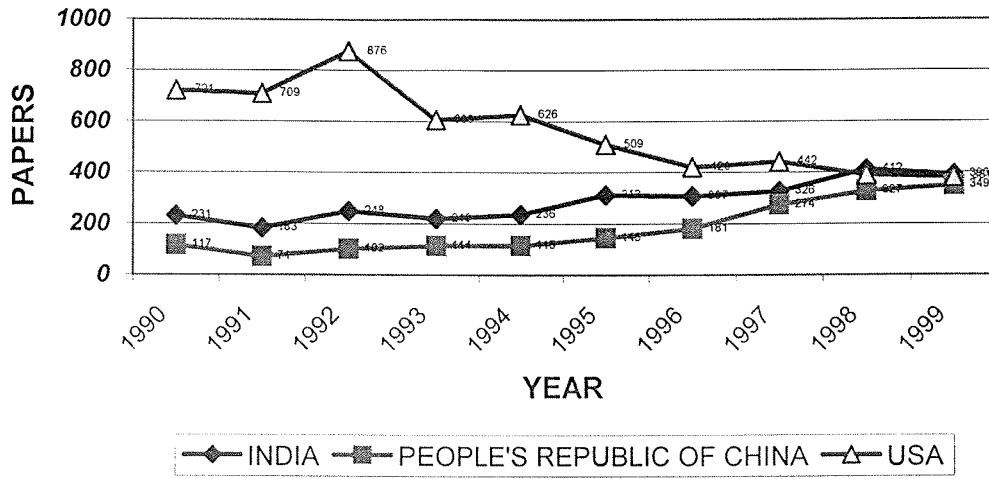


FIGURE 8
Contribution of India, People's Republic of China and
USA in the TDB during calender years 1990-99



PART – II
Disease wise Segregation of Research papers for India,
People's Republic of China and USA in three Databases
(*MEDLINE, SCI and TDB*) for 1990-99

PART – II

Table I: and Figure 1 provide the number of records captured from three countries for five diseases in the three databases. As expected USA topped the tally in all the diseases. Interestingly India's contribution for tuberculosis in the *TDB* database was maximum amongst the three countries. In any case India contributed more papers than People's Republic of China in five diseases analysed.

Table I: Mapping of research papers in five diseases from India, People's Republic of China and USA in three databases during 1990-99

DISEASES	INDIA			CHINA			USA		
	MEDLINE	SCI	TDB	MEDLINE	SCI	TDB	MEDLINE	SCI	TDB
AIDS	441	384	85	155	57	11	17448	25683	334
DIARRHOEA	820	425	126	281	51	14	5879	3087	183
FILARIA	344	298	143	98	21	66	653	668	300
MALARIA	988	474	247	245	89	126	2746	3422	874
TUBERCULOSIS	1331	415	279	42	47	16	4141	3596	91
TOTAL	3924	1996	880	821	265	233	30867	36456	1782
AVERAGE	392.4	199.6	88	82.1	26.5	23.3	3086.7	3645.6	178.2

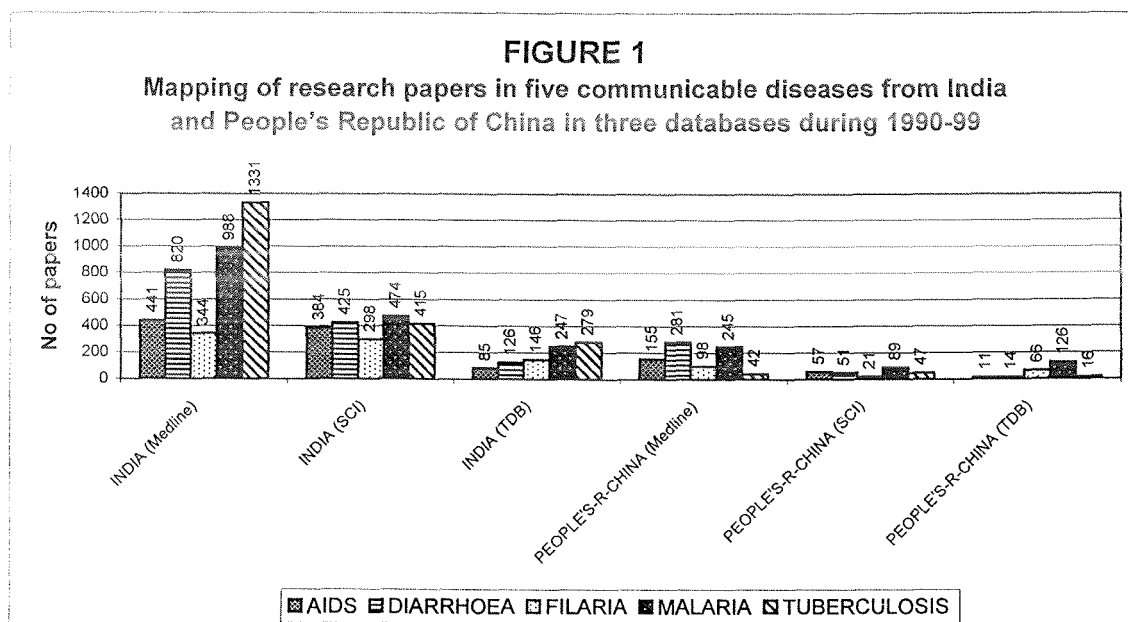


Table II: Mapping of research papers in five diseases from India in MEDLINE during 1990-99

YEAR	AIDS	DIARRHEA	FILARIA	MALARIA	TUBERCULOSIS
1990	20	84	46	99	149
1991	9	66	37	116	135
1992	19	86	45	113	116
1993	48	63	35	85	117
1994	62	100	34	81	118
1995	55	76	27	82	132
1996	52	106	33	121	136
1997	54	72	31	103	127
1998	58	89	30	72	138
1999	64	78	26	116	163
TOTAL	441	820	344	988	1331

Table III: Mapping of research papers in five diseases from USA in MEDLINE during 1990-99

YEAR	AIDS	DIARRHEA	FILARIA	MALARIA	TUBERCULOSIS
1990	1670	548	65	239	217
1991	1632	537	71	212	203
1992	1562	498	61	233	230
1993	1658	497	63	234	307
1994	1897	522	56	266	352
1995	2610	625	78	304	550
1996	1176	641	70	326	647
1997	1079	647	58	316	535
1998	1119	682	79	298	580
1999	2191	523	38	208	397
TOTAL	16594	5720	639	2636	4018

Table IV: Mapping of research papers in five diseases from India in SCI during 1990-99

YEAR	AIDS	DIARRHEA	FILARIA	MALARIA	TUBERCULOSIS
1990	11	34	41	33	37
1991	22	28	24	49	26
1992	20	41	30	45	33
1993	33	36	42	35	50
1994	44	55	25	39	45
1995	50	53	31	42	50
1996	42	61	27	45	45
1997	56	33	28	68	45
1998	64	47	25	50	38
1999	42	37	25	68	46
TOTAL	384	425	298	474	415

Table V: Mapping of research papers in five diseases from People's Republic of China in SCI during 1990-99

YEAR	MALARIA	FILARIA	DIARRHEA	AIDS	TUBERCULOSIS
1990	4	4	6	2	1
1991	11	3	10	4	0
1992	5	1	6	3	4
1993	11	1	4	0	3
1994	10	4	4	9	4
1995	10	2	2	4	10
1996	6	0	7	4	5
1997	8	3	2	5	7
1998	11	2	4	12	5
1999	13	1	6	14	8
TOTAL	89	21	51	57	47

Table VI: Mapping of research papers in five diseases from People's Republic of China in SCI during 1990-99

YEAR	AIDS	DIARRHEA	FILARIA	MALARIA	TUBERCULOSIS
1990	2089	339	190	313	193
1991	2280	294	71	320	204
1992	2501	317	54	337	275
1993	2935	282	52	350	386
1994	2938	339	58	367	380
1995	2881	310	56	320	422
1996	2722	327	64	357	482
1997	2512	271	36	360	411
1998	2537	296	40	335	409
1999	2288	312	47	363	434
TOTAL	25683	3087	668	3422	3596

Table VII: Mapping of research papers in five diseases from India in TDB during 1990-99

YEAR	AIDS	DIARRHOEA	FILARIA	MALARIA	TUBERCULOSIS
1990	3	13	17	30	8
1991	4	4	12	23	8
1992	4	11	16	27	14
1993	7	8	14	27	8
1994	1	23	16	16	21
1995	13	15	11	21	31
1996	9	16	15	24	39
1997	6	14	17	39	20
1998	12	11	19	28	63
1999	26	11	6	12	67
TOTAL	85	126	143	247	279

Table VIII: Mapping of research papers in five diseases from People's Republic of China in *TDB* during 1990-99

YEAR	AIDS	DIARRHOEA	FILARIA	MALARIA	TUBERCULOSIS
1990	0	0	16	30	1
1991	0	2	4	4	0
1992	1	1	7	23	0
1993	0	1	8	15	1
1994	2	0	1	1	1
1995	0	0	7	7	1
1996	1	4	7	15	3
1997	1	1	7	4	1
1998	1	3	6	10	4
1999	5	2	3	17	4
TOTAL	11	14	66	126	16

Table IX: Mapping of research papers in five diseases from USA in *TDB* during 1990-99

YEAR	AIDS	DIARRHOEA	FILARIA	MALARIA	TUBERCULOSIS
1990	32	21	41	107	8
1991	27	20	48	118	8
1992	42	21	44	141	7
1993	34	21	32	76	5
1994	32	17	24	112	12
1995	19	24	35	109	9
1996	34	12	36	67	9
1997	40	13	18	73	8
1998	22	26	12	53	9
1999	52	8	10	18	16
TOTAL	334	183	300	874	91

PART - III
Analysis of AIDS papers from India in three Databases
(*MEDLINE, SCI* and *TDB*) for 1990-99

AIDS research in India (1990-99) – Medline

- ◆ Mapping of AIDS research papers from India for the 10 year period (1990-99) from the three databases namely **Medline**, **SCI** & **TDB** reveals that the maximum amount of research papers on AIDS appears in **Medline (441)**, followed by **SCI (384)** & **TDB (85 papers)**.
- ◆ Considering the **Medline database**, it is seen that 441 research papers were published in 132 journals from 22 countries all over the world. As many as 37 UK journals published 61 papers while 32 US journals published 62 papers. Even though the no. of Indian journals used was only 26, these journals published a whopping 256 papers on this disease.
- ◆ The top ten journals published a good 218 papers in no. which is 49.43% of the total number of papers mapped (441). Indian journals accounted for 8 out of the top ten journals. *Indian J Med Res* (46) published highest no. of papers, followed by *J Indian Med Assoc* (36), *J Commun Dis* (32) & *J Assoc Phys India* (22).
- ◆ The journal profile of AIDS research papers reveals that 73 journals have published single papers, 43 journals with a publishing range of 2-5 papers, 6 journals publishing in the range of 6-10 papers and 10 journals publishing 10 papers or more.
- ◆ Research has been extensively carried out on AIDS by Indian researchers and has been published in good peer reviewed and high impact journals. As many as 87 journals have IF values with 52 journals having IF more than 1.00 and the rest 35 having IF < 1.00. Among the top IF journals used was *Immunol Today* (17.134), *Lancet* (10.197), *J Immunol* (7.145) & *AIDS* (6.931). *Neurol India* had the lowest value of IF (0.057).
- ◆ AIIMS, New Delhi seems to be the national organisation carrying out extensive research on this disease as is revealed by the number of papers (40). It was closely followed by Christian Medical College, Vellore publishing 34 papers and PGIMER, Chandigarh (18 papers). As many as 141 institutions have been engaged in research on this deadly disease, out of which 8 institutions have published 10 or more papers. 98 institutions published papers in the range of 1-2, 16 institutes publishing 3-5 papers, and 11 institutes with a publishing range of 6-9.
- ◆ The Ministry of Health & Family Welfare (MHFW), seems to sponsoring the highest number of research projects on this disease (108 papers) followed by ICMR (40 papers) and CSIR (11 papers), in the country.
- ◆ The top states/UT's carrying out maximum research work on AIDS , is Delhi (133) followed by Maharashtra (88), Tamil Nadu (57) & West Bengal (50). The probable reasons for these may be again traced out to the fact that most of the research organisations are situated in Delhi and some of our countries' top medical colleges & hospitals are in Maharashtra, due to which research in these areas on AIDS flourishes well, thus helping these states to stay at the top position.

AIDS research in India (1990-99) – SCI

- ◆ Compared to Medline, the **SCI database** shows less amount of research work on AIDS (384 papers). The total research on AIDS in this database for the ten year period of study has been published in 82 journals from 14 countries. US journals were the most widely used by Indian scientists to publish their findings (29 journals publishing 146 papers), followed by 23 UK journals (74 papers), 6 journals of Netherlands (18 papers) and only a meagre number of 4 Indian journals used to publish 87 papers.
- ◆ The top 10 journals publishing 190 papers (49.4%) included 4 US journals & 3 Indian journals. The maximum number of papers though was published by *Indian J Med Res* (66), followed by *AIDS* (28) & *AIDS Res & Hum Retrovirus* with 26 papers.
- ◆ As many as 51 journals published papers in the range of 1-3, 24 journals published in the range of 4-7 papers and 8 journals published 7 or more papers.
- ◆ Research findings on AIDS by Indian scientists have been published in a good number of high impact journals. As many as 77 journals out of the total 82 have IF values, of which 55 journals have IF values of 1.00 or more and 22 journals having an IF < 1.00. *FASEB J* has the highest IF (11.88) while the minimum IF is for the *J of Trop Paediatr* (0.297).
- ◆ A total of 52 institutions all over the country have contributed to research on AIDS as mapped in SCI. Christian Medical College Hospital, Vellore, seems to be carrying out extensive research on this disease as it has published the maximum no. of papers (39), followed by Indian Institute of Chemical Technology, Hyderabad (16), NARI, Pune (13). In all 6 institutes have published 10 or more papers. Institutions publishing papers in the range of 1-4 were 42.
- ◆ ICMR has sponsored as many as 37 research projects on AIDS, followed by MHFW (28 projects) & CSIR (20 research projects).
- ◆ The top states/UT carrying out maximum research on AIDS as mapped in SCI are Tamil Nadu (53), closely followed by Delhi (52) & Maharashtra (51 papers). This factor may be linked to the presence of reputed research organisations such as CMC, Vellore, National Institute of Communicable Diseases & National Institute Immunology in Delhi & National AIDS Research Institute & National Institute of Virology in Pune situated these states.

AIDS research in India (1990-99) - TDB

- ◆ Compared to the other two databases, **TDB** has the least number of papers mapped on AIDS research from India (85). A meagre 32 journals from 8 countries have been used to publish these 85 papers. 12 UK journals published 17 papers, whereas 9 Indian journals published a total of 49 papers. US journals used were 5 in number publishing 11 papers.
- ◆ The top 10 journals published 57 papers (67.05% of total papers). *Indian J Med Res* published the maximum number of papers (17) followed by *J Commun Dis* (9) & *Med J Armed Forces India* (8).
- ◆ The IF range of journals was between a low of 0.363 for *Natl Med J India* to a high of 10.197 for *Lancet*. As many as 20 journals of a total 32 were *JCR/SCI* indexed with 12 of them having IF ≥ 1.00 , and the rest 8 having IF < 1.00 .
- ◆ AIDS research has been carried out by a fair number of 48 institutes all over India. Christian Medical College, Vellore tops the list of institutes by publishing the maximum research work (16 papers) followed by Armed Forces Medical College, Pune (5 papers).
- ◆ Two major Government agencies of national repute have sponsored research papers. Ministry of Health Family Welfare leads with 18 research projects sponsored, followed by ICMR, the main funding agency for biomedical research in our country sponsoring 12 projects on AIDS.
- ◆ Maharashtra & Tamil Nadu both share the common top position in being the states publishing maximum research papers (23 each), followed by Delhi (10 papers).

PART – III

Table I: Mapping of research papers in AIDS from India in the three Databases (*MEDLINE*, *SCI* and *TDB*) during 1990-99

YEAR	<i>MEDLINE</i>	<i>SCI</i>	<i>TDB</i>
1990	20	11	3
1991	9	22	4
1992	19	20	4
1993	48	33	7
1994	62	44	1
1995	55	50	13
1996	52	42	9
1997	54	56	6
1998	58	64	12
1999	64	42	26
TOTAL	441	384	85

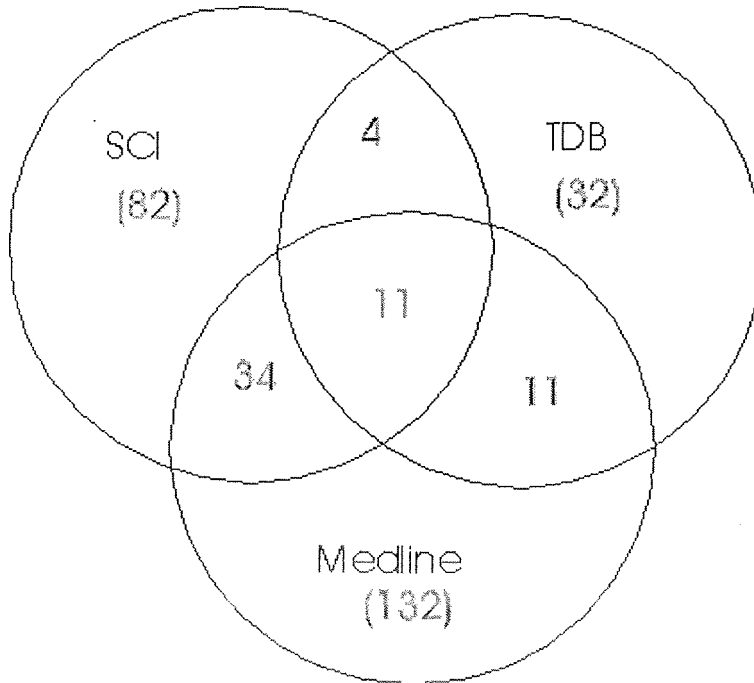
Table II provides publishing journal's profiles of five diseases in case of India in three databases during 1990-99. Disease-wise top 10 *SCI* journals with impact factor for the year 1999 for India are given in Table VII.

Table II : Publishing journal profile of five diseases in the case of India in three databases during 1990 – 99

Diseases	<i>MEDLINE</i>	<i>SCI</i>	<i>TDB</i>
AIDS	132	82	32
Diarrhoea	175	112	38
Filaria	91	82	47
Malaria	168	151	65
Tuberculosis	300	153	56
Total	866	580	240

Intersection of common journals in the field of AIDS, in three databases (*Medline*, *SCI* and *TDB*) in the case of India through Venn analysis/diagram was found to be only 12. These common journals(12) accounted for 304 papers altogether.

**Intersection of common journals in the field of AIDS,
in *Medline*, *SCI* and *TDB***



12 Common journals with no. of papers in three databases

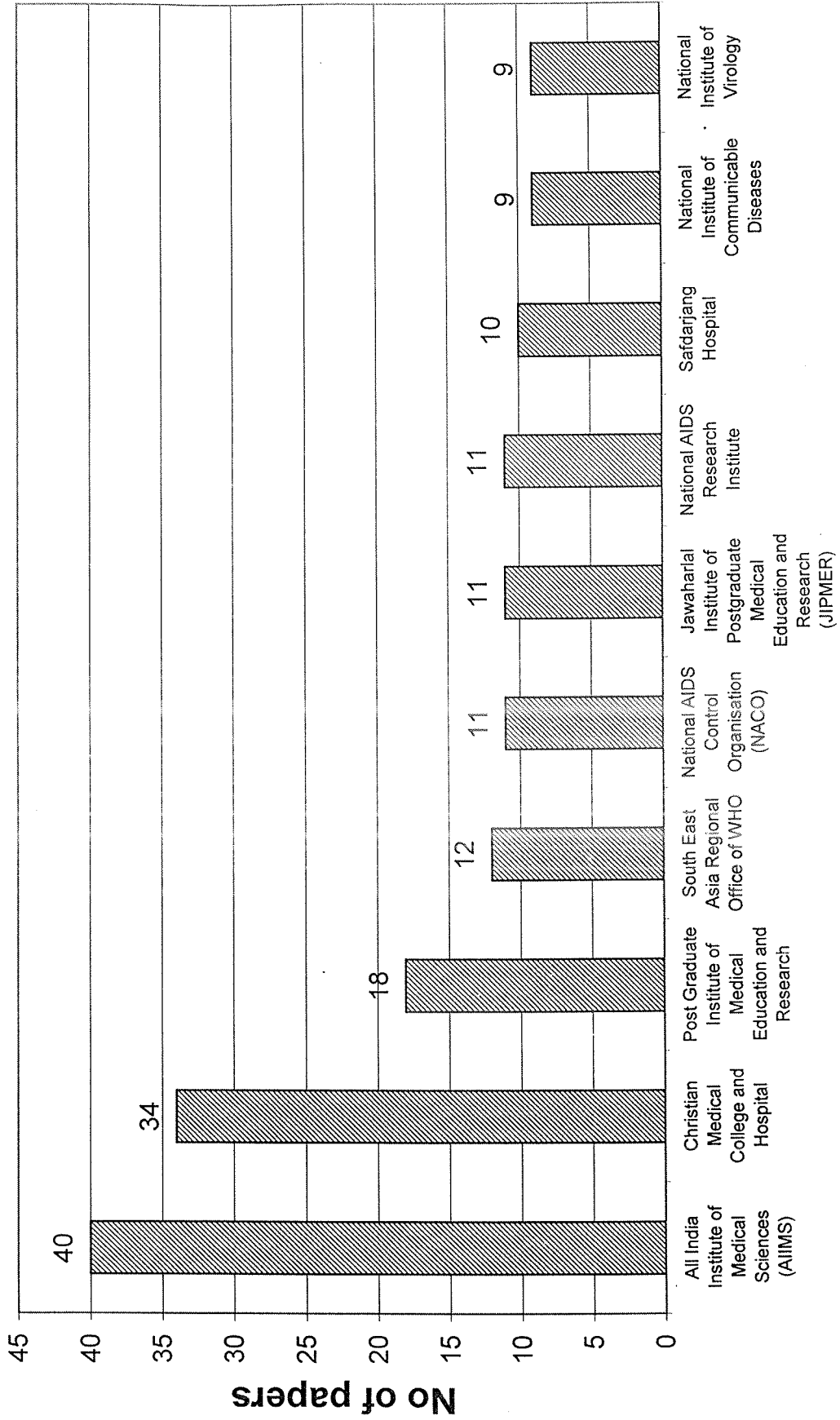
JOURNAL TITLE (IF)	NO. OF PAPERS COVERED IN		
	<i>TDB</i>	<i>MEDLINE</i>	<i>SCI</i>
AIDS (6.931)	1	12	28
BULLETIN OF THE WORLD HEALTH ORGANISATION (1.490)	1	2	6
INDIAN JOURNAL OF MEDICAL RESEARCH (0.365)	17	46	66
JOURNAL OF ACQUIRED IMMUNE DEFICIENCY SYNDROMES (2.712)	5	8	22
JOURNAL OF CLINICAL MICROBIOLOGY (3.67)	2	2	8
JOURNAL OF INFECTION (0.896)	1	2	6
JOURNAL OF INFECTIOUS DISEASES (4.842)	1	2	6
LANCET (10.197)	1	1	7
NATIONAL MEDICAL JOURNAL OF INDIA (0.363)	3	12	13
SCANDINAVIAN JOURNAL OF INFECTIOUS DISEASES (1.201)	1	1	2
TROPICAL MEDICINE AND INTERNATIONAL HEALTH (1.560)	2	3	5
TOTAL	37	91	173

MEDLINE: Total number of publishing journals – 132
Number of research papers – 441

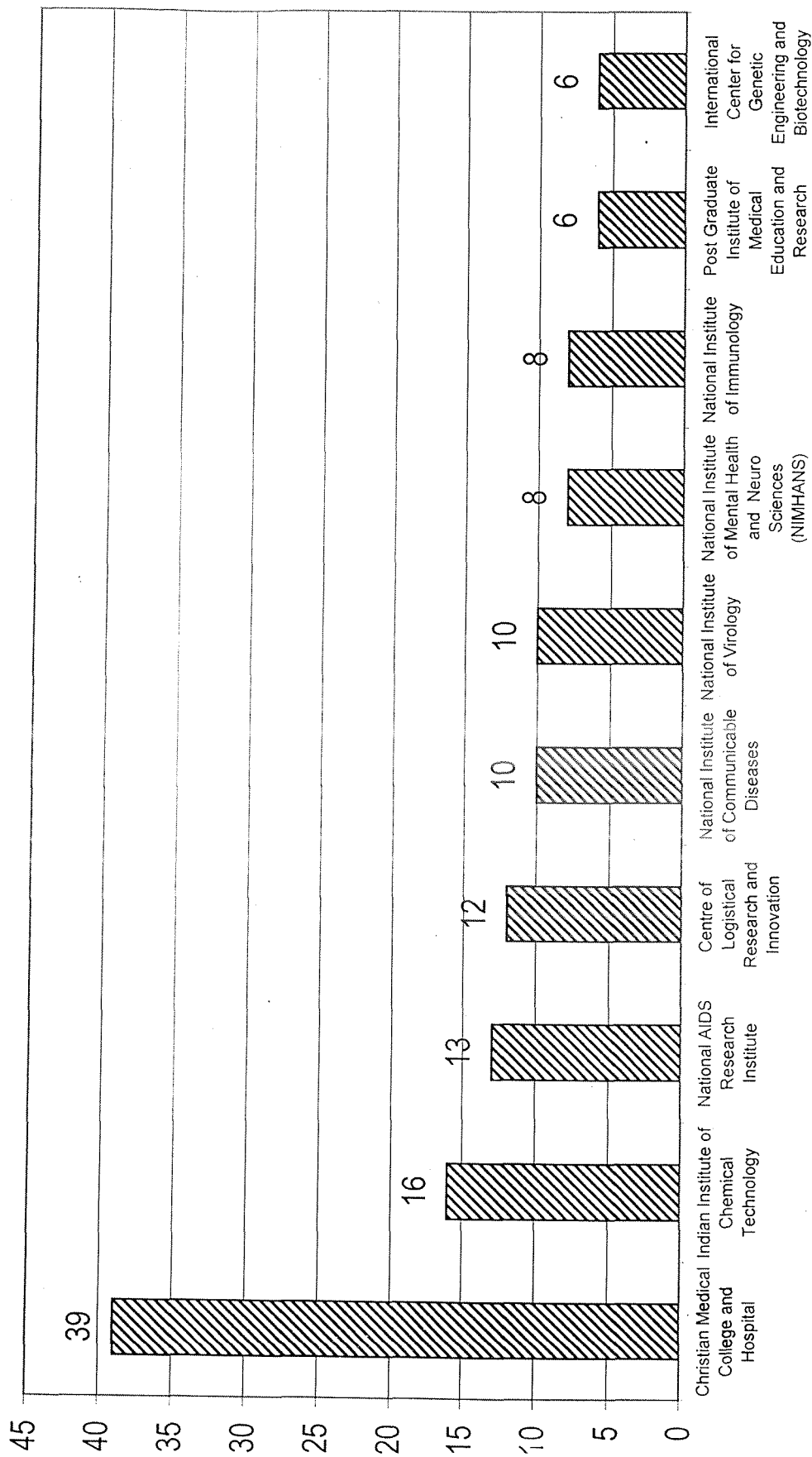
SCI: Total number of publishing journals – 82
Number of research papers – 384

TDB: Total number of publishing journals – 32
Number of research papers – 85

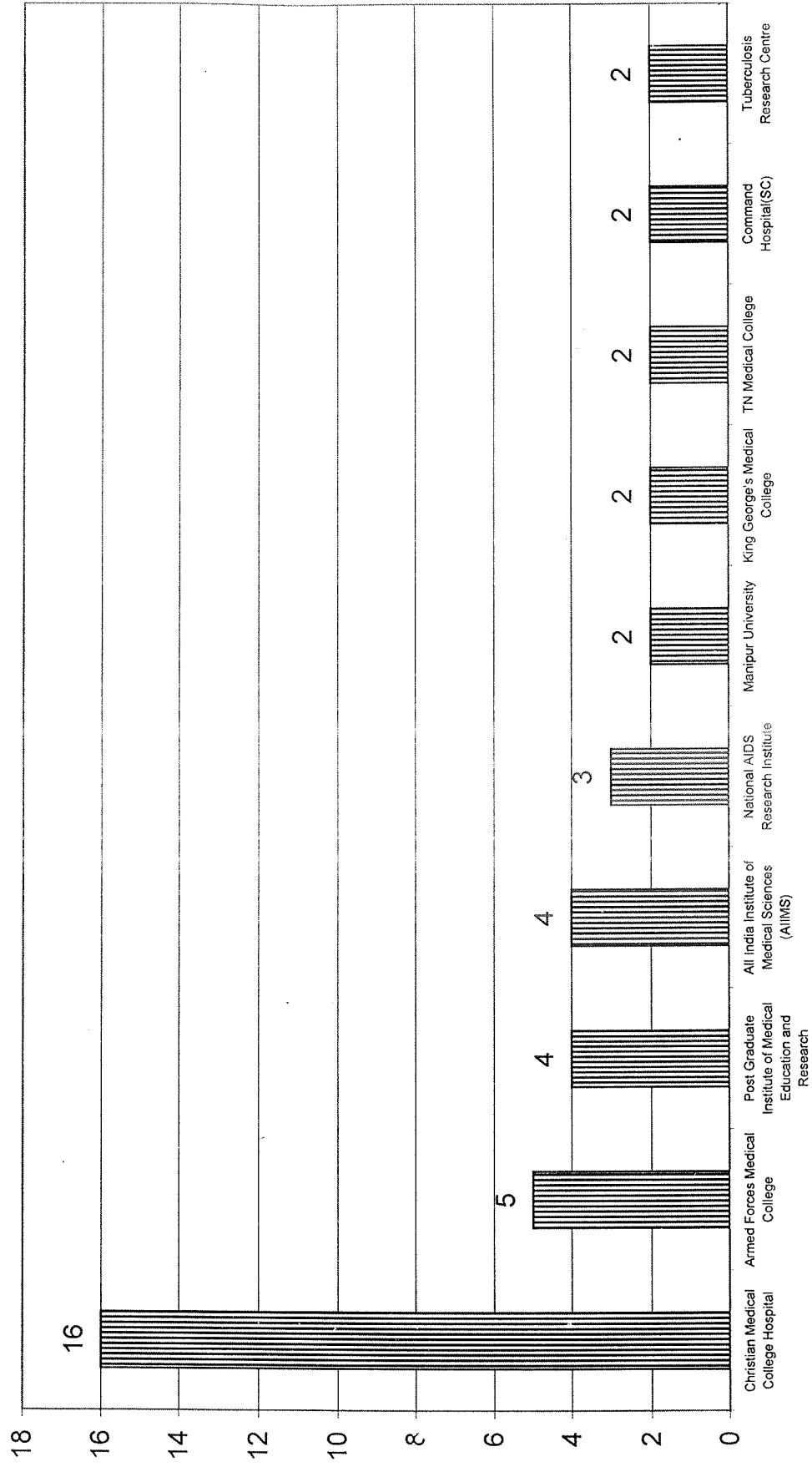
Institute profile of AIDS papers (441) from India in *Medline* database during 1990-99 (Top ten publishing Institute)



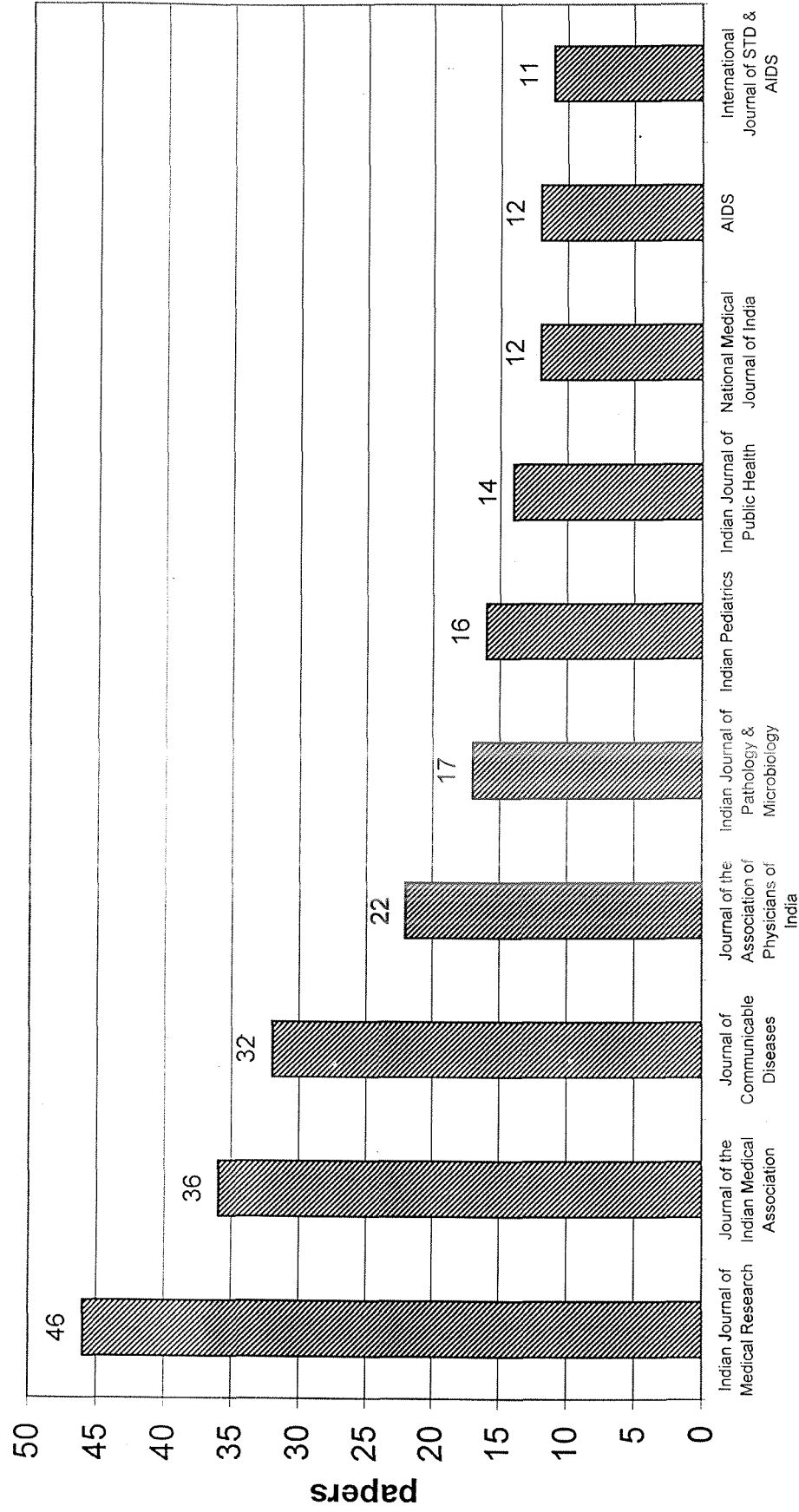
Institute profile of AIDS papers (384) from India in SCI/ database during 1990-99 (Top ten publishing Institute)



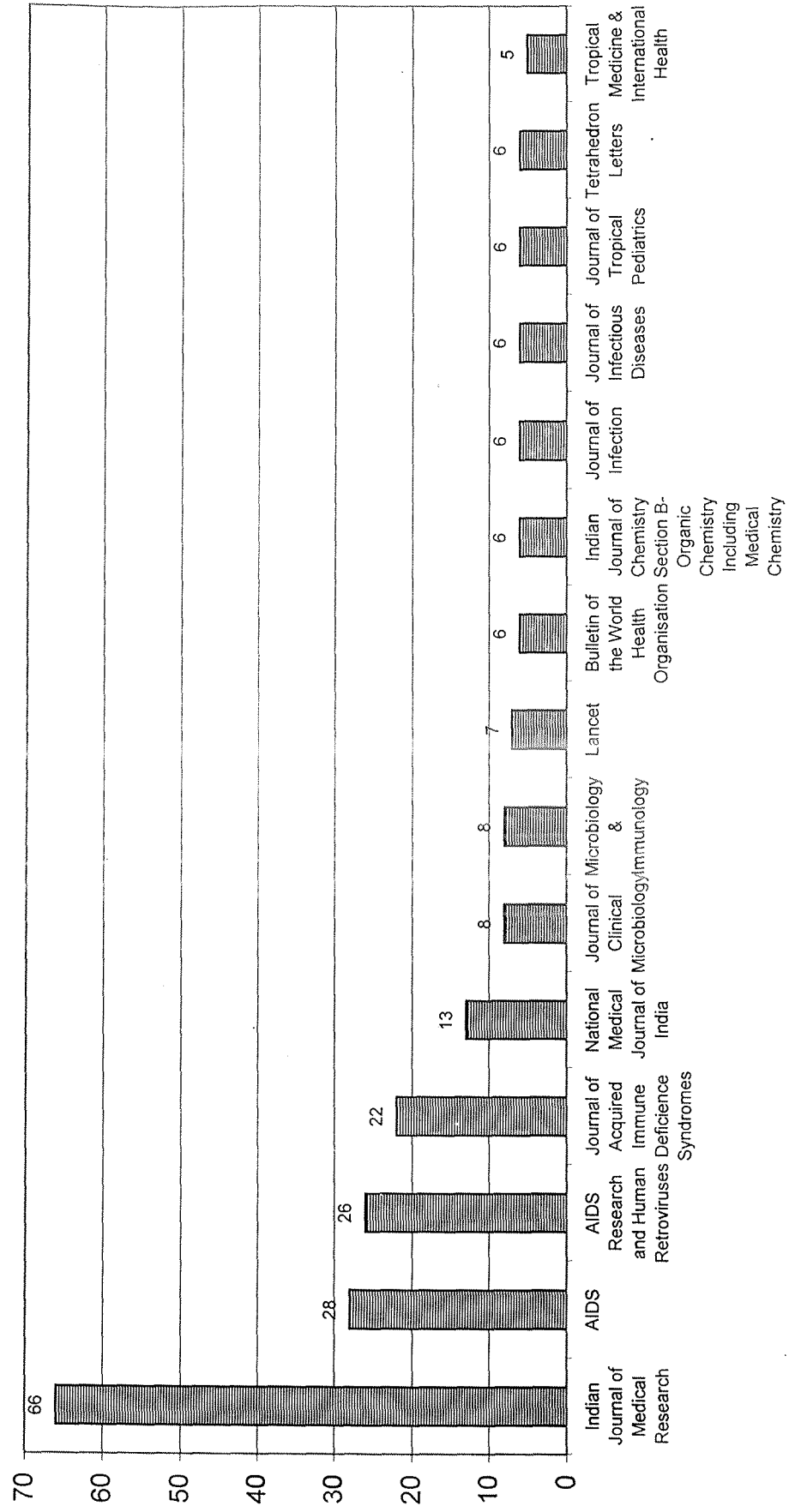
Institute profile of AIDS papers(85) from India in *TDB* database during 1990-99 (Top ten publishing Institute)



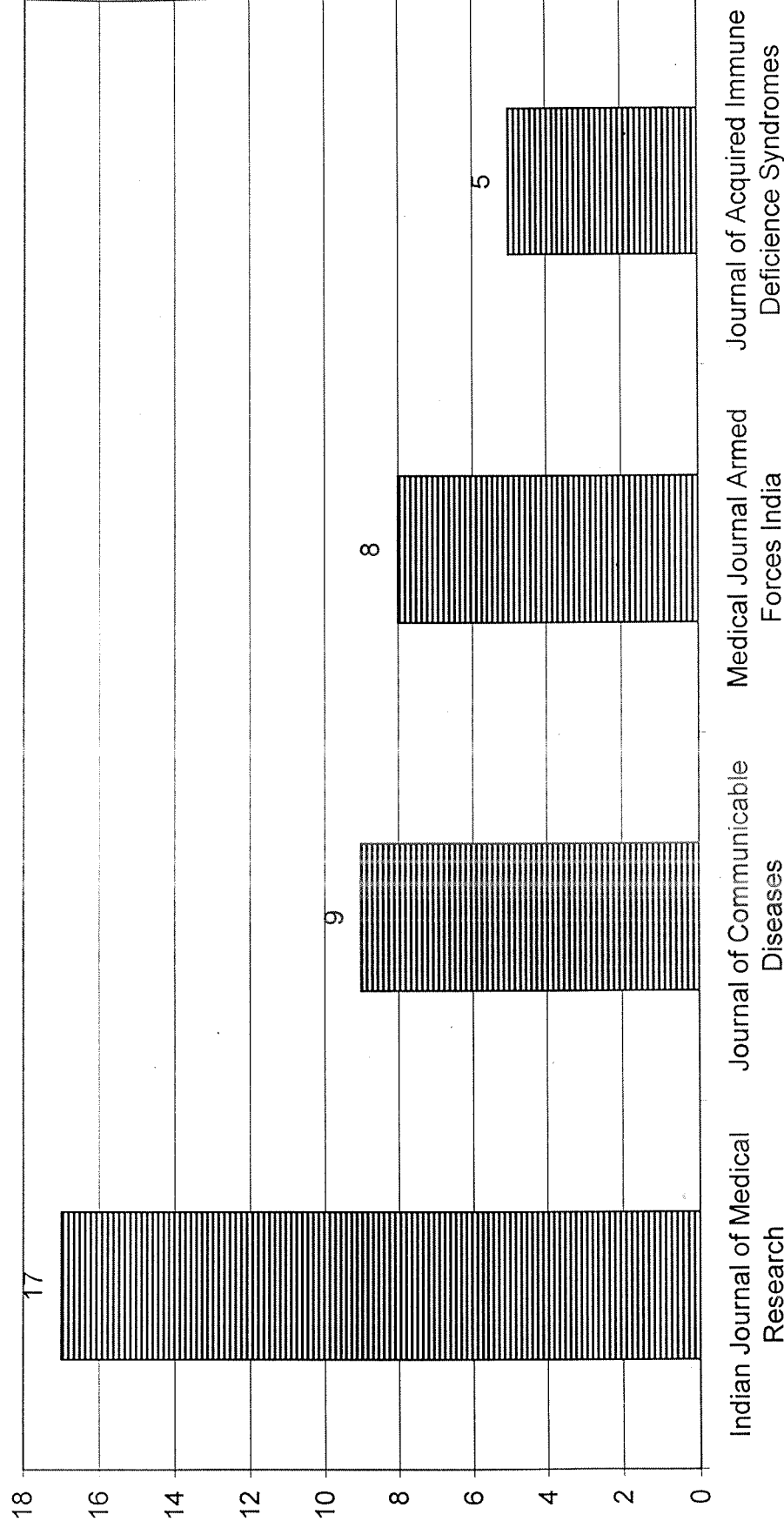
Journal profile of AIDS papers (441) from India in *Medline* database during 1990-99 (Top publishing journal with minimum 10 papers)



Journal profile of AIDS papers (384) from India in SCI database during 1990-99 (Top publishing journals with minimum 5 papers)



**Journal profile of AIDS papers(85) from India in TDB
database during 1990-99 (Top publishing journals with
minimum 5 papers)**



PART - IV
**Analysis of Diarrhoea papers from India in three
Databases (*MEDLINE, SCI* and *TDB*) for 1990-99**

Diarrhoea research in India (1990-99) – Medline

- ◆ Mapping research work on diarrhoea during the 10 year period from India shows that data captured from **Medline** amounts to **820** papers, **SCI (425 papers)** & **TDB (126 papers)**. As usual Medline tops the three databases in the no. of records mapped.
- ◆ A whopping number of 175 journals from 21 countries have been used to publish 820 papers, as revealed by the **Medline database**. US journals were the most widely used to publish research (115 papers) followed closely by UK journals (129 papers) and Indian journals (19 journals publishing as many as 381 papers). 17 journals of Netherlands have been used to publish 62 papers.
- ◆ The top ten journals have published a total of 398 research papers (48.5% of total). The *Indian J Med Res* published the maximum number of papers (101) followed by *Indian Paediatr* (73) and *J Diarrhoeal Dis Res* (46). India journals accounted for 6 out of the top ten journals.
- ◆ The publishing profile of journals reveals that as many as 126 journals published papers in the range of 1-2, 32 journals published 3-5 papers, 8 journals in the publishing range of 6-10 papers and 18 journals published more than 10 papers.
- ◆ High impact journals are indexed in Medline database and research on diarrhoea have been published in such high impact journals such as *New Engl J Med* (28.857), which has the highest IF value. 133 journals have IF values, of which 89 journals have IF ≥ 1.00 . The journal *Gynaecol Oncol* has the lowest IF (0.186).
- ◆ A good number of 159 national level institutions have published research on diarrhoea, in India. National Institute for Cholera & Enteric Diseases, Kolkata tops the list of institutions with an excellent number of 150 research papers followed by All India Institute of Medical Sciences, New Delhi (78), CMC, Vellore with 45 papers & Post Graduate Institute of Medical Education Research, Chandigarh with 42 papers. The top 10 institutes published 460 papers i.e., 56.09% of the total research produced (820 papers). As many as 17 institutes have published 10 papers or more.
- ◆ ICMR is the top agency sponsoring about 184 papers followed by MHFW (145 papers) & CSIR (59 papers).
- ◆ West Bengal emerges atop among all states/UT's in India to have published maximum research with the maximum number of papers (248). Delhi followed suit with 184 papers & Uttar Pradesh with 75 papers.

Diarrhoea research in India (1990-99) – SCI

- ◆ Simultaneously research work mapped on diarrhoea disease from the SCI database amounts to 425 papers. A total 112 unique journals from 15 countries have been used to publish research findings. Of the 112 journals, US journals were the maximum in no. (35 journals published 119 papers), followed by 30 UK journals (109 papers) & 19 journals of Netherlands with 61 papers published. On the contrary, only 4 Indian journals were used to publish 83 papers.
- ◆ The top 10 journals published 211 papers (49.64% of total journals used). *Indian J Med Res* again turned out to be the journal publishing the maximum research (72 papers) followed by *J Clin Microbiol* (29 papers) & *FEMS Microbiol Letts* (22 papers).
- ◆ As many as 86 journals published research papers in the range of 1-3, 17 journals in the range of 4-9 & 9 journals published 10 papers or more.
- ◆ The IF of the 112 journals used ranged from a minimum value of 0.297 (*J Trop Paediatr*) to a maximum of 28.857 (*New Engl J Med*). As many as 105 journals had IF values suggesting that research work had been published in journals of national and international repute. Total number of journals with IF > 1.00 is 81 & 24 journals with IF < 1.00. Other commonly used high impact journals included *Gastroenterology* (12.782), *FASEB J* (11.88) & *J Clin Investigation* (10.921).
- ◆ In all, 53 institutions all over the country have published a paper at least once during the 10 year period of study. 7 institutions have published 10 or more papers, NICED, Kolkata has been actively engaged in research on this disease and tops the list of institutions with 97 papers in all, followed by Indian Institute of Chemical Biology, Kolkata (34), closely followed by AIIMS, Delhi (33) & CMC, Vellore (30).
- ◆ Among the 3 major sponsoring agencies conducting biomedical research in our country, ICMR has sponsored 101 research projects on this disease followed by MHFW (57) and CSIR (54).
- ◆ The top states/UT's publishing research, are West Bengal (165 papers) which is far ahead of other states, due to considerable amount of research work carried out by NICED on this disease. Delhi follows suit with 56 research papers and Tamil Nadu & Chandigarh follow next with 40 & 29 papers published respectively.

Diarrhoea research in India (1990-99) – TDB

- ◆ Mapping of diarrhoea research in the **TDB** shows that 38 unique journals from 10 countries had been used to publish 126 research papers on this disease. As many as 11 UK journals were used (publishing 23 papers). A total of 8 Indian journals were used for publishing 55 papers.
- ◆ *Indian Paediatr* was the top journal publishing 22 papers in all followed by *Indian J Med Res* (18) & *J Diarrhoeal Dis Res* (16).
- ◆ The IF values of journals ranged from a high of 10.197 (*Lancet*) to a low of 0.198 (*Trop Doctor*). 29 out of a total 38 journals used had been indexed in *JCR/SCI* with 17 journals having IF values > 1.00.
- ◆ In all, 37 institutions all over the country have published 126 research papers on this disease. The top institutions actively involved in research on this disease include NICED, Kolkata (35 papers) & AIIMS, Delhi (12 papers).
- ◆ ICMR has taken active participation as an agency to sponsor diarrhoeal research. It is the top agency sponsoring research on this disease (45 papers) followed by MHFW (24) revealing that diarrhoea research does not find a significant place in TDB.
- ◆ The top states/UT's producing highest impact by means of research on this disease happens to be West Bengal (38 papers) followed by Delhi (32). These may be credited to the presence of reputed institutions like NICED in Kolkata, AIIMS in Delhi.

PART – IV

Table I: Mapping of research papers in Diarrhoea from India in the three Databases (*MEDLINE*, *SCI* and *TDB*) during 1990-99

YEAR	<i>MEDLINE</i>	<i>SCI</i>	<i>TDB</i>
1990	84	34	13
1991	66	28	4
1992	86	41	11
1993	63	36	8
1994	100	55	23
1995	76	53	15
1996	106	61	16
1997	72	33	14
1998	89	47	11
1999	78	37	11
TOTAL	820	425	126

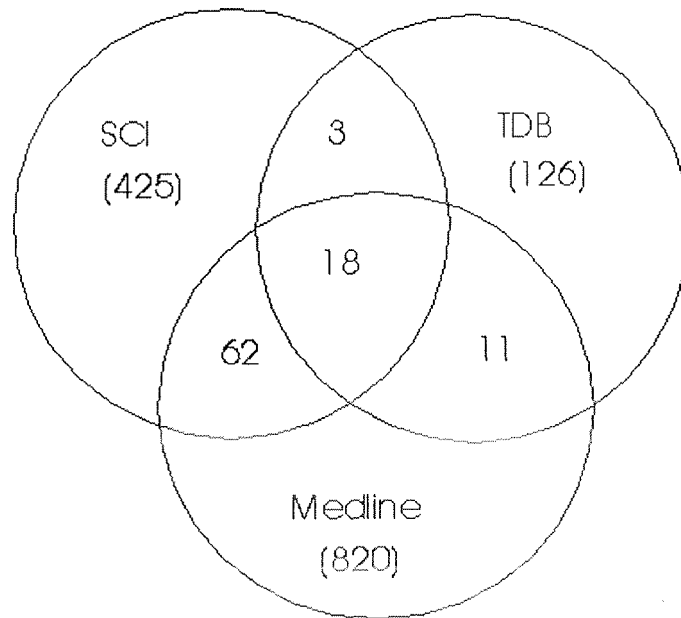
Table II provides publishing journal's profiles of Diarrhoea in case of India in three databases during 1990-99.

Table II : Publishing journal profile of Diarrhoea in case of India in three databases during 1990 – 99

Diseases	<i>MEDLINE</i>	<i>SCI</i>	<i>TDB</i>
Diarrhoea	175	112	38

Intersection of common journals in the field of Diarrhoea, in three databases (*Medline*, *SCI* and *TDB*) in the case of India through Venn analysis/diagram was found to be only 18. These common journals (18) accounted for 477 papers altogether.

**Intersection of common journals in the field of Diarrhoea,
in *Medline*, *SCI* and *TDB***



18 Common journals with no. of papers in three databases

Journal Title (IF)	No. of Papers Covered in		
	<i>TDB</i>	<i>Medline</i>	<i>SCI</i>
<i>Acta Paediatrica</i> (1.130)	1	9	10
<i>Archives of Virology</i> (1.591)	1	4	5
<i>Bulletin of the World Health Organisation</i> (1.490)	1	2	1
<i>Clinical Diagnostics and Laboratory Immunology</i> (1.583)	1	1	1
<i>Epidemiology and Infection</i> (1.911)	2	6	6
<i>Indian Journal of Medical Research</i> (0.365)	18	101	72
<i>International Journal of Epidemiology</i> (1.974)	1	3	1
<i>Intervirology</i> (1.215)	1	3	2
<i>Journal of Clinical Microbiology</i> (3.670)	1	20	29
<i>Journal of Infection</i> (0.896)	2	3	10
<i>Journal of Medical Microbiology</i> (1.735)	2	16	14
<i>Journal of Nutrition</i> (2.150)	1	2	2
<i>Journal of Tropical Medicine & Hygiene</i>	5	3	2
<i>Journal of Tropical Pediatrics</i> (0.297)	11	18	15
<i>Lancet</i> (10.197)	3	2	17
<i>Mycopathologia</i> (0.364)	1	3	4
<i>Transactions of the Royal Society of Tropical Medicine & Hygiene</i> (1.781)	5	12	7
<i>Vaccine</i> (3.173)	1	7	6
TOTAL	58	215	204

MEDLINE: Total number of publishing journals – 175
Number of research papers – 820

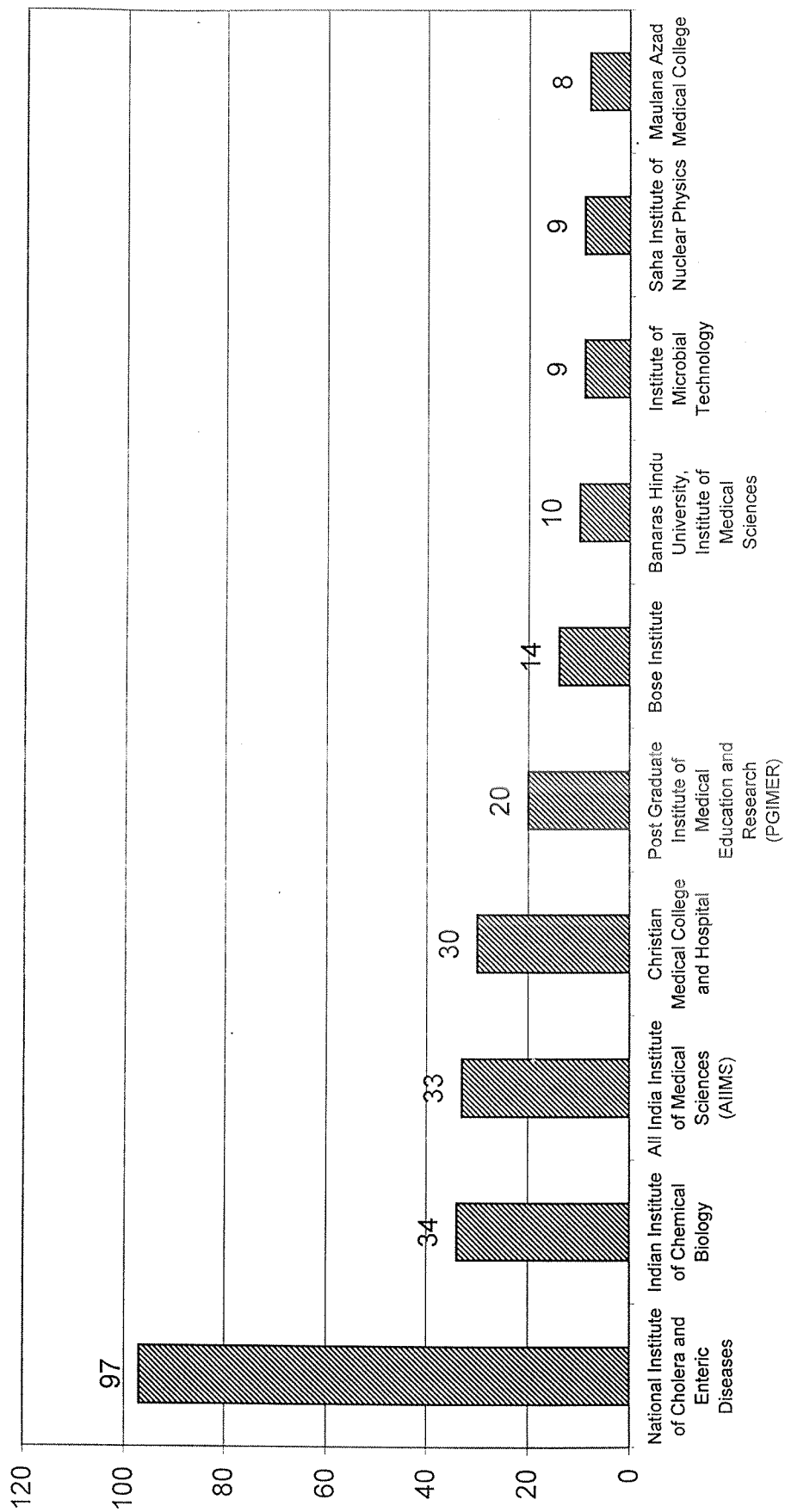
SCI: Total number of publishing journals – 112
Number of research papers – 425

TDB: Total number of publishing journals – 38
Number of research papers – 125

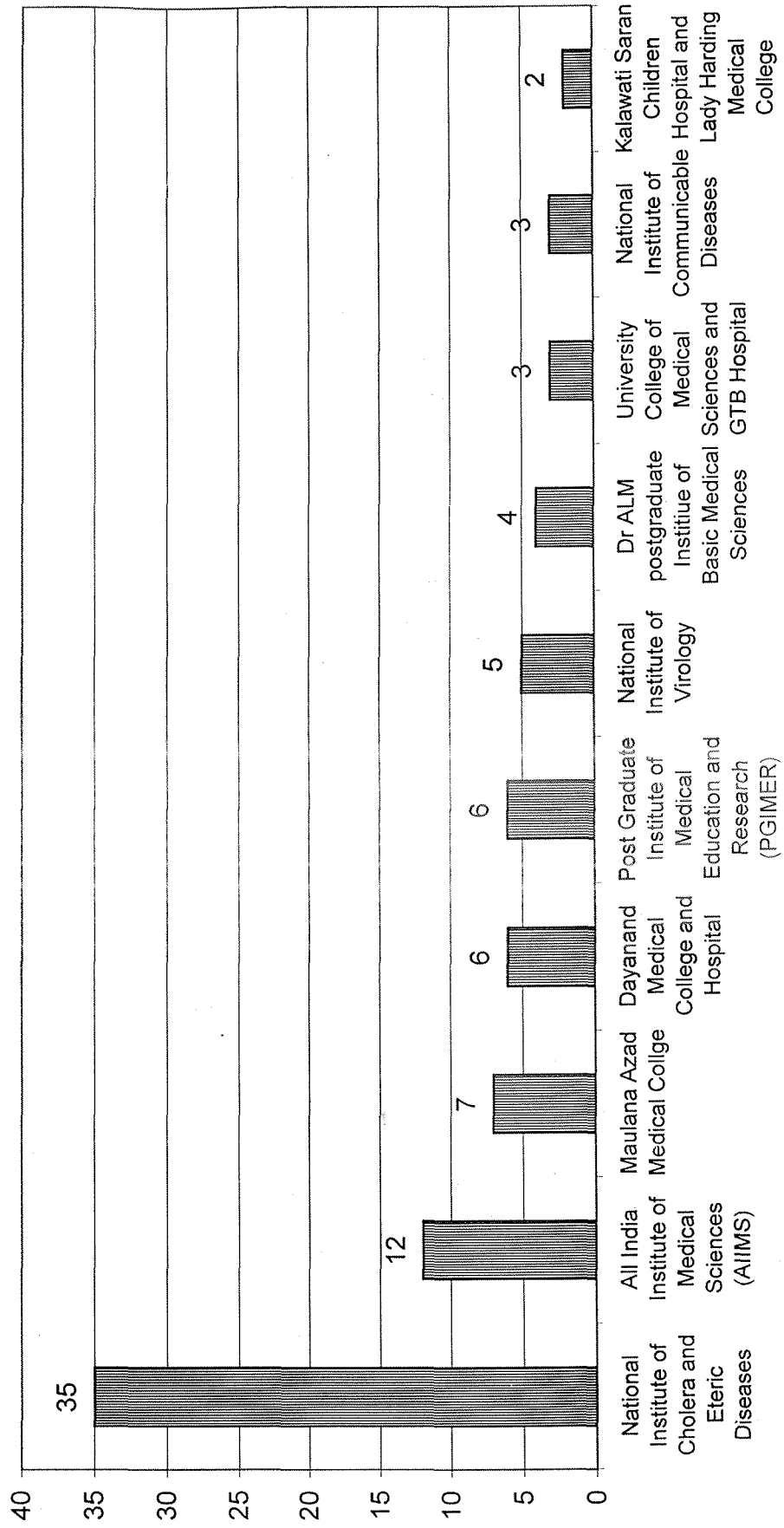
institute profile of Diarrhoea papers (820) from India in Medline database during 1990-99 (Top ten publishing Institute)



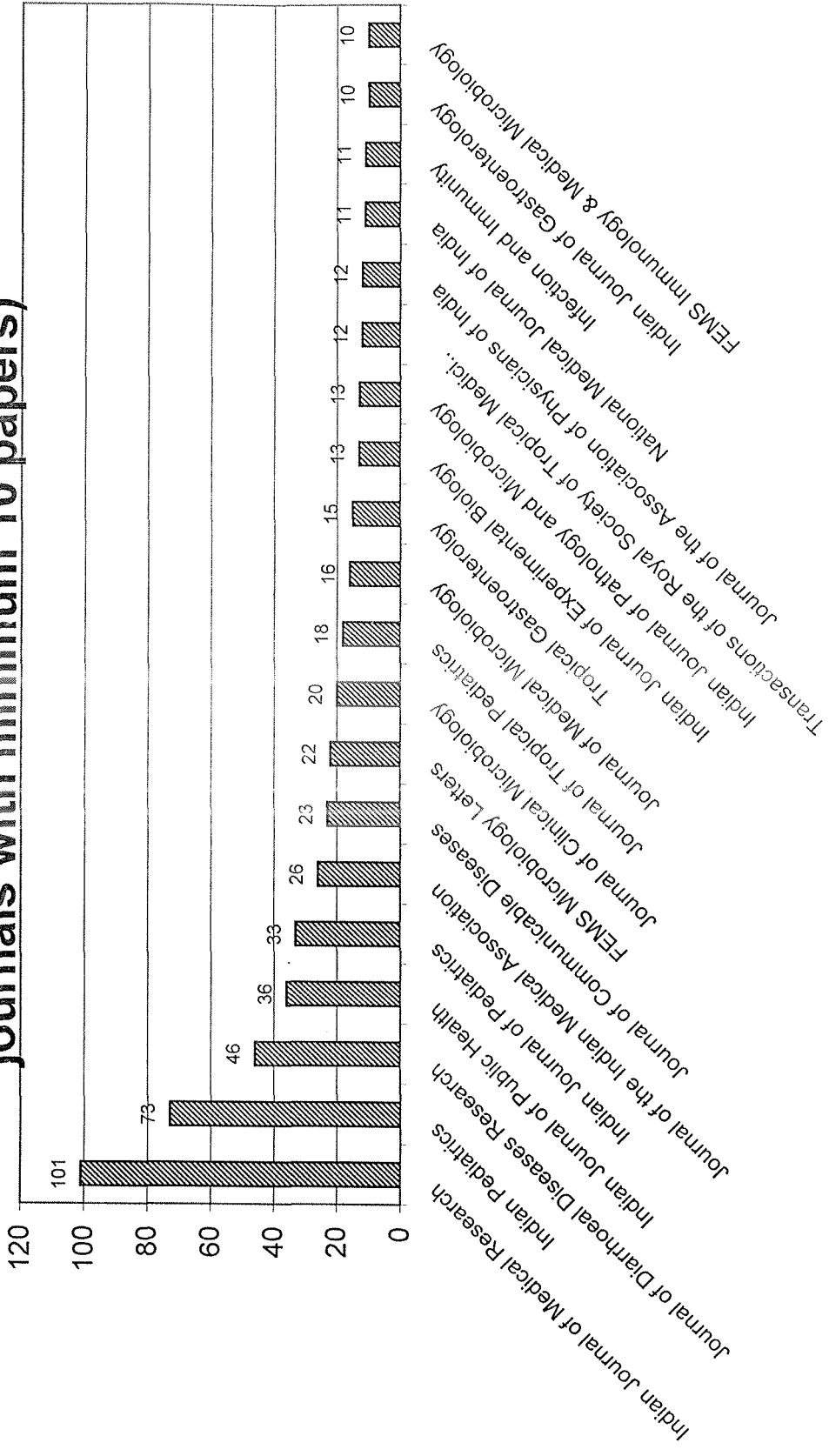
Institute profile of Diarrhoea papers (261) from India in SCI database during 1990-99 (Top ten publishing Institute)



Institute profile of Diarrhoea papers (126) from India in TDB database during 1990-99 (Top ten publishing Institute)



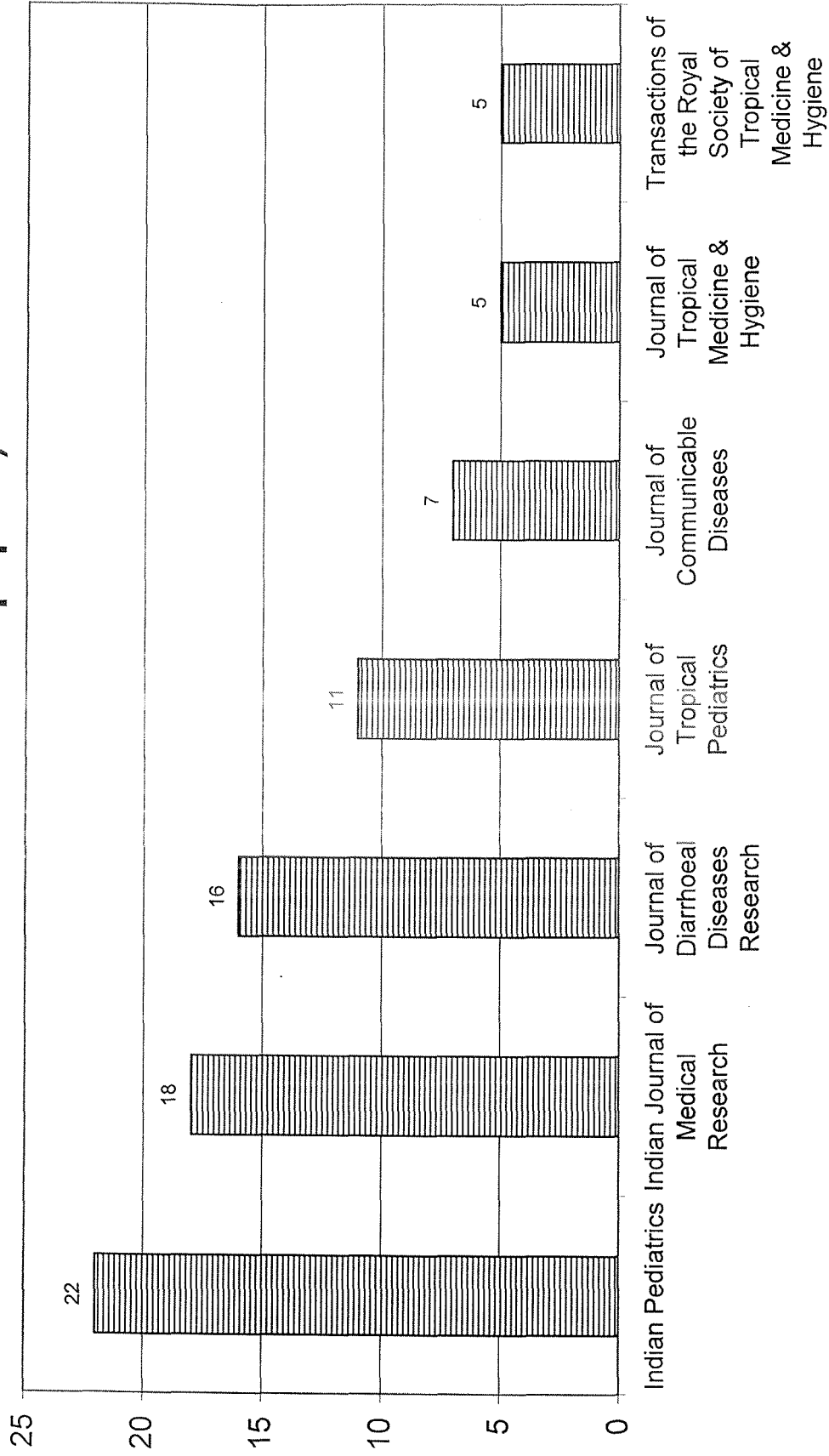
Journal profile of Diarrhoea papers (820) from India in Medline database during 1990-99 (Top publishing journals with minimum 10 papers)



Journal profile of Diarrhoea papers (425) from India in SCI/ database during 1990-99 (Top publishing journals with minimum 10 papers)



Journal profile of Diarrhoea papers (126) from India in TDB database during 1990-99 (Top publishing journals with minimum 5 papers)



PART - V
Analysis of Filaria papers from India in three Databases
(*MEDLINE, SCI and TDB*) for 1990-99

Filaria research in India (1990-99) - Medline

- Mapping of filaria research papers from India, for the ten year period (1990-99) in the three databases shows that maximum amount of research has been mapped in **Medline (344 papers)** followed by **SCI (298 papers)** & **TDB (143 papers)**.
- Taking the **Medline** database into consideration, we see that during the ten year period, Indian researchers have published their research on filaria in a total of 91 unique journals from 14 countries. Of the total 91 journals used, the country of publication of 25 journals was UK (97 papers), 20 US journals (48 papers), 18 Indian & 6 from Switzerland, even though the maximum amount of research was published in Indian journals (119 papers).
- The top ten journals published a total of 173 papers of which 79 papers were published by the top three Indian journals, namely *Indian J Exp Biol* (29 papers), *J Commun Dis* (28 papers) & *Indian J Med Res* (22 papers). Other journals often used by Indian researchers to publish their research included *Southeast Asian J Trop Med Publ Health* (18 papers), *Acta Trop* (17 papers), & *Ann Trop Med Parasitol* (15 papers).
- The journal profile of filaria research papers shows that of the 344 papers, 48 journals published single papers, 12 journals published 2 papers each, 16 journals published papers in the range of 3-5, one journal each with 8, 7 & 6 papers, three journals with 9 papers each and 9 journals published more than 10 papers.
- The IF for the 91 journals ranges from a minimum of 0.025 (*Diagnostic Cytopathology*) to a maximum of 7.145 (*J Immunol*), with only 62 journals having IF values, the rest 29 journals being unindexed. Total number of journals in the IF range 1.0 or above is 36, while journals with IF less than 1.0 are 26 in number.
- In all, 62 institutions have published at least one paper in the ten years, 7 of them have published 10 papers or more with Vector Control Research Centre (ICMR), Pondicherry, publishing the maximum no. of papers (62) followed by Central Drug Research Institute, Lucknow (47 papers) & Regional Medical Research Centre, Bhubaneswar (28 papers). The institute publishing profile reveals that 7 institutes published more than 10 papers, 36 institutes published papers in the range of 1-2, 12 institutes in the range of 3-5, & 14 institutions with more than 6 papers.
- ICMR is the sole sponsoring agency to have published 105 research papers on this disease, followed by CSIR (49 papers) & MHFW (34 papers).
- The top states/UT's to have published research on this disease are Uttar Pradesh (80 papers), followed by Pondicherry (70 papers), Maharashtra & Kerala with 34 & 33 papers respectively. Consequently the top city to

publish research on filaria was Pondicherry (69 papers) due to the presence of VCRC. Lucknow was second highest with 56 papers.

Filaria research in India (1990-99) – SCI

- Studying the **SCI** database for filaria research papers we find that 298 papers mapped during the 10 year period from 1990-99 has been published in 82 unique journals from 11 countries all over the world. Indian researchers published maximum of their research work in US journals (28 journals publishing 87 papers) followed by UK journals (24 journals publishing 100 papers). As many as 7 journals of the Netherlands and 6 Indian journals were used for publishing research on this disease.
- The top 10 journals published a total of 131 papers of which 4 were Indian journals. *Acta Cytologica* published the highest no. of papers (26) followed by *Indian J Med Res* (20) and *Acta Tropica* and *Ann Trop Med Parasitol* both with 16 papers each.
- The journal profile of SCI database shows that 47 journals published single papers, 20 journals published papers in the range of 2-5, 11 journals with publishing papers in the range of 7-15, and only 4 journals with a good publishing profile of 16 papers or more.
- Indian researchers published their work in good peer reviewed and high impact journals, the fact has been revealed by the IF values of the journals. As many as 70 journals of the 82 have got IF of which *New England Journal of Medicine* has the highest IF (28.857). The top 10 journals in terms of IF values are all US journals (range 3.161- 28.857). In all 44 journals have an IF value of 1.0 or above, while 26 journals have an IF less than 1.0. The lowest IF value is 0.08 (*Tropical Agriculture*).
- Researches on this disease have been carried out by 49 institutions all over the country, with the maximum research being carried out by Central Drug Research Institute, Lucknow (49 papers), followed by Vector Control Research Centre, Pondicherry (35 papers), Regional Medical Research Centre, Bhubaneshwar (28 papers) and Mahatama Gandhi Institute of Medical Sciences, Wardha (18 papers). 7 institutions have published 10 papers or more.
- The top 2 research organization of the country, *i.e.*, ICMR and CSIR have sponsored the maximum amount of research work done in this disease. ICMR has sponsored as many as 70 researches while CSIR has funded around 51 researches on this disease.
- The top states/UT's to publish research on this disease are Uttar Pradesh (81 papers) followed by Pondicherry (39 papers), Maharashtra (32 papers) and Orissa (30 papers). The top positions acquired by these states can be directly linked to the presence of eminent research institutions in these states.

Filaria research in India (1990-99) - TDB

- Analysing the **TDB** database for filaria research papers, we find that 143 papers have been mapped from this database during the 10 year period 1990-99, by Indian researchers. These 143 papers have appeared in 47 unique journals from 11 countries over the world. Maximum research has been published in 13 UK journals (50 papers) followed by 11 Indian journals (44 papers) and 5 US journals. Journals of countries such as Czech Republic (*Folia Parasitologica*) and Thailand (*South East Asian Journal of Tropical Medicine and Public Health*) have also been used by Indian scientists to publish their research.
- The top 10 journals published a total of 88 papers of which 3 were Indian journals. *Indian J Med Res* published the highest number of papers on this disease (15 papers) followed by *Trans Roy Soc Trop Med Hyg* (13 papers) and *Acta Trop* with 11 papers.
- The journal profile of TDB database for filarial research reveals that at least 26 journals have published single papers each, a range of 2-4 papers have been published by 13 journals and 7 papers or more have been published in as many as 8 journals.
- Of the 47 journals used 32 journals are *JCR/SCI* indexed with *Nature* journal having the highest IF (29.491) followed by *Parasite Immunol* (2.014). There are 17 journals which have an IF of 1.0 or above while 15 journals have IF values below 1.0. Out of the top 10 high impact journals 6 are UK journals.
- Researches on this disease has been carried out by 27 institutions in all, with the maximum research being carried out by VCRC, Pondicherry (51 papers) followed by RMRC, Bhubaneshwar (21 papers).
- ICMR happens to be the only sponsoring body funding a good number of research projects on this disease (74 papers) followed by MHFW (10 projects) and CSIR (7 papers).
- The top states/UT to publish research on this disease are Pondicherry (55 papers) followed by Orissa (23 papers) and Maharashtra and Uttar Pradesh with 14 & 13 papers respectively. The top positions acquired by these states can be directly attributed to the presence of eminent research institutions, such as Vector Control Research Centre, Regional Medical Research Centre, Bhubaneshwar, Mahatma Gandhi Institute of Medical Sciences, Wardha and Central Drug Research Institute, in these states, which carry out good amount of research work on this disease.

PART – V

Table I: Mapping of Research Papers in Filaria from India in the three Databases (*MEDLINE*, *SCI* and *TDB*) during 1990-99

YEAR	<i>Medline</i>	<i>SCI</i>	<i>TDB</i>
1990	46	41	17
1991	37	24	12
1992	45	30	16
1993	35	42	14
1994	34	25	16
1995	27	31	11
1996	33	27	15
1997	31	28	17
1998	30	25	19
1999	26	25	6
TOTAL	344	298	143

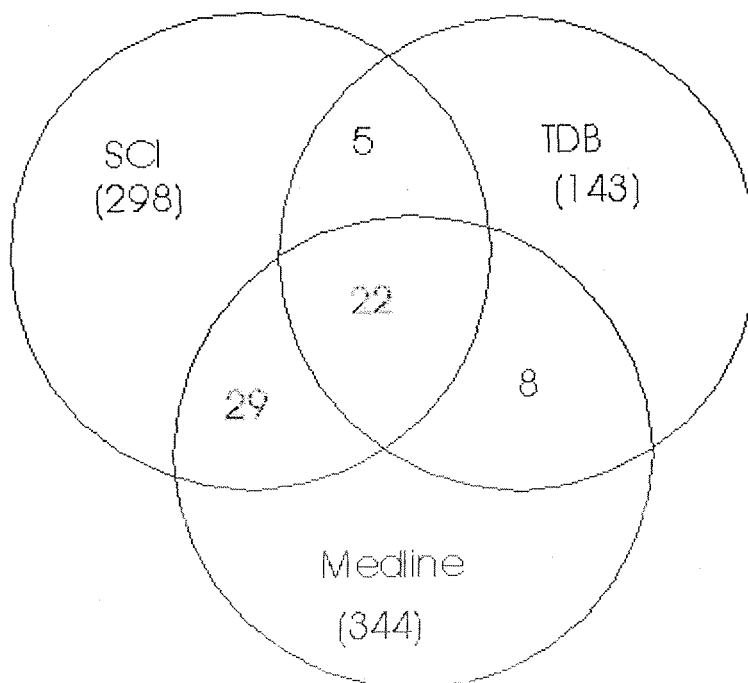
Table II provides publishing journal's profiles of Filaria diseases in case of India in three databases during 1990-99.

Table II : Publishing journal profile of Filaria in case of India in three databases during 1990 – 99

Diseases	<i>MEDLINE</i>	<i>SCI</i>	<i>TDB</i>
Filaria	91	82	47

Intersection of common journals in the field of Filaria, in three databases (*Medline*, *SCI* and *TDB*) in the case of India through Venn analysis/diagram was found to be only 23. These common journals (23) accounted for 424 papers altogether.

Intersection of common journals in the field of Filaria, in *Medline*, *SCI* and *TDB*



12 Common journals with No. of Papers in three databases

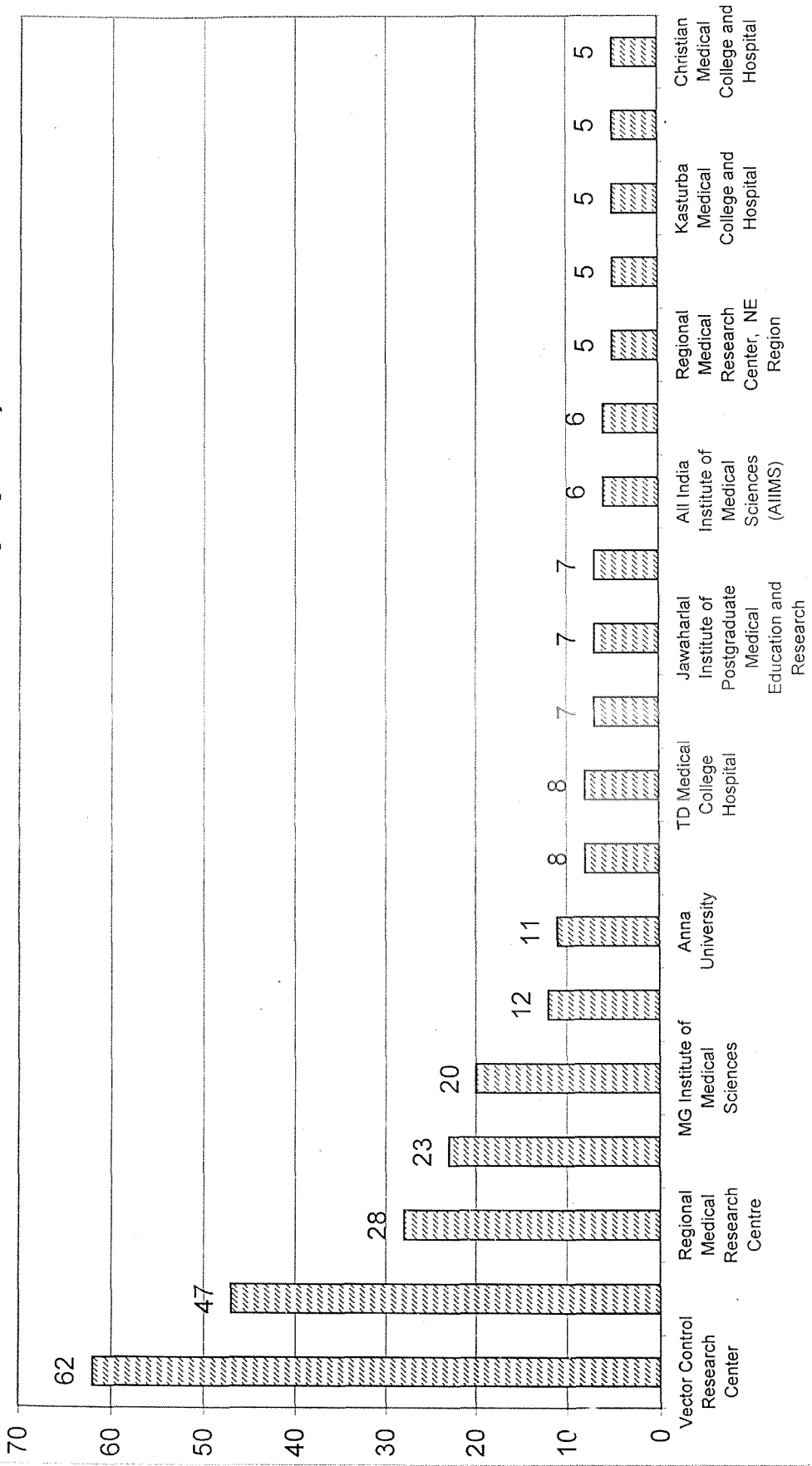
JOURNAL TITLE (IF)	NO. OF PAPERS COVERED IN		
	<i>TDB</i>	<i>MEDLINE</i>	<i>SCI</i>
<i>Acta Cytologica</i> (1.295)	3	11	26
<i>Acta Tropica</i> (1.000)	11	17	16
<i>American Journal of Tropical Medicine and Hygiene</i> (1.932)	1	3	5
Annals of Tropical Medicine and Parasitology (0.989)	8	15	16
Bulletin of the World Health Organisation (1.490)	1	1	1
Cell Biology International (0.731)	1	3	2
Cytopathology (0.760)	1	2	3
Epidemiology and Infection (1.911)	2	3	4
Folia Parasitologica (0.796)	1	5	3
Human Heredity (1.441)	1	1	1
Indian Journal of Medical Research (0.365)	15	22	20
International Archives of Allergy & Immunology (1.911)	2	2	2
Journal of Helminthology (0.564)	4	9	8
Journal of the American Mosquito Control Association (0.832)	1	3	2
Journal of Tropical Medicine & Hygiene	8	8	9
Journal of Tropical Pediatrics (0.297)	1	1	1
National Medical Journal of India (0.363)	10	9	2
Parasite Immunology (2.014)	3	6	7
Parasitology Research (1.161)	1	3	3
Transactions of the Royal Society of Tropical Medicine & Hygiene (1.781)	13	14	15
Tropical Medicine & International Health (1.560)	4	9	10
Parasitology (1.868)	3	7	5
Total	95	159	169

MEDLINE: Total number of publishing journals – 91
Number of research papers – 344

SCI: Total number of publishing journals – 82
Number of research papers – 298

TDB: Total number of publishing journals – 47
Number of research papers – 143

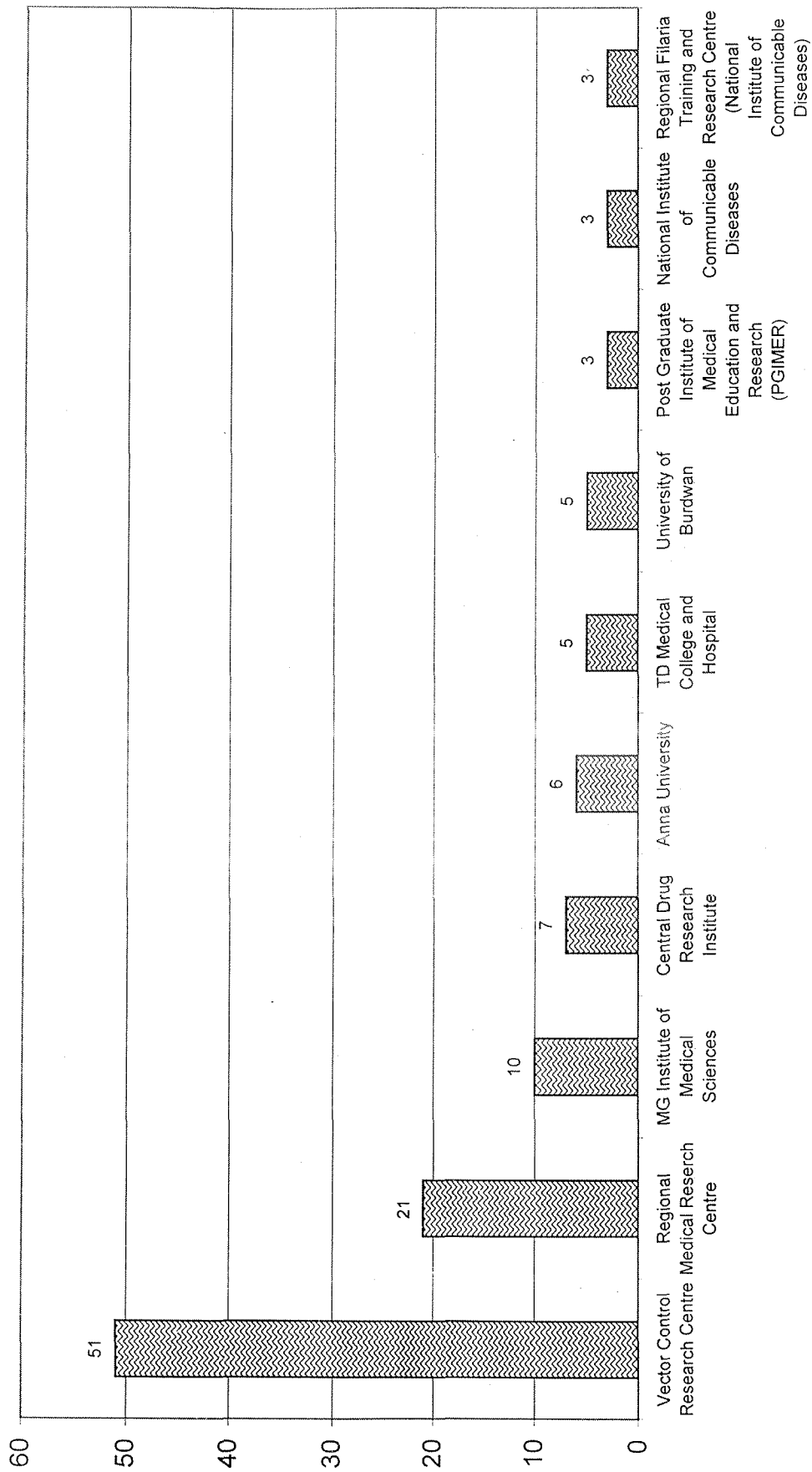
Institute profile of Filaria papers (344) from India in Medline database during 1990-99 (Top publishing Institutes with minimum 5 papers)



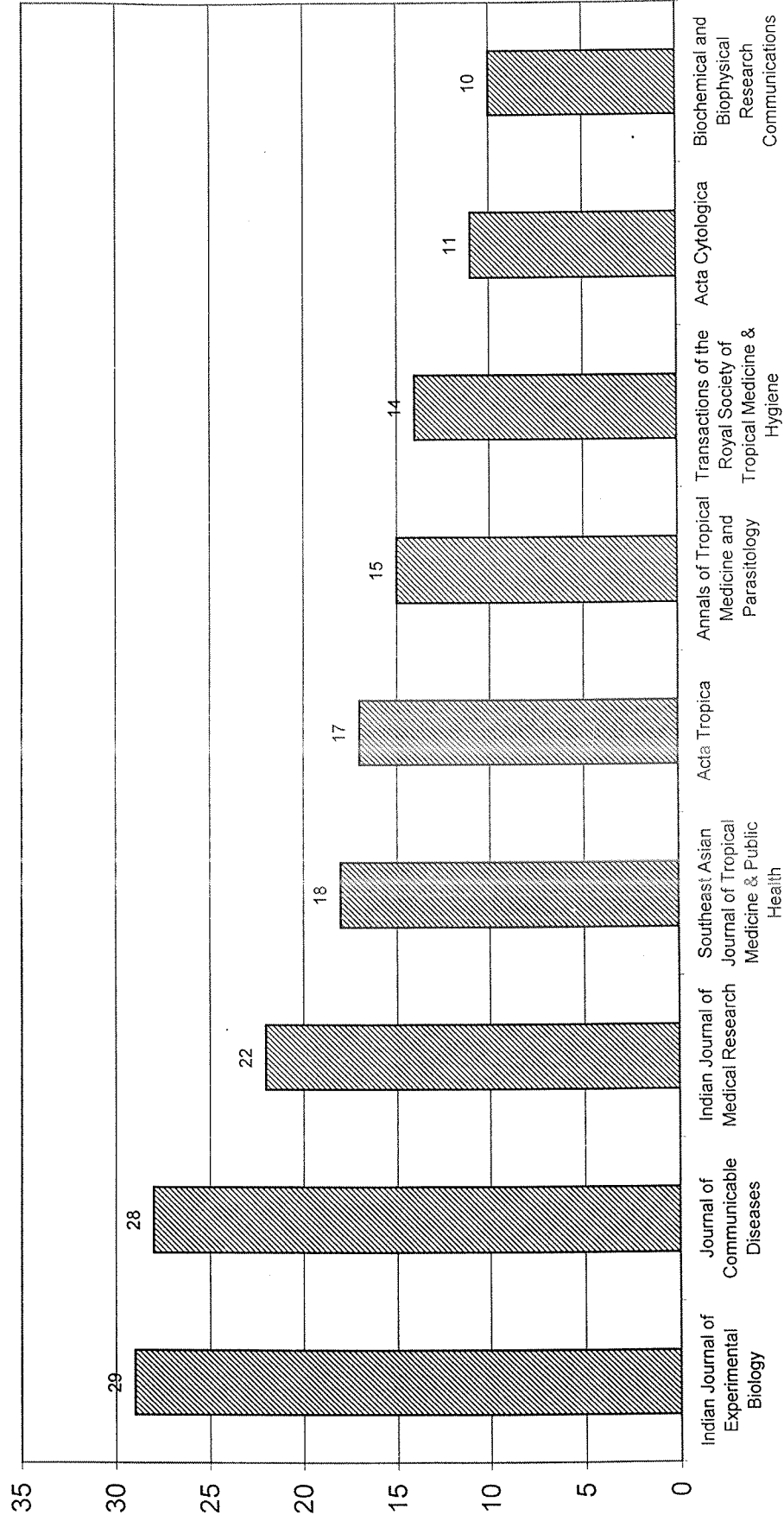
Institute profile of Filaria papers (298) from India in SCI database during 1990-99 (Top ten publishing Institute)



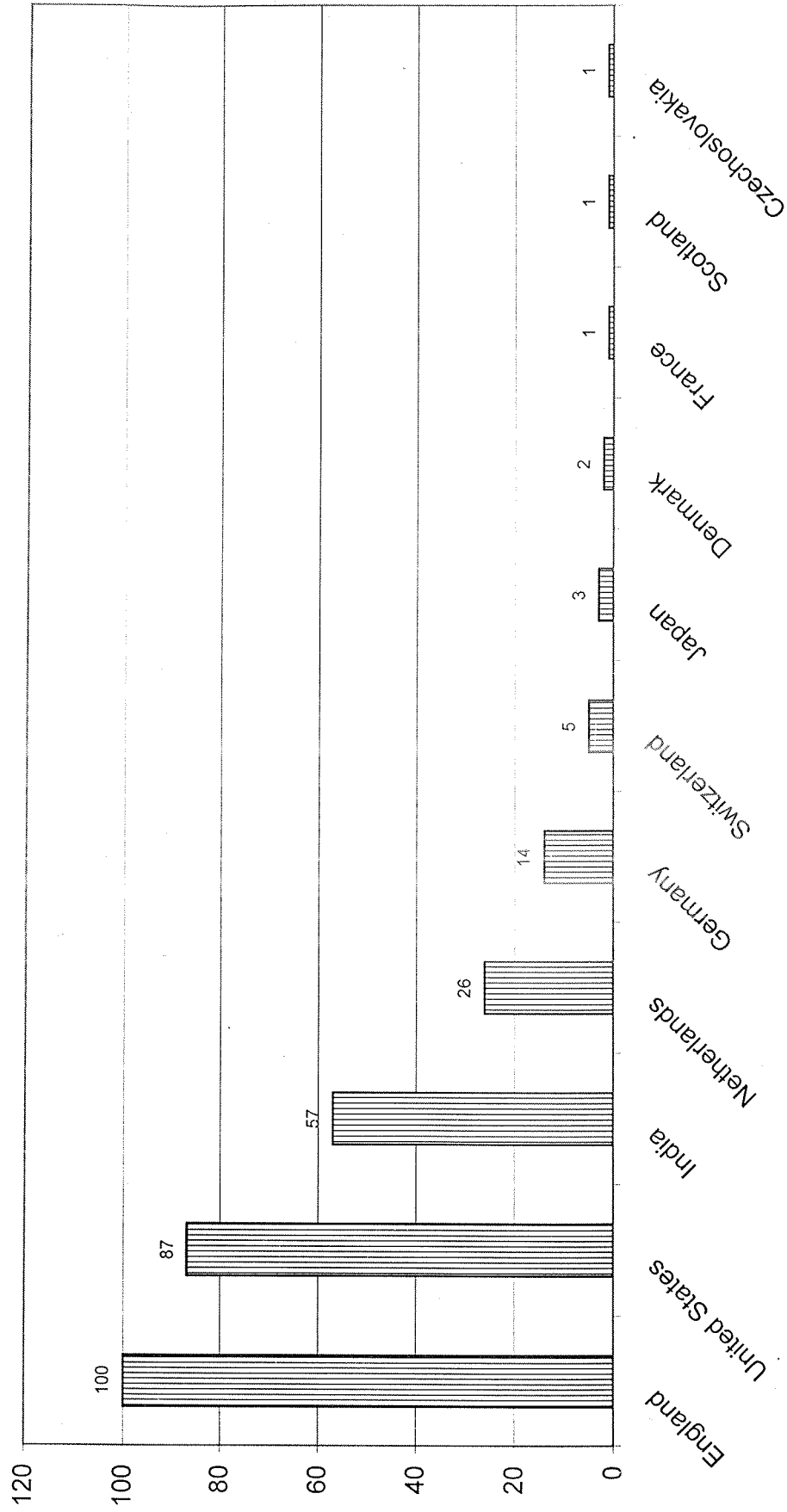
Institute profile of Filaria papers (143) from India in TDB database during 1990-99 (Top ten publishing Institute)



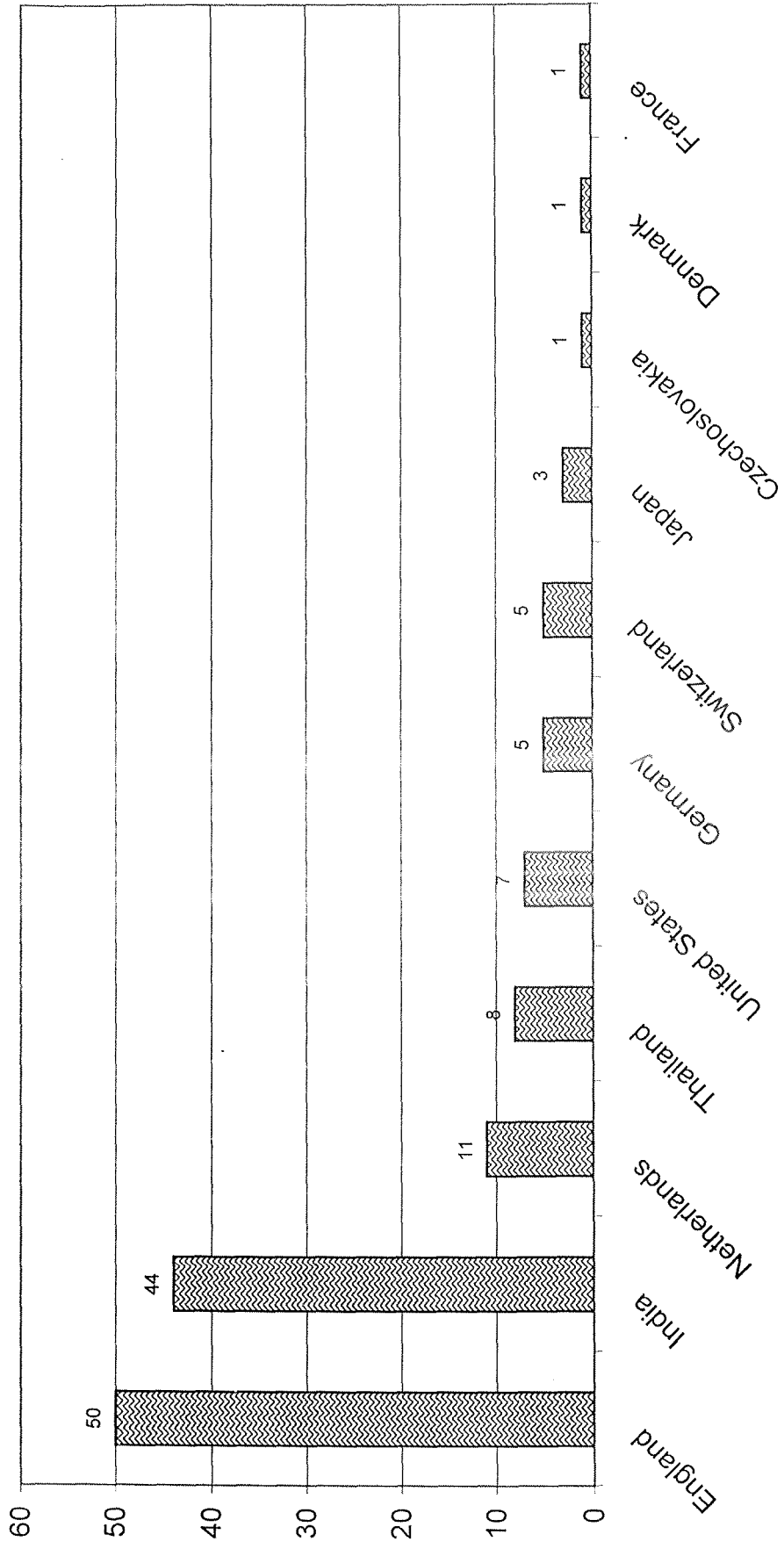
Journal profile of Filaria papers (344) from India in Medline database during 1990-99 (Top publishing journals with minimum 10 papers)



**Journal profile of Filaria papers (298) from India in
SCI database during 1990-99 (Distribution of papers
by Country of Publication)**



**Journal profile of Filaria papers (143) from India in
TDB database during 1990-99 (Distribution of papers
by Country of Publication)**



PART - VI
Analysis of Malaria papers from India in three Databases
(*MEDLINE, SCI and TDB*) for 1990-99

Malaria research in India (1990-99) – Medline

- ◆ Mapping of malaria research papers from India for the ten year period (1990-99) in the three databases reveals as usual that maximum research work had been mapped from *Medline* (988 papers) followed by *SCI* (474) & *TDB* (247).
- ◆ Studying the **Medline** database we see that a whopping no. of 168 journals from 20 countries have been used to publish research on this infectious disease. UK journals were most commonly use (49) followed by 44 US journals and 18 journals from Netherlands. Even though Indian journals used were only 17, these journals published a total of 563 papers in all, more than 50.00% of the total research papers mapped.
- ◆ The top ten journals published a total of 624 papers. 144 journals published papers in the range of 1-5, 11 journals in the range of 6-10 papers. There were 13 journals which published more than 10 papers. The top three Indian journals published a total of 409 papers. *Indian J Malariol* published the maximum number of research (232 papers) followed by *J Commun Dis* (112) & *Indian J Med Res* (65).
- ◆ The IF values for the 168 journals ranged between 10.26 (*Proc Natl Acad Sci USA*) to 0.08 (*Indian J Med Sci*). As many as 125 journals were *JCR/SCI* indexed, 84 journals had IF values ≥ 1.00 .
- ◆ A total number of 190 institutions published research on this disease. Malaria Research Centre, Delhi published the maximum research (223 papers) followed by VCRC (75) & CDRI, Lucknow (71). The top ten institutes published 561 papers in all.
- ◆ ICMR was the top funding agency carrying out research on this disease (386 papers) followed by MHFW (167) & CSIR (87 research projects).
- ◆ Delhi seems to be heading other states/UT's in terms of research published on this disease with an excellent number of 402 research papers from different institutions being published. U.P. followed with 96 papers & Pondicherry was at the third position with 79 papers. The presence of institutes such as AIIMS, International Center for Genetic Engineering & Biotechnology, CDRI make these states come onto the world picture.

Malaria research in India (1990-99) – SCI

- ◆ The **SCI database** reveals that 474 research papers mapped from India had appeared in 151 unique journals from 13 countries. UK journals used were the highest in number (51 journals publishing a maximum no. of 144 papers), followed by 50 US journals which published the second highest no. of papers (139). 13 journals of Netherlands published 39 papers in all. Indian journals used though few in number (7), published as many as 99 papers.
- ◆ The top journals included *Indian J Med Res* (48 papers), *J Am Mosq Contr Assoc* (27) & *Curr Sci* (26). The top ten journals published 196 papers in all. As many as 106 journals published papers in the range of 1-2, 30 journals in the range of 3-5.
- ◆ The research findings on malaria appeared in high impact journals. *Nature* had the highest IF value of 29.491 while the *J Sci Industr Res* had the lowest IF value (0.201). As many as 134 journals were indexed by *JCR/SCI*, and 92 journals out of these had IF values ≥ 1.00 . The other high impact journals included *J Exptl Med* (15.651), *Am J Hum Genet* (10.426).
- ◆ As many as 86 institutes all over India published 474 research papers on malaria. MRC, Delhi published maximum research findings on this disease (73 papers) followed by CDRI (71), AIIMS (39) & International Centre for Genetic Engineering and Biotechnology, Delhi (33). In all, a total of 8 institutes had published 10 papers or more.
- ◆ ICMR was found to be the top agency sponsoring research on this disease (122 papers) followed by CSIR (80) & MHFW (66).
- ◆ Delhi topped the list of states/UT's to publish research on this disease (167 papers) followed by U.P. (79 papers).

Malaria research in India (1990-99) – TDB

- ◆ Compared to the other two databases, malaria research in **TDB** appeared in 247 cases in 65 unique journals from 10 countries. Equal number of US & UK journals (20 each) were used to publish research on this disease followed by 13 Indian journals. These Indian journals published 115 research papers on malaria.
- ◆ *Indian J Malariol* emerged as the top publishing journal (65 papers) followed by *Trans Roy Soc Trop Med Hyg* (17). The top ten journals published a total of 151 papers.
- ◆ The IF values of the 65 journals ranges from a maximum of 29.492 (*Nature*) to a minimum of 0.297 (*J Trop Paediatr*). As many as 46 journals had IF values with 33 out of these having IF ≥ 1.00 . the other commonly used high impact journals are *Lancet* (10.197), *Ann Internal Med* (10.097), *J Immunol* (7.145).
- ◆ In all 63 institutions published research on malaria all over India; the maximum research being carried out by Malaria Research Centre, Delhi (77 papers) followed by Central Drug Research Institute, Lucknow (30).
- ◆ The Ministry of Health & Family Welfare has been actively involved in research on this disease as it emerged as the top agency carrying out maximum research on malaria (39 papers) followed by CSIR (32) and ICMR (29).
- ◆ Delhi headed the list of states/UT's in having published the maximum research on this disease (116 papers) followed by U.P. (41 papers).

PART – VI

Table I: Mapping of Research Papers in Malaria from India in the three Databases (*MEDLINE*, *SCI* and *TDB*) during 1990-99

YEAR	<i>Medline</i>	<i>SCI</i>	<i>TDB</i>
1990	99	33	30
1991	116	49	23
1992	113	45	27
1993	85	35	27
1994	81	59	16
1995	82	42	21
1996	121	45	24
1997	103	68	39
1998	72	50	28
1999	116	68	12
TOTAL	988	474	247

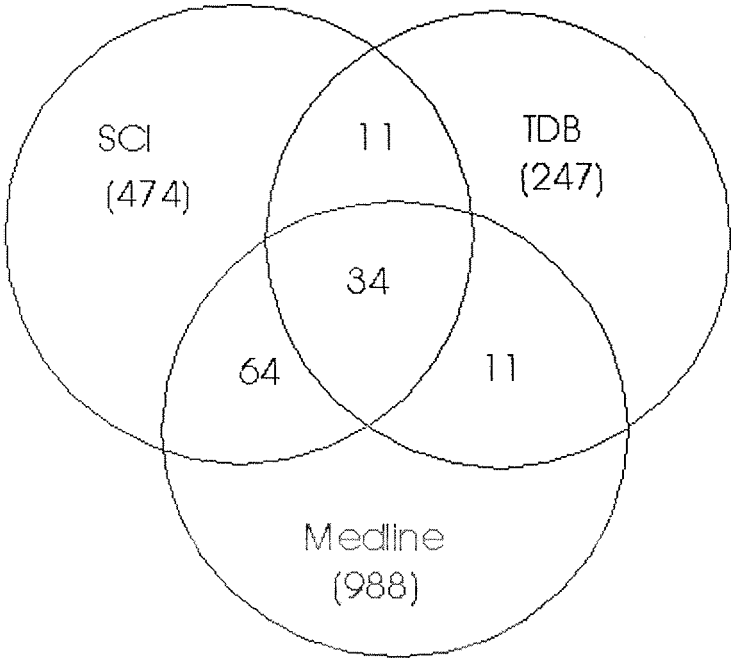
Table II provides publishing journal's profiles of Malaria diseases in case of India in three databases during 1990-99.

Table II : Publishing journal profile of Malaria in case of India in three databases during 1990 – 99

Diseases	<i>MEDLINE</i>	<i>SCI</i>	<i>TDB</i>
Malaria	168	151	65

Intersection of common journals in the field of Malaria, in three databases (*Medline*, *SCI* and *TDB*) in the case of India through Venn analysis/diagram was found to be only 34. These common journals (34) accounted for 576 papers altogether.

Intersection of common journals in the field of Malaria, in *Medline*, *SCI* and *TDB*

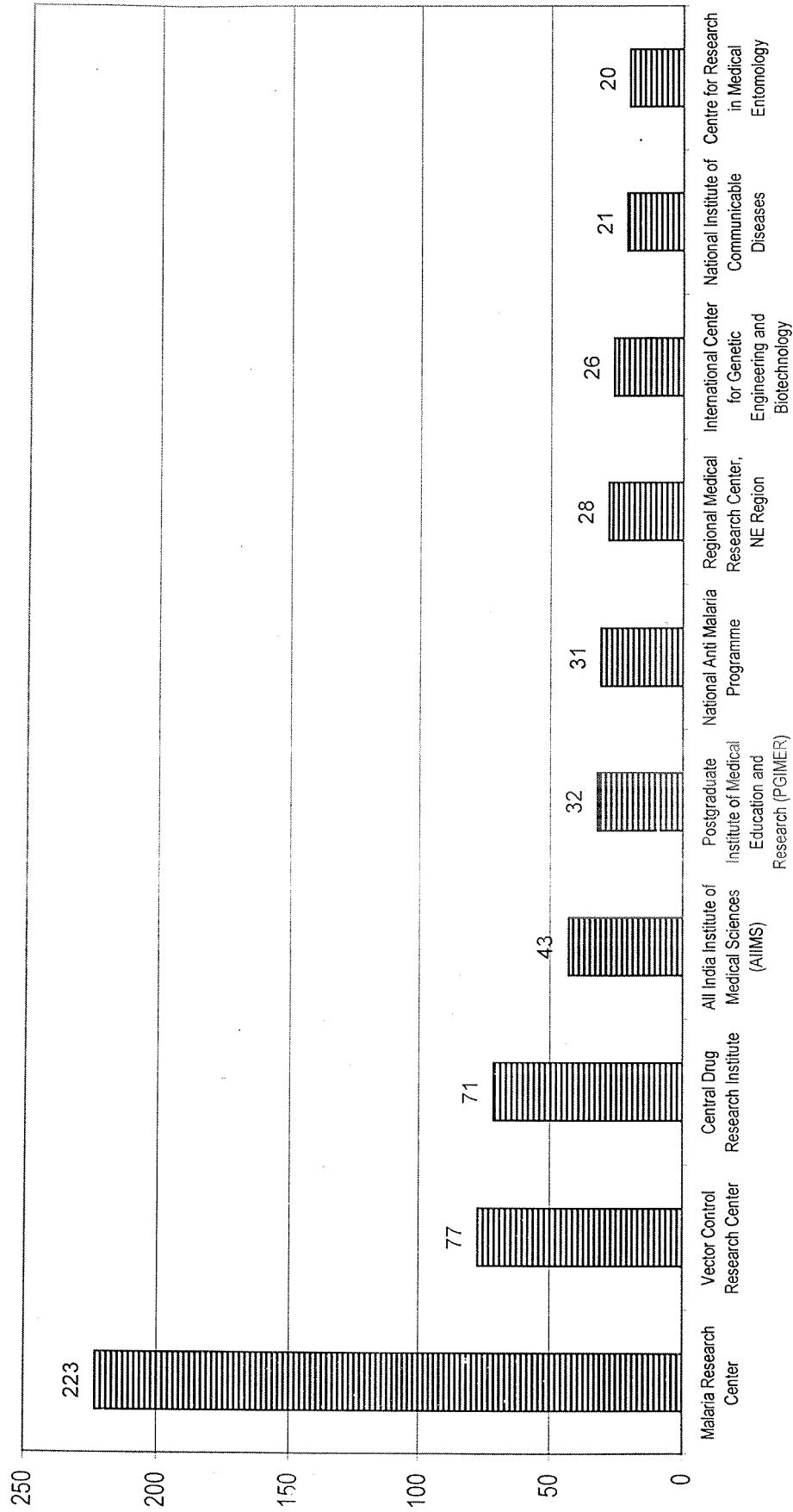


34 Common journals with No. of Papers in three databases

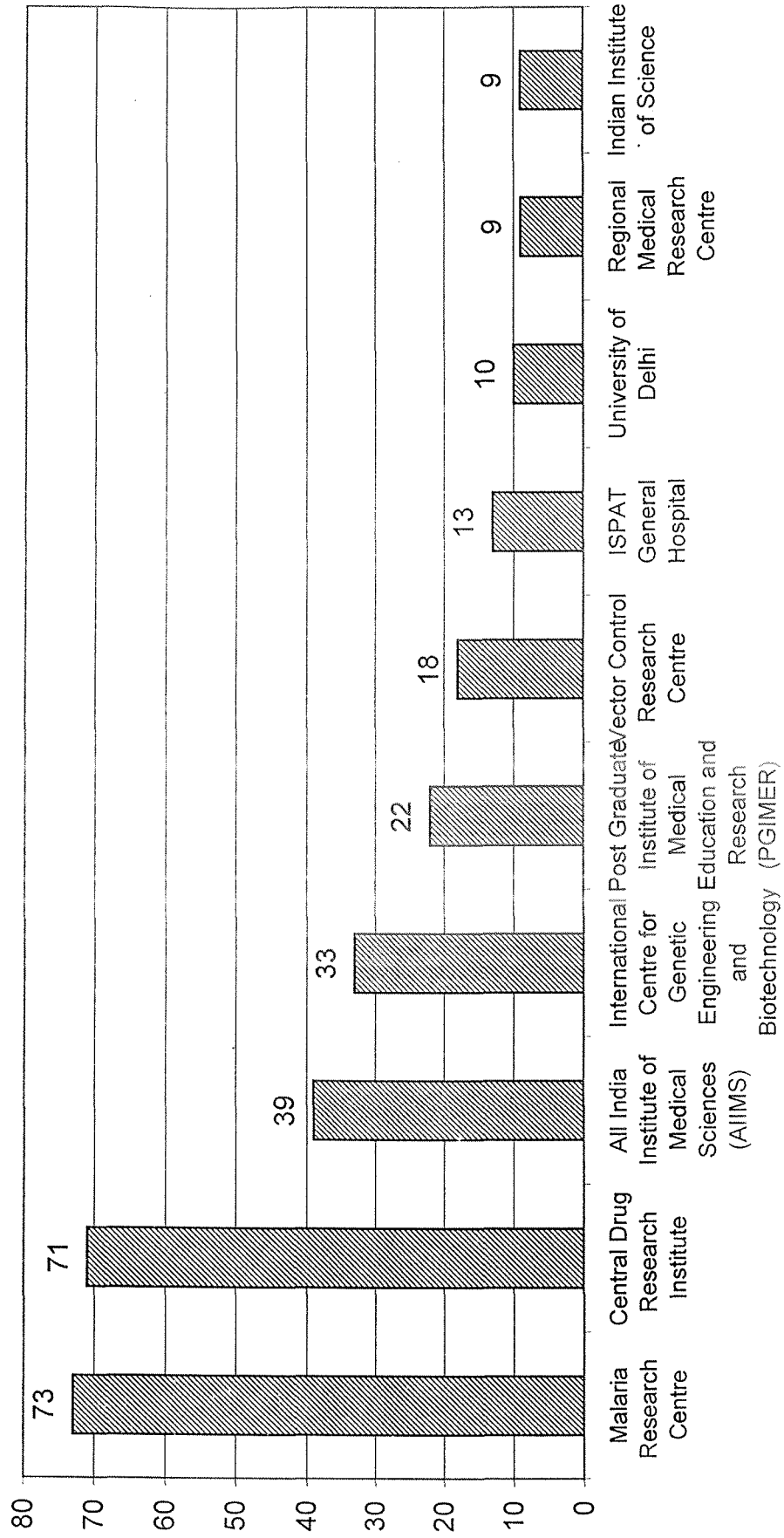
Journal Title/ (IF)	No. of Papers Covered in		
	TDB	Medline	SCI
<i>Acta Tropica</i> (1.000)	5	10	8
<i>American Journal of Clinical Nutrition</i> (3.958)	1	2	2
<i>American Journal of Hematology</i> (1.461)	1	1	1
<i>Analytical Biochemistry</i> (2.146)	1	2	1
<i>Annals of Tropical Medicine and Parasitology</i> (0.989)	6	18	14
<i>Antimicrobial Agents and Chemotherapy</i> (3.969)	1	1	1
<i>Bulletin of World Health Organisation</i> (1.490)	1	4	3
<i>Clinical and Experimental Immunology</i> (2.831)	1	2	2
<i>Clinical and Infectious Diseases</i> (3.199)	1	1	1
<i>Experimental Parasitology</i> (1.729)	1	8	6
<i>Immunology</i> (2.575)	1	2	2
<i>Immunology & Cell Biology</i> (2.006)	1	2	2
<i>Indian Journal of Medical Research</i> (0.365)	12	65	48
<i>Infection and Immunity</i> (4.184)	3	9	10
<i>International Journal of Parasitology</i> (1.900)	6	9	10
<i>Japanese Journal of Medical Science & Biology</i> (0.357)	2	4	4
<i>Journal of American Mosquito Control Association</i> (0.832)	6	30	27
<i>Journal of Immunology</i> (7.145)	1	1	1
<i>Journal of Parasitology</i> (1.485)	1	2	1
<i>Journal of Pharmaceutical Pharmacology</i> (1.195)	1	1	1
<i>Journal of Protozoology</i> (1.417)	2	1	1
<i>Journal of Tropical Medicine & Hygiene</i>	3	4	4
<i>Lancet</i> (10.197)	3	2	6
<i>Medical and Veterinary Entomology</i> (1.268)	3	8	3
<i>Molecular and Bio Chemical Parasitology</i> (2.709)	3	10	10
<i>Molecular and Cellular Biochemistry</i> (1.547)	1	2	2
<i>Molecular and Cellular Probes</i> (1.432)	1	4	3
<i>National Medical Journal of India</i> (0.363)	3	11	4
<i>Parasite Immunology</i> (2.014)	2	1	1
<i>Quarterly Journal of Medicine</i> (0.426)	1	1	4
<i>Transactions of the Royal Society of Tropical Medicine & Hygiene</i> (1.781)	17	24	21
<i>Tropical Geographical Medicine</i>	1	1	1
<i>Tropical Medicine and International Health</i> (1.560)	7	3	3
<i>Tropical Medicine and Parasitology</i>	1	5	5
<i>Vaccine</i> (3.173)	2	6	6
TOTAL	103	257	219

MEDLINE: Total number of publishing journals – 168
Number of research papers – 988
SCI: Total number of publishing journals – 151
Number of research papers – 474
TDB: Total number of publishing journals – 65
Number of research papers - 247

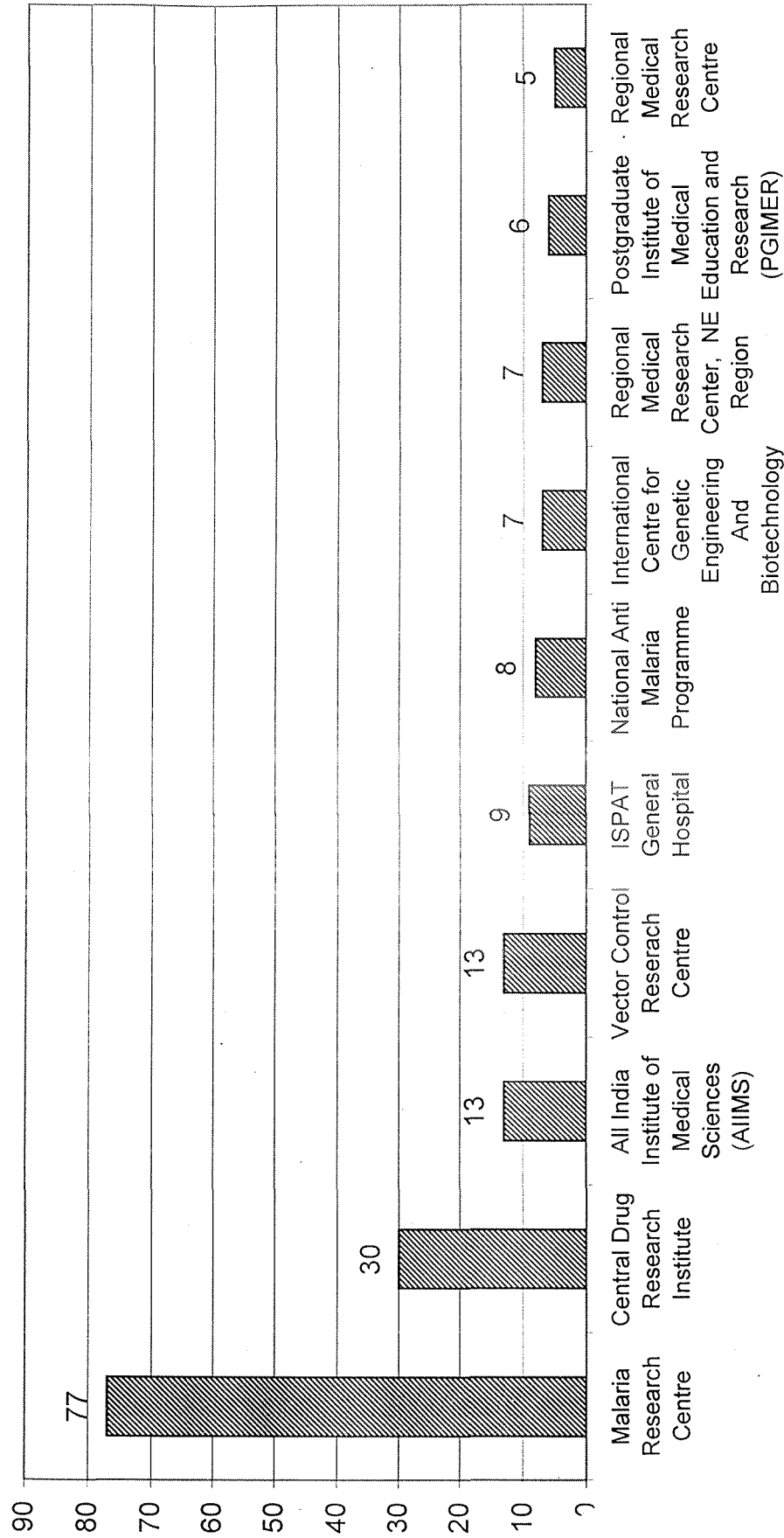
Institute profile of Malaria papers (988) from India in Medline database during 1990-99 (Top ten publishing Institute)



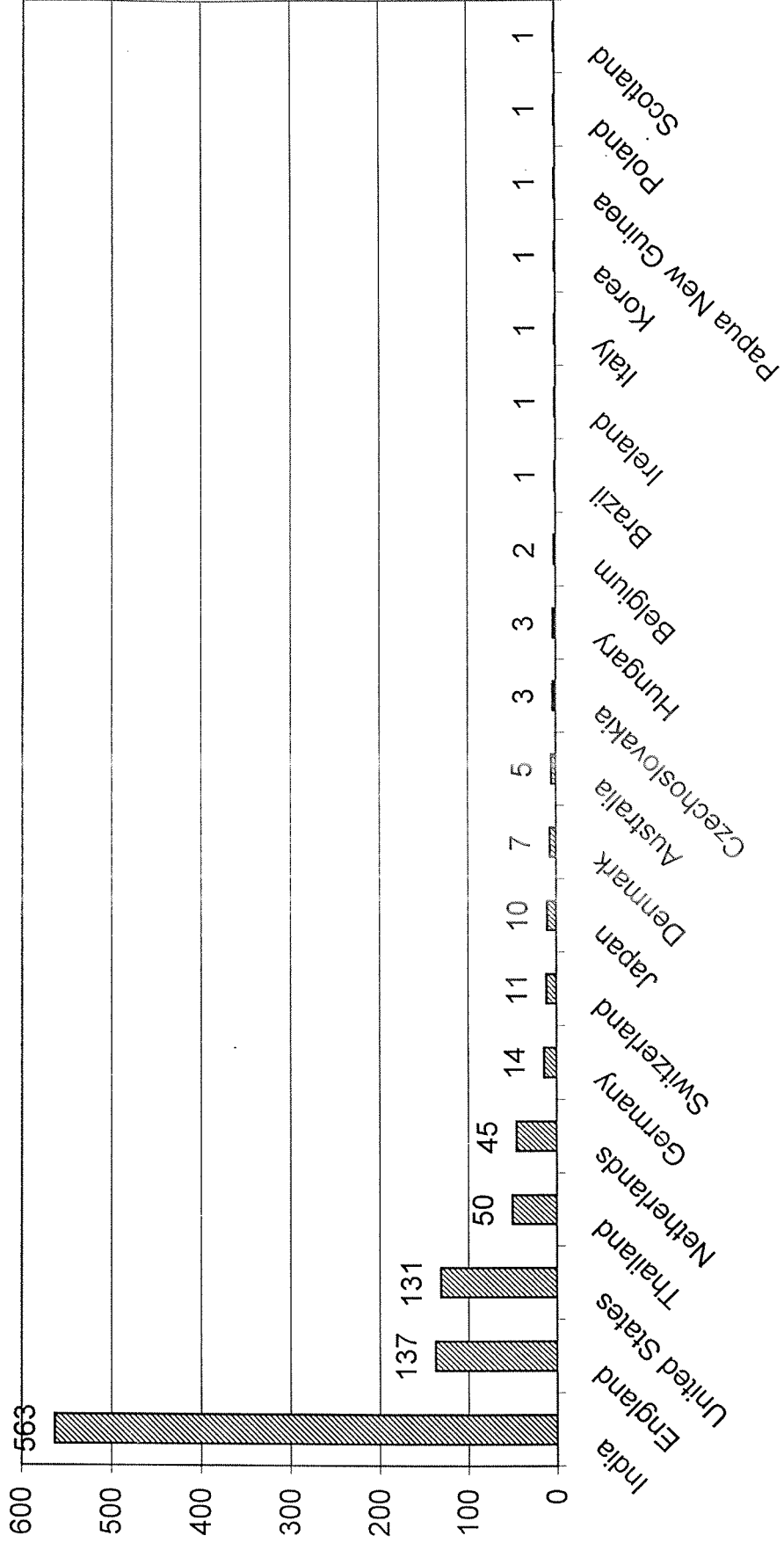
Institute profile of Malaria papers (474) from India in SCI database during 1990-99 (Top ten publishing Institute)



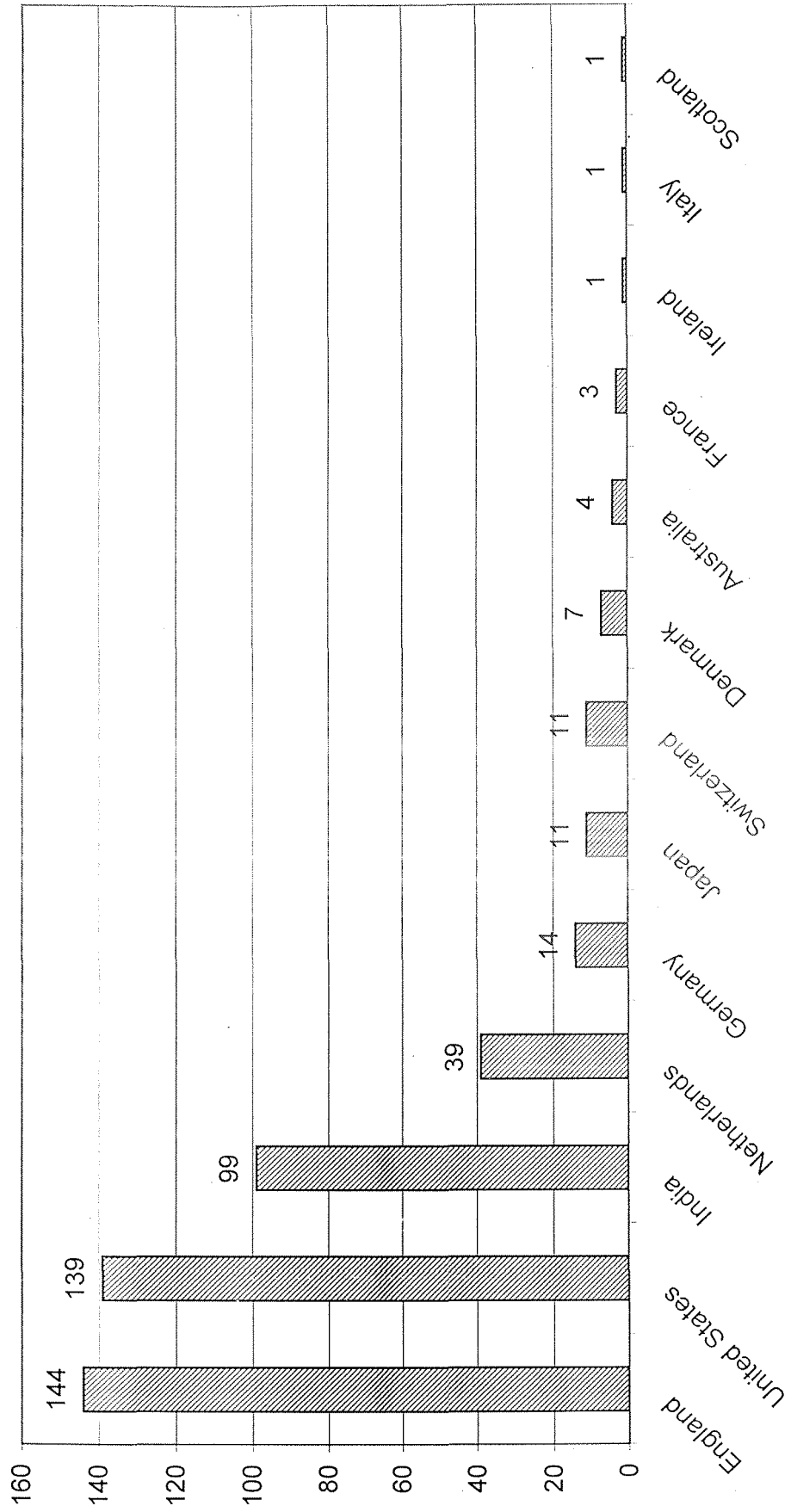
Institute profile of Malaria papers (247) from India in TDB database during 1990-99 (Top ten publishing Institute)



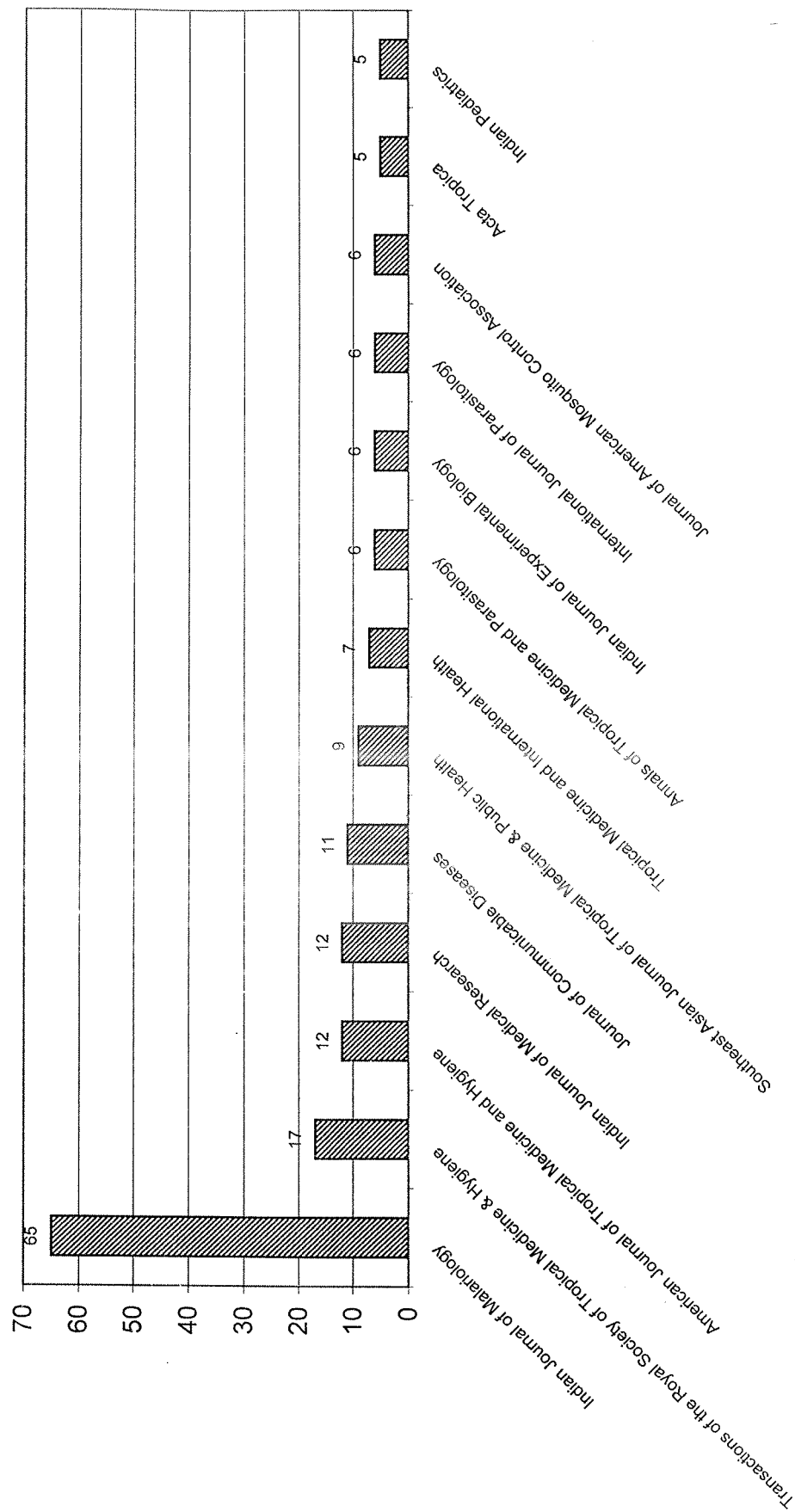
**Journal profile of Malaria papers (988) from India in
Medline database during 1990-99 (Distribution of
papers by Country of Publication)**



Journal profile of Malaria papers (474) from India in SCI database during 1990-99 (Distribution of papers by Country of Publication)



Journal profile of Malaria papers (247) from India in TDB database during 1990-99 (Top publishing journals with minimum 5 papers)



PART - VII
Analysis of Tuberculosis papers from India in three
Databases (*MEDLINE, SCI* and *TDB*) for 1990-99

Tuberculosis research in India (1990-99) – Medline

- ◆ Mapping of Tuberculosis research papers from India for the 10 year period of study (1990-99) in the three databases reveals that a huge amount of research on this disease appears in Medline (1331 papers), followed by SCI (415) & TDB (279).
- ◆ The 1331 research papers in **Medline** appeared in 300 unique journals from 29 countries. US journals were used most commonly by Indian researchers to publish their research. A total no. of 101 US journals were used for publishing 281 papers followed by 68 UK journals (219 papers). 23 journals each were used from Germany and India, but Indian journals published the maximum amount of research (528).
- ◆ As many as 26 journals published 10 or more papers. Commonly used journals to publish TB research were *Indian Paediatr* (85 papers), *J Assoc Phys India* (69), *Indian J Chest Dis Allied Sci* (59), *J Indian Med Assoc* (52), *Indian J Lepr* (48), *Internatl J Lepr Other Mycobact Dis* (47).
- ◆ As many as 231 journals out of a total 300 were *JCR/SCI* indexed of which 143 journals had $IF \geq 1.00$. TB research though was not published in very high impact journals as the highest IF value was 12.182 (*Gastroenterol*) & lowest IF was 0.057 (*Neurol India*).
- ◆ As many as 249 institutions from all over the country published research on TB. AIIMS was the top institute to publish research (140 papers) on tuberculosis followed by PGIMER, Chandigarh (129). The top ten institutions published 559 papers in all. A total of 28 institutions published 10 papers or more.
- ◆ MHFW was the top agency carrying out research on this communicable disease (320 papers) followed by ICMR (113) & CSIR (35).
- ◆ Delhi emerged as the top state actively pursuing research on TB (379 papers) followed by Maharashtra (170), U.P. (163), Tamil Nadu (160) & Chandigarh (140).

Tuberculosis research in India (1990-99) – SCI

- ◆ Compared to Medline database, the SCI database has much less no. of research papers mapped from India on Tuberculosis. A total no. of 415 research papers from India appears in SCI. These 415 papers appeared in 153 unique journals from 17 countries. The maximum no. of journals used were US (65 journals publishing 145 papers) followed by 39 UK journals (publishing 96 papers). 12 journals from Germany published as many as 26 research papers on Tuberculosis.
- ◆ A single Scottish journal namely *Tubercle & Lung Dis* published the highest number of papers (57). The other commonly used journals were *Indian J Med Res* (28 papers), *Am J Gastroenterol* (11). As many as 18 journals published 5 or more papers.
- ◆ The IF values of the 153 journals ranged from a maximum of 28.857 for *New Engl J Med* to a low of 0.126 for *Ann Ophthalmol*. 146 journals out of a total 153 were indexed by *JCR/SCI*, 97 of them having an IF value of 1.00 or more.
- ◆ In all, 92 institutions all over India have carried out research on Tuberculosis as revealed by SCI database. Tuberculosis Research Centre, Chennai has carried out the highest amount of research work in this field (50 papers) followed by AIIMS (49) & University of Madras, Dr. ALM Post Graduate Institute of Basic Medical Sciences (48 papers).
- ◆ Tamil Nadu happens to be in the top position among states/UT's carrying out research work on tuberculosis with 119 papers. Other states making their presence in the top slot are Delhi (103) & Maharashtra (54).
- ◆ MHFW has been the top agency to have carried out research on this communicable disease (59 papers) followed closely at it's heels by ICMR (54) & CSIR (14).

Tuberculosis research in India (1990-99) – TDB

- ◆ Mapping of Tuberculosis research from India in the TDB, during the ten year period of study undertaken reveals that 279 papers have been mapped from this database. These papers appeared in 56 publishing journals from 14 countries. US journals were the most widely used (15) followed by 12 journals each from England and India, though Indian journals published maximum number of research papers (181).
- ◆ The *Indian J Tuberc* achieved the top position by publishing a good number of 100 research papers in it. The other journals in the top slot included *Indian J Med Res* & *Indian Paediatr* both with 23 papers each. The *Internatl J Tuberc Lung Dis* published 19 papers.
- ◆ The high impact journals used for tuberculosis research included *Lancet* (10.197), *Brit Med J* (5.143), *J Infect Dis* (4.842) & *Infect Immun* (4.184). 39 journals out of 56 were JCR/SCI indexed, of which 20 journals had an IF ≥ 1.00 . The journal with lowest IF value was *Trop Doctor* (0.198).
- ◆ A total of 107 research institutions all over India carried out research on Tuberculosis at least once during the ten year period of study under consideration. Tuberculosis Research Centre, Chennai published the maximum amount of research (49 papers) followed by National Tuberculosis Institute, Bangalore (17).
- ◆ Among the states/UT's Delhi carried out the maximum research work (61 research papers) closely followed by Tamil Nadu which carried out 60 researches on TB.
- ◆ ICMR was the top agency sponsoring research on TB (60) followed by MHFW (42).

PART – VII

Table I: Mapping of Research Papers in Tuberculosis from India in the three Databases (*MEDLINE*, *SCI* and *TDB*) during 1990-99

YEAR	<i>Medline</i>	<i>SCI</i>	<i>TDB</i>
1990	149	37	8
1991	135	26	8
1992	116	33	14
1993	117	50	8
1994	118	45	21
1995	132	50	31
1996	136	45	39
1997	127	45	20
1998	138	38	63
1999	163	46	67
TOTAL	1331	415	279

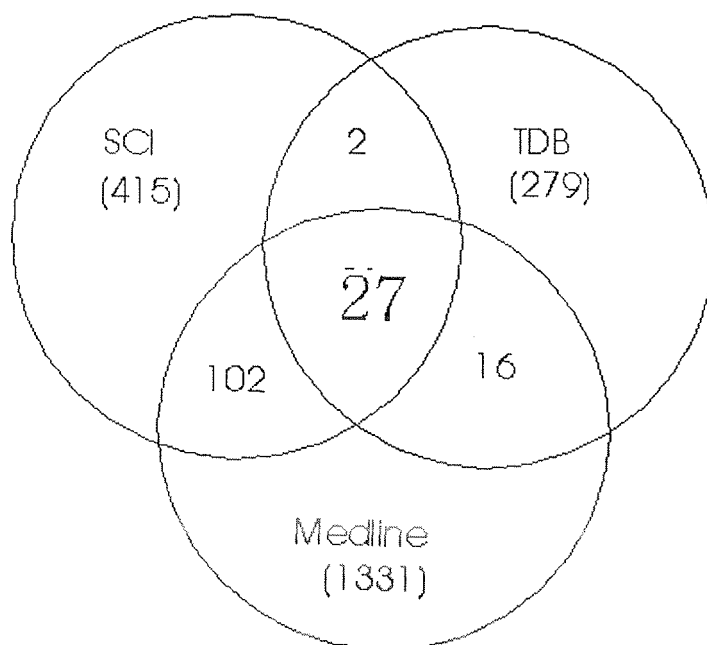
Table II provides publishing journal's profiles of Tuberculosis diseases in case of India in three databases during 1990-99.

Table II : Publishing journal profile of Tuberculosis in case of India in three databases during 1990 – 99

Diseases	<i>MEDLINE</i>	<i>SCI</i>	<i>TDB</i>
Tuberculosis	300	153	56

Intersection of common journals in the field of Tuberculosis, in three databases (*Medline*, *SCI* and *TDB*) in the case of India through Venn analysis/diagram was found to be 28 only . These common journals (28) accounted for 432 papers altogether.

Intersection of common journals in the field of Tuberculosis, in *Medline*, *SCI* and *TDB*

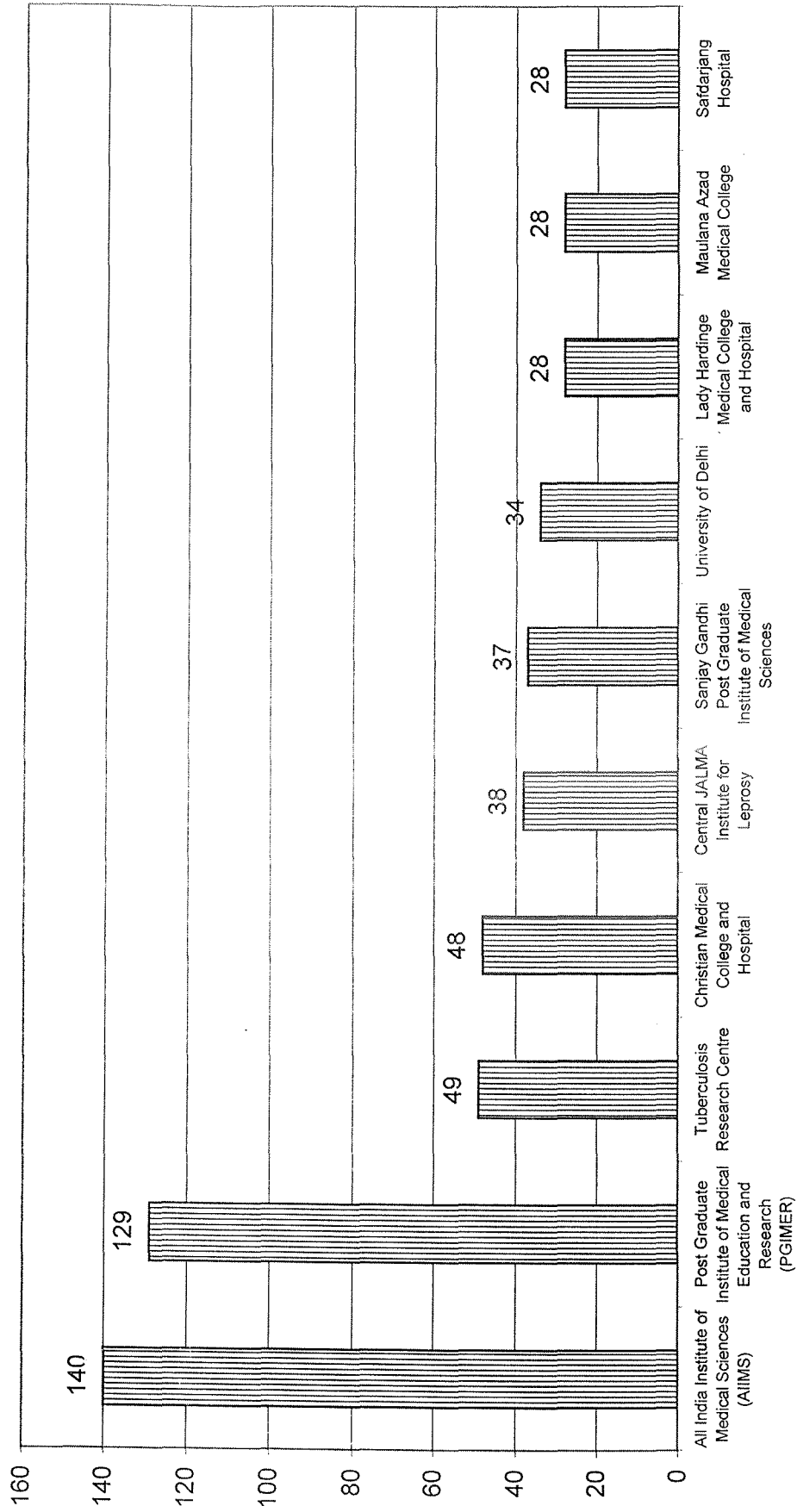


28 Common journals with No. of Papers in three databases

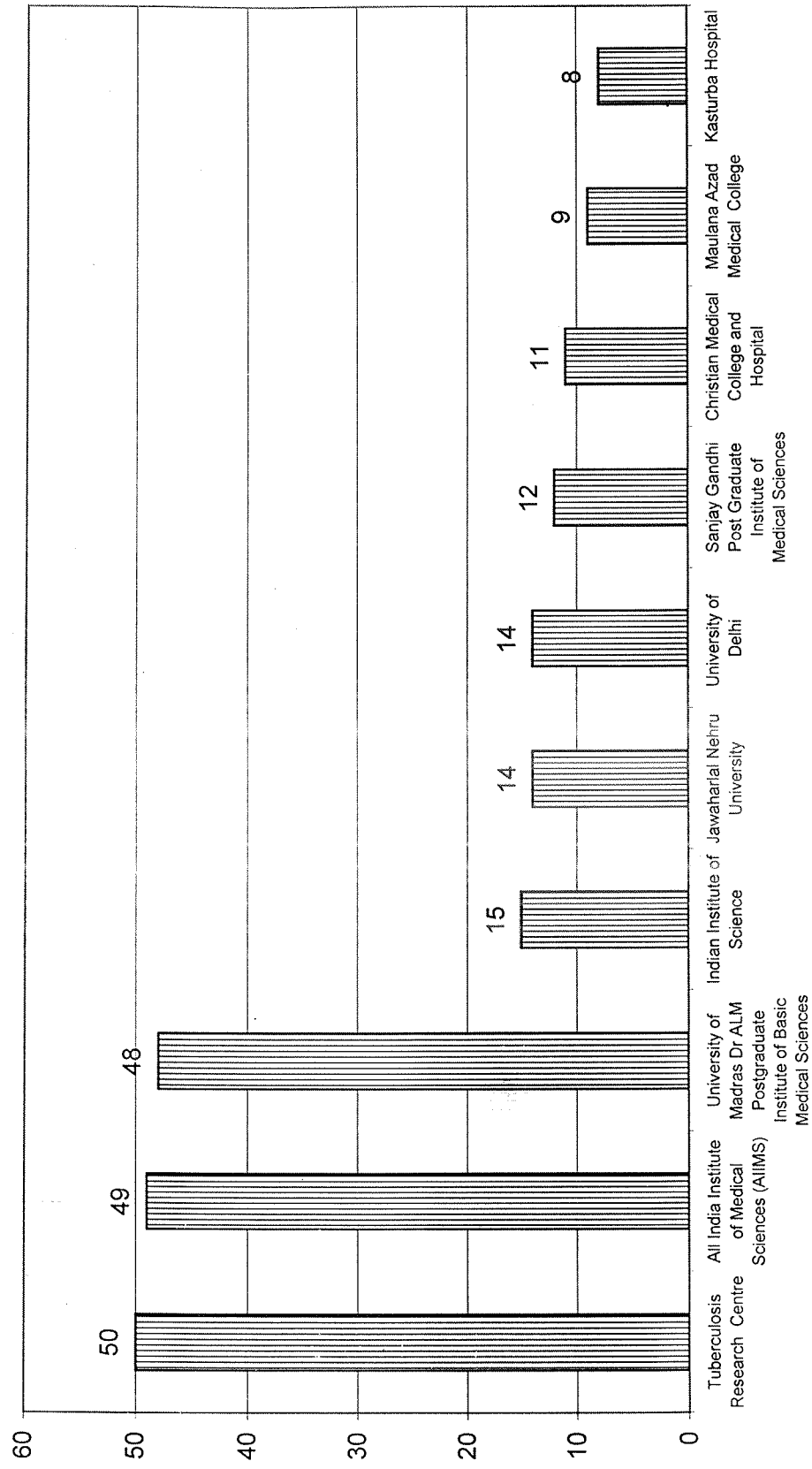
Journal Title (IF)	No. of Papers Covered in		
	<i>TDB</i>	<i>Medline</i>	<i>SCI</i>
<i>Acta Cytologica</i> (1.295)	2	16	7
<i>Allergy</i> (1.801)	1	1	1
<i>American Reviews of Respiratory Diseases</i>	1	2	3
<i>Archives of Disease in Childhood</i> (1.519)	2	2	1
<i>Australian and Newzealand Journal of Surgery</i> (0.568)	1	5	2
<i>European Journal of Clinical Nutrition</i> (1.668)	1	1	1
<i>FEMS Immunology & Medical Microbiology</i> (1.329)	1	4	2
<i>Indian Journal of Medical Research</i> (0.365)	23	38	28
<i>Infection and Immunity</i> (4.184)	1	3	7
<i>International Ophthalmology</i> (0.224)	1	3	2
<i>Journal of Clinical Microbiology</i> (3.670)	2	8	6
<i>Journal of Clinical Pathology</i> (1.657)	1	2	2
<i>Journal of Gastroenterology & Hepatology</i> (0.983)	1	2	2
<i>Journal of Immunoassay</i> (0.821)	1	1	1
<i>Journal of Infection</i> (0.896)	1	3	2
<i>Journal of Infectious Diseases</i> (4.842)	2	3	2
<i>Journal of Medical Microbiology</i> (1.735)	2	7	3
<i>Journal of Tropical Medicine & Hygiene</i>	1	4	1
<i>Journal of Tropical Pediatrics</i> (0.297)	5	9	4
<i>Lancet</i> (10.197)	4	3	9
<i>Leprosy Reviews</i> (0.954)	1	34	2
<i>Medical Microbiology & Immunology</i> (1.904)	1	7	5
<i>Memorias do Instituto Oswaldo Cruz</i> (0.636)	1	1	1
<i>Quarterly Journal of Medicine</i> (0.426)	1	2	2
<i>Scandinavian Journal of Infectious Diseases</i> (1.253)	1	3	3
<i>Tubercle and Lung Disease</i>	8	41	57
<i>Zentralblatt fur Bakteriologie</i> (0.679)	2	1	4
TOTAL	69	206	160

MEDLINE: Total number of publishing journals – 300
 Number of research papers – 1331
SCI: Total number of publishing journals – 153
 Number of research papers – 414
TDB: Total number of publishing journals – 56
 Number of research papers - 279

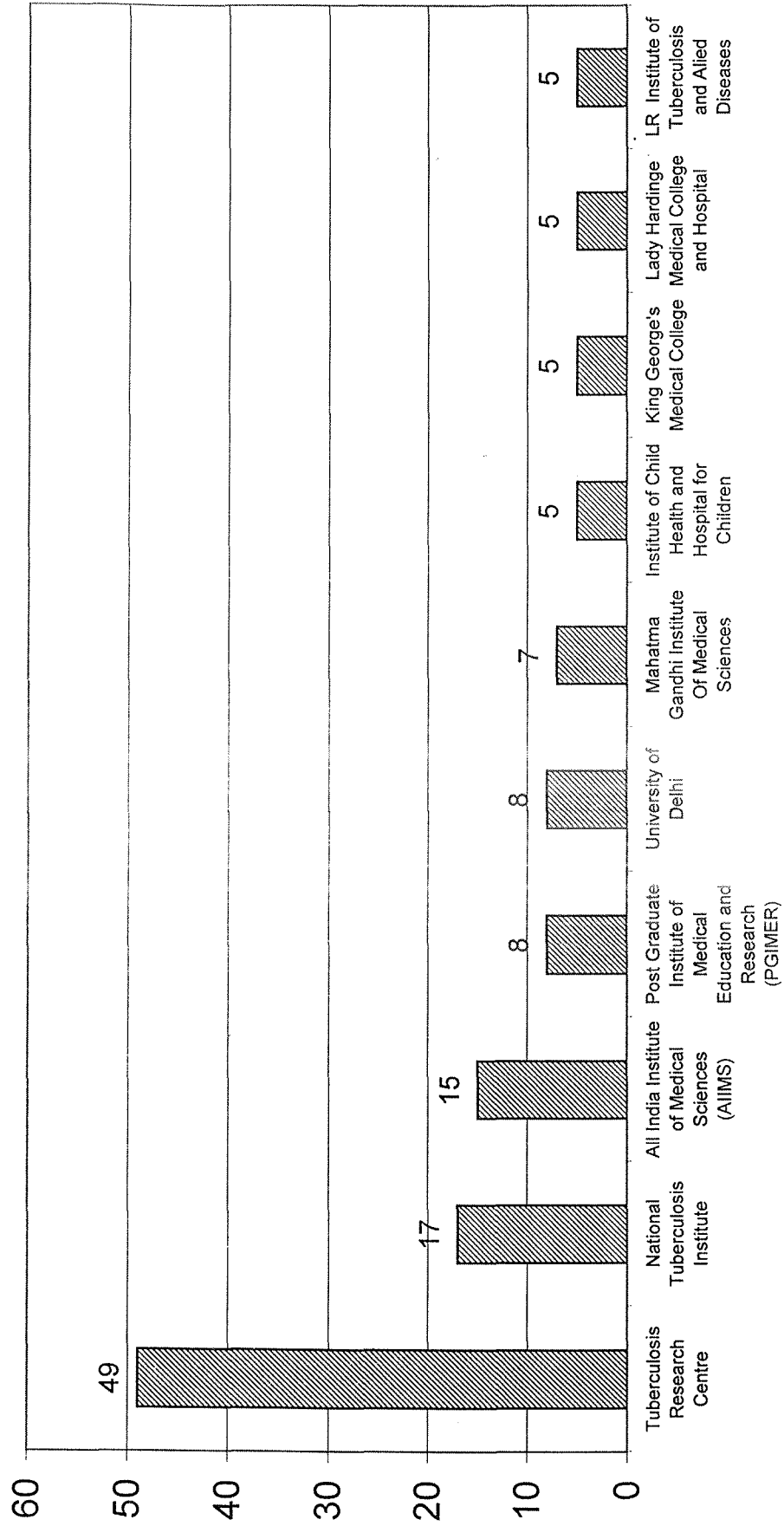
Institute profile of Tuberculosis papers (1331) from India in Medline database during 1990-99 (Top ten publishing Institute)



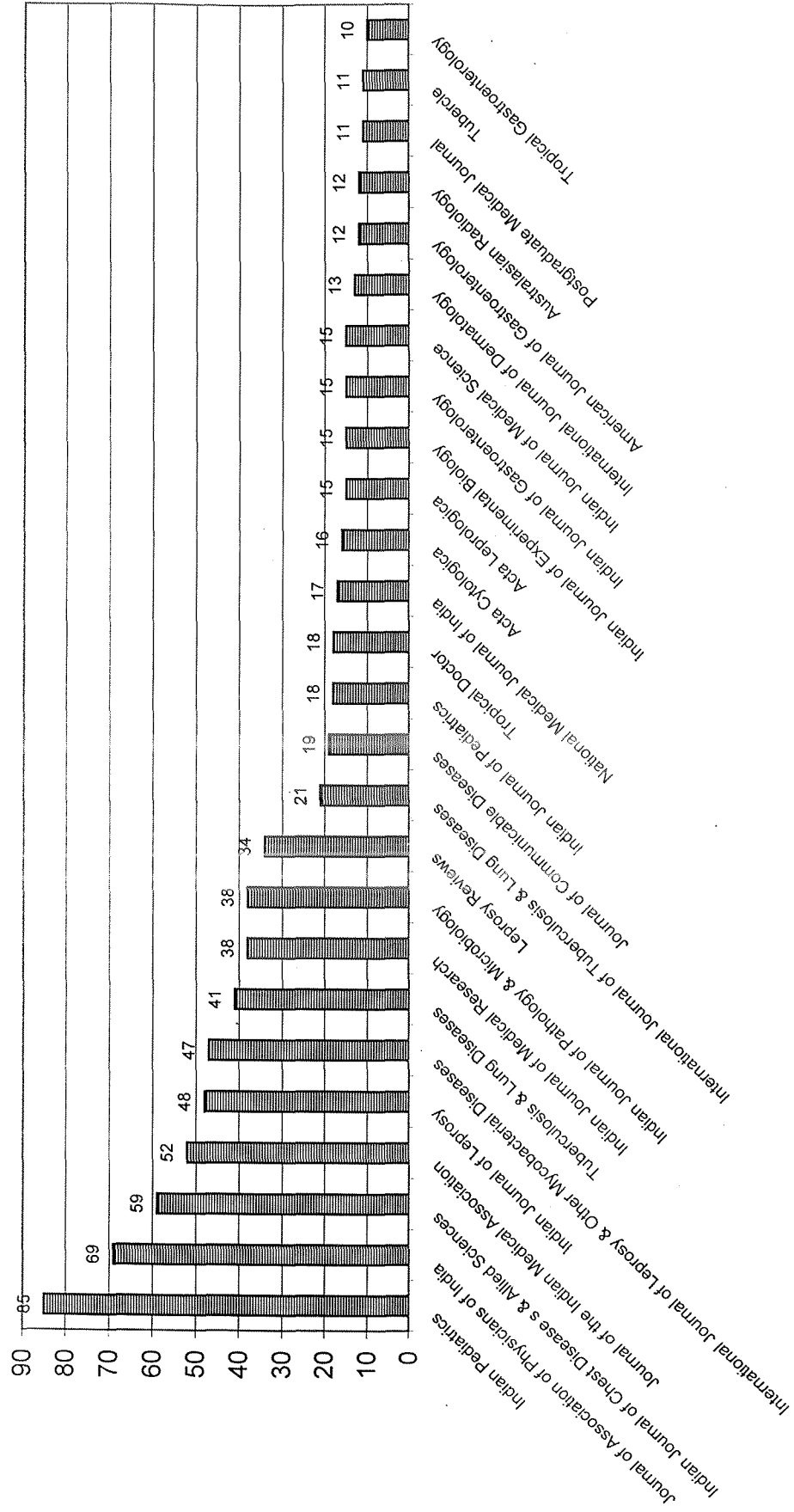
Institute profile of Tuberculosis papers (415) from India in SCI database during 1990-99 (Top ten publishing Institute)



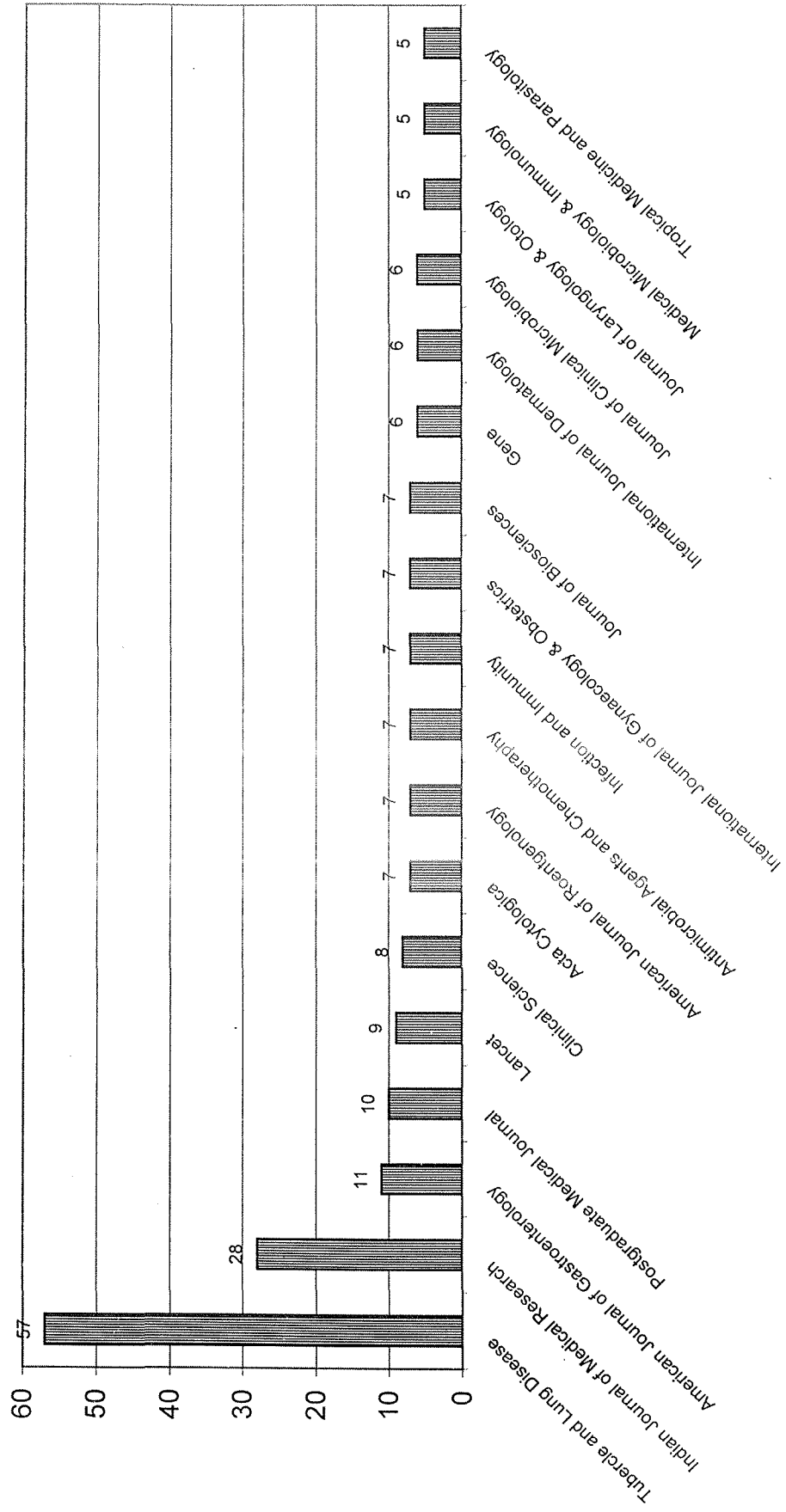
Institute profile of Tuberculosis papers (279) from India in TDB database during 1990-99 (Sorted by No of Papers)



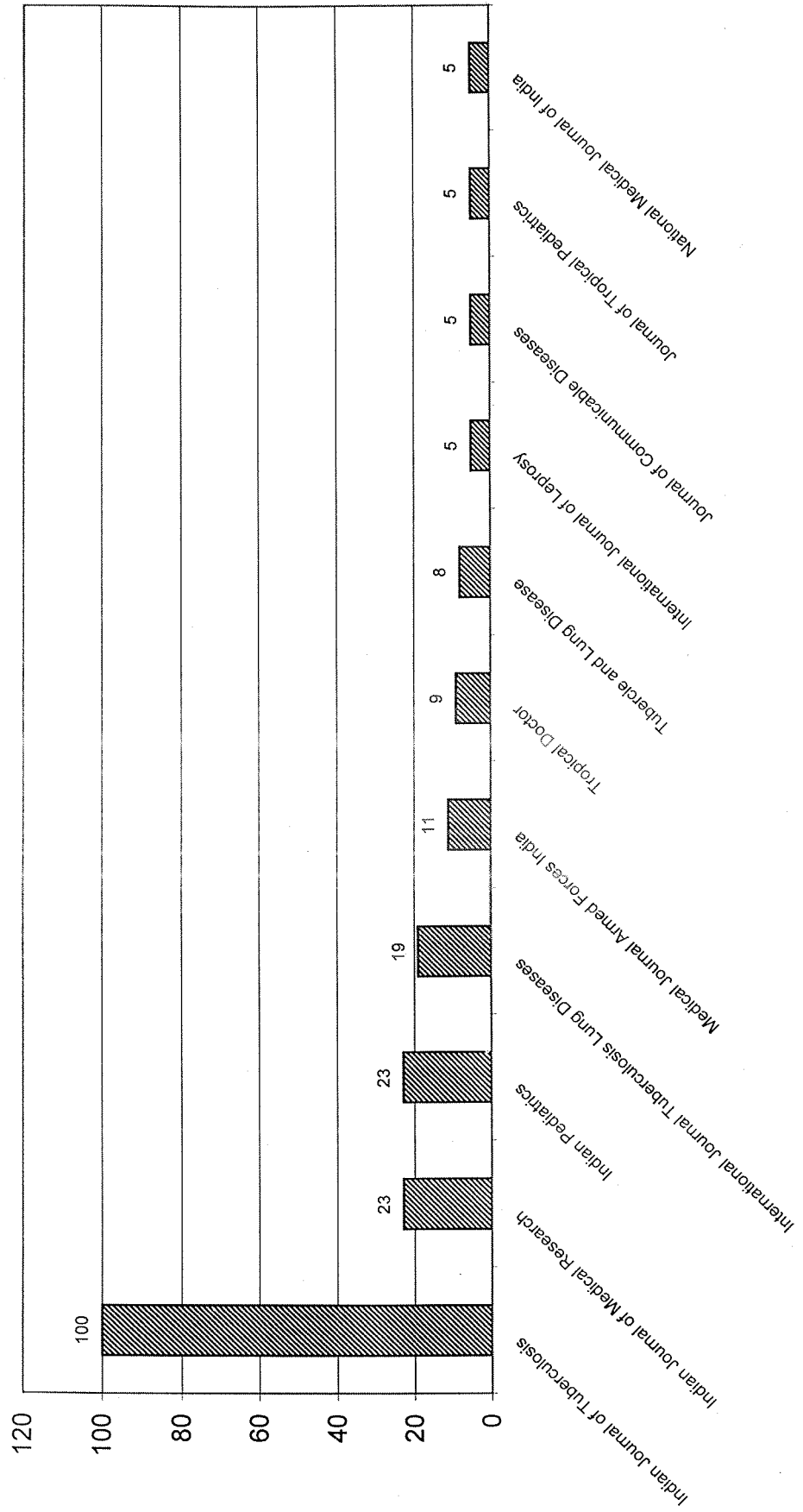
Journal profile of Tuberculosis papers (1331) from India in Medline database during 1990-99 (Top publishing journals with minimum 10 papers)



Journal profile of Tuberculosis papers (415) from India in SCI database during 1990-99 (Top publishing journals with minimum 5 papers)



**Journal profile of Tuberculosis papers(279) from India in
TDB database during 1990-99 (Top publishing journals
with minimum 5 papers)**



Major Conclusions

- USA contributed the largest amount of research papers in all the three databases, followed by India and People's Republic of China.
- However, in the *SCI* database, share of research papers from People's Republic of China has shown an increasing trend which could be due to schemes like the "Knowledge Innovation Programme" initiated in 1998 as also "863 Programme" announced in 1986.
- Specifically, disease-wise a total of 6800 papers have been contributed by India in the three databases during the study period which is over five times than the contribution made by the People's Republic of China (1319).
- India contributed more research papers in *TDB* database in the field of tuberculosis, than the share from even USA and People's Republic of China.
- Disease-wise top 10 *SCI* indexed journals with IF for the year 1999 for India ranged from 30% to about 50% of the total papers.
- *New England Journal of Medicine* (1999, IF : 28.857) & *Nature* (29.491) emerged as top two journals having the maximum IF among all publishing journals used in five diseases. *New England Journal of Medicine* has the highest IF in the *Medline* database while *Nature* had the highest IF in both *SCI* as well as *TDB* databases.
- In the case of AIDS publications from India, maximum number of papers (441) has been mapped in the *Medline* database. The number of papers has recorded an upward trend during the past four years.
- Intersection of common journals in the field of AIDS in three databases in the case of India through Venn analysis/diagram was found to be only 11 (*i.e.*, 4.48 %; 11 / 246). These common journals (11) accounted for 301 papers altogether.
- Govt. funded research organizations under the Ministry of Health & Family Welfare like the ICMR institutes figure as the top ranking publishing institutes for most of the five diseases analyzed. Specifically, the ICMR institutes such as the National Institute of Cholera and Enteric Diseases, Kolkata was the top ranking institute in diarrhoea in all the three databases, Vector Control Research Center, Pondicherry in filaria in two databases, *Medline* and *TDB*, Malaria Research Center, Delhi

for malaria in three databases and Tuberculosis Research Centre, Chennai was the top institute in two databases (*SCI* and *TDB*).

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