CHAPTER II

Review of literature

According to Dr. S. R. Ranganathan, any research starts with a bibliography and ends with a bibliography. Before starting a research, the scholar has to collect data related to his research topic. This data is called review of literature. Review of literature is a significant part of any research study. An investigator acquires information about what has been done in a field of study, to arrive at a fruitful conclusion. A review presents a vivid picture about previous researches in the area in which he intends to study. Familiarity with available literature in the area of research is also required by the investigator for making new grounds besides the proper designing of the study. Review of related studies further avoids duplication of work that has already been done in the area. It also helps the investigator to study the different aspects of the problem. It enables the investigator to identify the research gaps or the unexplored areas if any, in order to create new grounds for research. By considering the efficiency of various dimensions of bibliometric studies, the researcher has classified them into six categories namely

1. General Bibliometric studies

2. Literature growth oriented studies
3. Language of Contribution studies

4. Country of Publication

5. Authorship Pattern

6. Bibliometric Analysis of Bibliometric literature

7. Bibliometric Analysis of Specific Subjects

A review of previous studies in each of the above categories was attempted and presented in this chapter. The review of literature has been arranged in the chronological descending order.

2.1. GENERAL BIBLIOMETRIC STUDIES

Adany and Pocsai studied the status of genetic epidemiology. There was considerable difference in the research areas in Europe and USA. The study resulted that the number of publications increased significantly in Europe in the period covered under the research.

The area of research was related mental disease and behavioral disease genetic epidemiology in Europe whereas USA was with a larger emphasis on cancer.

Li...etal., ¹¹(2007) studied about acupuncture and moxibustion for treatment of knee osteoarthritis (KOA). The study revealed that,

- More clinical studies were involved in 98 papers which were published in 48 journals. Combined therapy was commonly-used method.
- The level of clinical study on acupuncture and moxibustion treatment of KOA is lower; whole studies on the mechanism were insufficient.

Guilera...etal., ¹²(2006) aimed to study scientific productivity with respect to articles published in Spanish on the issue of Differential item functioning (DIF). They focused mainly on presenting the frequencies and percentages of publications with respect to various bibliometric indicators. The results revealed that interest in the issue of DIF was found to be increased, and the most productive institutions were identified as universities. The majority of articles were found to be published in the journal Psicothema.

Low ¹³ used the Bibliometric techniques to analyze the citation


patterns of research papers published in the American Journal of Veterinary Research (AJVR). He analyzed more than 25,000 bibliographic references appearing in the AJVR from 2001 to 2003. His findings were that majority of items were found to be journals (88.8%), followed by books (9.8%) and gray literature (2.1%). He identified that Current sources of information were favored; 65% of the journals and 77% of the books were published in 1990 or later.

Weaver…etal.,\textsuperscript{14} aimed to study the research literature on the effects of religion on adolescent tobacco use published between 1990 and 2003. Twenty-two of the 29 studies was reported at least one significant effect of religion on tobacco use, but the researcher found that 31 of 43 separate analyses of religious variables yielding significant negative correlations between religion and tobacco use. They concluded that religion was inversely related to all measures of tobacco use (lifetime, occasional, and regular use).

Fracolli and Granja\textsuperscript{15} studied the bibliographic production of Brazilian nurses during 1993 to 2003. They focused on the periodicals: Acta Paulista de Enfermagem, Nursing (SP), Revista Brasileira de Enfermagem, Revista da Escola de Enfermagem da USP, Revista


latinoamericana de Enfermagem e Revista Texto e contexto de Enfermagem. The result revealed that 40 articles and the most of them were published in Revista Brasileira de Enfermagem in the year of 2000.

Carrasco-Rico… etal.,\textsuperscript{16} analysed the research literature on hypertension published between 1990 and 2000 in Mexico and evaluated the congruency between epidemiologic publications and the perspective of health services of the public institutions in Mexico. They found that, Out of 71 publications, 43 were identified as clinical trials, 21 as epidemiologic studies, and remaining pertaining to studies of various topics related with hypertension. The researcher found that most of the studies were related to moderate hypertension and 40% of publications were found to be related with treatment.

Martínez… etal.,\textsuperscript{17} analysed the scientific production at the National Autonomous University of Mexico (Universidad Nacional Autónoma de México, UNAM) School of Medicine during the period from 1999 to 2002. The findings were:

- 94.83% of total international scientific papers were recovered by them during the study and percentage of corresponding authors were 58.83%.


\textsuperscript{17} Martínez F… etal., Scientific productivity standards and the National Autonomous University of Mexico School of Medicine, \textit{Gac Med Mex.}, 2004, Vol.140(6), Pp.599-606.
27.80% of papers were national collaborations, 9.83% were international collaborations, and 3.37% corresponded to personal publications.

Canales...et al.,\textsuperscript{18} studied the output of Spanish scientific research in antimicrobial and antiparasitic chemotherapy published in the Spanish Journal of Chemotherapy from 1996 to 2000 covering 20 issues. Their study revealed that majority of the articles were found to be original, and a small group of high-output authors and an appropriate level of contribution were identified. Greatest percentage of scientific output was found to be from the autonomous regions of Madrid and Valencia.

Afifi\textsuperscript{19} analysed mental health publications in Arab countries cited in PubMed from 1987 to 2002. The total number of mental health research citations published in Arab countries during the period was identified as 338, out of which 1.2% was found related to biomedical research; 17% were on child and adolescent mental health. The researcher found that Child psychiatry, especially attention deficit hyperactivity disorder and child autism, were not gaining much interest from Arabians.

Clement... et al.,\textsuperscript{20} compared the levels of research activity in bipolar

disorder and schizophrenia and examined how research activities on the disorders varied over time across scientific fields. Their findings were that the ratios (bipolar disorder: schizophrenia) ranged from 1:1.3 for the number of research funding awards to 1:7.6 for the number of clinical trials. The researcher also found that a relative dearth of research activity on bipolar disorder was observed when compared with schizophrenia.

Gomes R... etal., 21 studied the content of the scientific production of three national pediatric journals from 1990 to 1999, concerning pregnancy among adolescents and tried to identify the justifications for the occurrence. A qualitative approach enabled them an analysis of the pediatric explanations and recommendations concerning the theme. Among 1437 papers, only 1.1% was found related to the subject. Controversies regarding the importance of the biological risk involving the adolescents’ lives were observed in the papers. Considering the complexity of the aspects involved in the pregnancy among adolescents, the authors point out the need for an interdisciplinary perspective in approaching the theme.

Glazier R... etal., 22 investigated the frequency of publications about arthritis and rheumatic diseases relative to other diseases during

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1991 to 1996. Available health statistics were used to quantify the burden of illness due to musculoskeletal (MSK) conditions. The findings were that among arthritic and rheumatic diseases, rheumatoid arthritis had the largest number of citations (2,004), followed by systemic lupus erythematosus (927) and osteoarthritis (793). MSK diseases had leading contributors to health professional consultations, but in contrast, MSK diseases were ranked ninth among twelve major disease. They concluded that Arthritis and rheumatic diseases received far less attention in the scientific literature.

Chapula aimed to conduct Bibliometric analysis regarding Haitian AIDS research from AIDSLINE database for the period 1980 to 1998. An attempt was made to identify the patterns of the growth in AIDS literature, as well as the types of documents published, authorship, institutional affiliations of authors, and subject content. The researcher found that most documents were published in periodicals. The International Conference on AIDS obtained the highest frequency. The United States, Haiti, and Canada were the main productive countries. He also concluded that nearly 40% of the records corresponded to ethnology-related articles, HIV infections, sex behavior, pregnancy.

Saameño and Cañabate\textsuperscript{24} aimed to find the scientific output on communication and health both in Spain and internationally with respect to the articles and the design of research. The databases MEDLINE (1995-2000) and IME (1990-2000) and the books summarizing papers from semFYC Congresses (1995-2000) were used by them. Out of 6766 articles from MEDLINE, 42 on the IME and 34 summaries from semFYC congresses. The study revealed that original articles on MEDLINE and IME were 70\% and 37\%; and review articles, 11\% and 44\%. 1.4\% of MEDLINE articles were randomized trials; and 0.08\%, meta-analysis. They concluded that Communication and health research was young field and still requires descriptive studies.

Bunout and Reyes\textsuperscript{25} aimed to assess the amount and quality of papers published by Chilean authors in international journals during January to August, 1997. Of the 390 papers, 188 (48\%) were published in Chile and the rest were published abroad. Thirty manuscripts had a greater relationship to clinical medicine. They concluded that significant proportion of biomedical research papers originated in Chile was found to publish abroad with the consequent lack of diffusion among non-specialized readers from their own country.


Matot... etal.,\textsuperscript{26} examined the frequency of obtaining Institutional Review Board (IRB) approval and informed consistency in critical care research.

The findings were:

- Of the 279 reviews, 124 (44\%) were conducted in the United States.
- Their study revealed that 243 (87\%) studies were performed by universities, 96 (34\%) studies were found to be supported by a grant, and 23 (24\%) studies were supported by a pharmaceutical company.
- Many published studies in critical care lack IRB approval and/or informed consent.
- All research supported by the pharmaceutical industry was fully approved. The findings raised ethical concerns about critical care research.

Nielsen\textsuperscript{27} analysed the investment by the Danish Heart Foundation in the cardiovascular research field for period 1988-1990. He identified that 80\% of the researchers concluded their research work and published 362


scientific papers in 131 journals. The total journal impact factor obtained among 270 scientific papers with known journal impact factor was found to be 642. 35% of the papers were found to be published in journals with journal impact factor greater than three with the median journal impact factor was 1.580. The study revealed that the number of publications and their impact factor were found to be adequate in relation to the economic input.

Rychetnik... etal.,28 studied 649 peer-reviewed publications in 72 editorials in three leading health promotion journals namely Health Education Research: Theory & Practice, Health Education Quarterly and Health Promotion International, from 1989 to 1994. The largest numbers of articles published were of descriptive research, followed by studies developing and validating health promotion measurement tools and health promotion theory. The proportion of program evaluations was found small and the proportion of randomized controlled trials ('highest quality evidence' of effectiveness) decreased over time.

Campos... etal.,29 made an attempt to establish the relative weight of the various kinds of Spanish primary health care (PHC) research collected in the IME during 1971-1994. The findings were that 3,015

studies were published, with a first phase (1970s) of under 10 documents per year, a second (1980s) with a big increase and a third (1990s) of stagnation. PHC research production was found to be stagnated, though the journal Atención Primaria was found to maintain its undisputed leadership position.

Hansen et al.\textsuperscript{30} studied scientific publications emanating from departments of clinical physiology and nuclear medicine in Denmark during the years 1989-1994. They found that the total number of scientific papers from Danish departments of clinical physiology and nuclear medicine fell during the period of research, whereas the volume of quality, as assessed on the cumulated impact, only fell with borderline significance, and the impact per paper was almost constant from 1989 to 1994, and was found to be above the national average.

Simeon-Rudolf and Kosicek\textsuperscript{31} analysed the Scientific and technical publications of the Institute of Medical Research and Occupational Health 1988-1993. The ratio between the number of papers and the number of scientists was calculated and compared to the ratio in the previous years and with other research institutions in the country. An increase was observed in the Institute production of scientific papers in international

journals.

Odaka T…etal\textsuperscript{32} examined the publication pattern of four Japanese universities in the subject life sciences. The databases used in the study were MEDLINE and EMBASE. The result was a 30\% difference in the number of papers among the four universities.

2.2. LITERATURE GROWTH ORIENTED STUDIES

McLean…etal\textsuperscript{33} Undertook a bibliometric analysis of Australian rural research trends and compared with international Rural Health (RH) research output, and they analyzed how Australian RH research has been addressing the National Health Priority Areas (NHPAs) during 1990 to 2005.

The findings are

\begin{itemize}
  \item Out of 20913 rural health publications of which 1442 (6.8\%) were from Australia.
  \item The top five journals that published RH articles were Journal of Rural Health (JRH; 453), Australian Journal of Rural Health (AJRH; 417), Medical Journal of Australia (MJA; 192), Social Science Medicine (191) and Lancet
\end{itemize}

The most frequent publication type was found to be the journal article. Australia's contribution to the international RH literature was found to been increasing, both in terms of the relative numerical contribution and the prominence of selected Australian journals as the destination for articles on RH topics.

The most frequent NHPA addressed by the RH publications in Australia was mental health.

Delnoil and Groenewegen\textsuperscript{34} examined the health services and health systems research in Europe, based on a search of the literature in PubMed and Embase. Their findings were:

- Health services research is particularly strong in the Nordic countries.
- The number of publications on health services research increased steadily between 1996 and 2004.
- The emphasis on the keywords 'patient' & 'hospital' was higher in those countries where the GP traditionally holds a strong position, but also in the new member states, Estonia and Slovenia.

They concluded that Health services research was in a growing domain of research.

As an applied discipline, health services research was expected to closely follow political agendas.

Majority of studies focussed on improving the efficiency and quality of the system.

Khalsa studied about Yoga as a therapeutic intervention with respect to the published research studies. After the bibliometric analysis on the biomedical journal literature involving research on the clinical application of yoga the researcher found an increase in publication frequency over the 3 decades with a substantial and growing use of randomized controlled trials. He also found that a majority of yoga research was being conducted by Indian investigators and published in Indian journals related to Yoga.

Rubin and Chang analyzed the trends in health economics articles indexed in the economics literature from 1991 to 2000. They found that articles, pages, and the number of journals increased, single authorship was found to decline dramatically from almost half of articles published to only one-third, and papers with four or more authors were found to increase.


three-fold. Over three-fourths of articles were analyzed to be of healthcare markets or health production, while policy oriented articles instituted the third largest share.

Faulkner... etal.\textsuperscript{37} attempted to find whether tried to analysis if the Family therapy and qualitative research field has been influenced by recommendations for an increase in use of qualitative methodology in family therapy. A content analysis was conducted on articles published in the marriage and family therapy literature from 1980 to 1999. Of the numerous articles examined in four journals, 131 articles were published using qualitative research methodology. Their findings supported the contention that qualitative research was in an increasing trend.

Andrés... etal.\textsuperscript{38} made an attempt to characterize the Revista Española de Salud Pública based on the original articles published therein throughout the 1991-2000 period. The findings were as follows: Throughout the 1991-2000 periods, 290 original studies (52.3\%) of a total of 555 studies were published. The number of originals averaged 29 originals/year. A 4.5 degree of collaboration was found to exist for the journal (number signing authors/number originals) for the period under study. They concluded that it apparently followed that the Revista Española de Salud Pública has been...
Pública continued to fall within the output-related indicators of other Spanish and foreign journals and that it had also evolved in keeping with the trend proper of scientific output in the biomedical field.

Valdez-Martinez E...etal,\(^{39}\) analyzed the general characteristics and methodology of indexed publications by the health staff of the Mexican Social Security Institute in 1997. The findings were:

- Out of 300 original articles published, they studied 212 (71%). Articles generated by Full-time investigators (FTI) and investigators with clinical activities (CAI) were 109 and 103 respectively.
- The median impact factor of the journals in which FTI published was 1.337 (0.341 to 37.297) and for CAI publications, 0.707 (0.400 to 4.237).
- Biomedical research predominated in the first group (41%) and clinical investigation in the second (66%).
- The FTI group had the highest bibliographic production of original articles in indexed journals with an impact factor.

Han and Lee\(^{40}\) identified the quality of research activity carried out in Korea and examined the role played by Korean medical colleges in the

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production of international research papers for a period from 1988 to 1999. The total of 4,881 papers was studied, more than 60% of MEDLINE foreign journal papers were found to be published by top five universities 25% by Seoul National University, and 15% by Yonsei University. The newly established medical colleges at the University of Ulsan and Sungkyunkwan University initiated to have produced outstanding numbers of papers in less than ten years. Radiology has led the internationalization of Korean medical papers. It was the most productive specialty identified in this study. The productivity of Internal medicine was on the rise from the mid-1990s, and the field began to produce the most number of papers since then.

Cromer and Stager\(^4\) examined 582 research articles published in the Journal of Adolescent Health during the period 1980 to 1998. The researcher found that the total percentage of medical topics in research articles published in the Journal decreased from 61% in 1980-1981 to 38% in 1997-1998 (p <.01). Retrospective designs (including case reports/series and chart reviews) decreased from 25% of all research articles in 1980-1981 to 9% in 1997-1998 (p <.01). They observed that a shift in subject content of research articles from medical to psychosocial topics over the period.

Simó Miñana J…etal.\textsuperscript{42} analysed the scientific production of Spanish professionals in the field of primary health care (PHC) during 1990-1997. Their results showed an increase in the scientific production of the Spanish professionals. Majority of the first authors were from Primary health care centers.

Dios and Moya\textsuperscript{43} studied the scientific production in NeuroPediatrics (NP) in Spain during the period (1984-96). Quantitative and qualitative bibliometric indicators of the articles over NP were performed. The results were

- NP was taken as the subject matter in 7.8\% (n = 235) of all the articles published in An Esp Pediatr. The main type of articles in NP were Clinical notes (55.3\%), which is double that of the Originals (29.8\%).
- The median of authors (5) and the references (15) per article were similar than other biomedical publications.
- The essential authorship of the scientific activity in NP fell on hospitals, with poor authorship on University and Health Care Centers.
- NP was found to have a significant quantitative

importance in pediatric journals.

Sabaté \textsuperscript{44} documented publication trends of vegetarian nutrition articles in biomedical literature between 1966 and 1995 using the National Institutes of Health MEDLINE bibliographic database. The publication rate of vegetarian articles was found to increase steadily during the 3 decades, from an average of <10/y in the late 1960s to 76/y in the early 1990s.

The proportion of original research and review articles increased whereas case series and letters to the editor were found to be in a decrease mode. Reports of epidemiologic studies of vegetarians with longitudinal designs had superseded cross-sectional designs in number and proportion.

In 40\% of all publications, preventive and therapeutic applications of vegetarian diets constituted the major themes of vegetarian articles in the decade of 1986-1995. The progressive change in the themes of vegetarian nutrition publications is interpreted by the authors as a shift in the role of vegetarian diets in human nutrition.

Gonzalez and Lorente \textsuperscript{45} studied the articles published in Pediatric Spanish (PS) journal (Anales Españoles de Pediadría) over 13-year period...
from 1984 to 1996. It was found that the main type of articles in PS were Clinical Notes (56.9%) and Originals (31.7%). It was also found that, PS had a significant quantitative importance in pediatric journals, with two negative differences in relation to the other pediatric subspecialties: low statistical accessibility and low insularity index.

Tortosa Serrano JA... etal.\textsuperscript{46} made a bibliometric analysis on the original research articles published in Revista Española De Anestesiología y Reanimación (REAR) from 1987 through 1996.

The findings were as follows:

- The authors/paper index was $5.16 \pm 1.62$ with no statistically significant difference in number of authors.
- Mean number of references cited per article were $24.05 \pm 12.02$ with statistically significant differences for 1993 and the period 1987 to 1988, and 1994 and the year 1987 ($p < 0.001$).
- English was the most frequent language of cited publications, followed by Spanish, French and German with 74 (1.03%).
- Of the 7,191 references analyzed, 89.65% was scientific.

journals next was books with 8.66%.

Takahashi...etal.,\textsuperscript{47} studied the role assumed by epidemiology in occupational health literature and characterize its change over the years between 1980 to 1993. The proportion of source items indexed by epidemiology by the researcher as a descriptor increased over threefold from 7.9% (42/534) in 1980 to over 25% after 1990. Epidemiology was assumed to be of increasing importance in occupational health literature.

López-Muñoz... etal, \textsuperscript{48} studied the Spanish scientific output in the Neurosciences between 1984 and 1993. Bibliometric laws such as: price's law of scientific literature growth, Bradford's law of scientific literature dispersal and Lotka's law of author productivity was used by them on 1488 documents. An exponential growth in the Spanish neuroscientific literature output was observed in their study. Scientific production was concentrated in the CCAA of Madrid and Cataluña, followed by Andalucia, Castilla-León and Valencia.

Tesio L... etal. \textsuperscript{49} aimed to study the rehabilitation which was found to be under-represented in the neurological literature on disabling diseases

during January 1991 and June 1994 with 27724 articles.

Aleixandre...etal.\textsuperscript{50} studied the Spanish publications on AIDS literature during 1983-1992. The study included 2,013 publications of which 1,821 were journal papers and 192 were books. The results were as follows:

- More than 50\% of the total papers taken for study were found to be published only by five journals.
- The most productive journals identified by them were Medicina Clínica and Enfermedades Infecciosas y Microbiología Clínica.
- Their study found an exponential growth of the publications from 1983.
- Parallelism has been detected between growth in the number of publications and in the number of journals publishing on the subject, the growth in the number of journals publishing on the subject.

Rovira \textsuperscript{51} carried out a bibliometric analysis of all available studies on Spanish health inequalities (health status and use and access to health services) for the period 1980-1994. The studies revealed that majority of


the studies located were empirical, and found to have not been published in books or journals. Since the period 1986-1988 a clear increase in the number of studies as well as in their formal publication has been observed.

Llorente et al.\textsuperscript{52} studied the evolution of anesthesia in gynecology and obstetrics in Spain between 1916 and 1936. The data covered all the articles appeared in the Revista Española de Obstetricia y Ginecología. They reviewed 83 articles out of which 18 (21.6\%) were found to be original research reports, 37 (44.6\%) were reviews of the Spanish professional literature and 28 (33.7\%) were summaries and descriptions of meetings of scientific organizations. The study revealed that Spanish references constituted 39.8\% and remaining 60.2\% came from European and Hispano-American sources. 24 articles were found to be related to spinal anesthesia, 15 pertaining to analgesia during childbirth and 14 were on barbiturates. The study revealed the strong international contacts in Spanish gynecology during the period, as well as the interest of gynecologists and obstetricians in various anesthetic techniques.

Yu and Gao\textsuperscript{53} studied the review of clinical trials for herbal drugs published in Chinese Journal of Integrated Traditional and Western Medicine (JITWM), Journal of Traditional Chinese Medicine (JTCM), and a

provincial Journal of Traditional Medicine (JTM) during 1991, 1987 and 1980. The result was that Controlled trials were recorded as 86% of JITWM, 40.8% of JTCM, and 26.8% of JTM in 1991 and found to be in increase trend in use or randomized trials. The quality of clinical trials in JITWM was noted the first, JTCM the second, JTM the third and proved a gradual improved trend with time.

Cox BJ… etal.,54 reviewed the distribution of citations in 278 anxiety disorder studies published in 14 journals in 1990 and 1991. The 278 anxiety disorder studies contained 3,199 references to articles from the 14 journals. The result was that a high percentage of "self-citation" in some of the journals and only limited evidence of citations across journal and author disciplines were found. Their findings suggest that anxiety disorder research findings were often not widely disseminated across disciplines.

Cami J etal.55 studied Spanish scientific production in biomedicine and health using Science Citation Index for a period from 1986 to 1989.

Their findings were as follows:

- Out off 12606 documents, 66.7% were journal articles.
- Universities were responsible for 46% of the documents

55 Cami, J … etal., Spanish scientific production in biomedicine and health. A study via the Science Citation Index (1986-1989), Med Clin (Barc), 1993. V.101(19), Pp.721-31
followed by hospitals with 39%.

- The autonomic communities of Madrid (32%) and Catalonia (26%) had the most productivity principally in hospitals, followed by Andalucia (10%) and Valencia (7%).

- The subject matters of greatest production were biochemistry, and molecular biology (14.7%), pharmacology and pharmacy (7.6%), neurosciences (6.8%) and microbiology (5.7%).

- Despite the growth in Spanish biomedical production, Spain only occupied seventh place. Madrid and Barcelona concentrated on biomedical investigation from the hospital network.

2.3 LANGUAGE OF CONTRIBUTION STUDIES

Ben Abdelaziz…et al.\textsuperscript{56} aimed to measure the international radiance of the Tunisian medical research indexed in Medline's database during the period 2000 and 2003. The study covered 1248 articles published in 2 national reviews and in 196 foreign one which from 21 different countries. (96%) of the articles were written in English and were published in foreign reviews. The international radiance of the Tunisian medical research was found to be satisfactory. English was scientific communication language.

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Winkmann G... etal.,\textsuperscript{57} aimed to review publication countries and languages in JCR Science-Editions 1997 and 1998, and publication languages in publication years 1995 - 2000 in bibliographic databanks SCI, MEDLINE (ME) and EMBASE (EM).

The findings were as follows:

\begin{itemize}
\item 70 % journals in JCR 1997 and 1998 were published in USA, United Kingdom, or The Netherlands.
\item Of two language options present, a number of English-classified journals contained >90 % articles in other languages, whereas >90 % publications in English could occur in Multi-Language (ML) journals, thereby complicating statistical comparisons.
\item 83,9 % JCR-periodicals in 1997 and 85,6 % in 1998 were classified English. English/ML ratios increased exponentially with increasing IF.
\item 95,5 % of the articles documented 1995 - 2000 in whole SCI and in our constructed SCI segment >>Medicine and related areas<< were written in English, compared to 88,5 % in ME and 89,8 % in EM.
\end{itemize}

They concluded that Anglo-American publishers’ countries and English-language journals prevail in JCR with respect to numbers and IF levels. Publication language English favored citation frequency. Of databanks studied, SCI showed a maximum preference for English-language sources.

Pardo C… etal., \(^58\) attempted describe bibliographic references in Spanish nursing research papers and their evolution over a decade (1985-1994) with 622 research papers.

The results were as follows:

- Spanish was the language of most of the references (60.3%), the second language was English (36.1%).
- The mean of references per paper was 10.64 +/- 10.42; with an increase over time (P < 0.001). Review papers had more references (P < 0.001)
- References to journals were found to predominate (58.6%), with a growing tendency for references to Spanish nursing journals
- Bibliographic references in Spanish nursing research papers were scarce and found to be not very specific.
- There had been a slight increase in references in English in

due course.

Osca \(^{59}\) analyzed Spanish production of the 275 books published in Spain about AIDS. Books were identified to be published in Barcelona (39.63\%) and Madrid (30.54\%) and 81.81\% of the books found to be written originally by some of the languages of their country. There were translations from English and French.

2.4 COUNTRY OF PUBLICATION

Swaminathan...etal.,\(^{60}\) examined the global clinical research attributed to anesthesia departments using Medline and Ovid databases and also investigated the impact of economic development on national academic productivity during the period 2000-2005. Population and gross national income data were obtained from publicly available databases. Their findings were as follows:

- Out of 6736 publications from 64 countries in 551 journals, about 85\% of all publications were represented by 46 journals.
- The United States led the field in quantity (20\% of total) and mean impact factor (3.0) of publications. Finland had the


highest productivity when adjusted for population (36 publications per million populations).

- Publications from the United States declined from 23% in 2000 to 17% in 2005.
- The United States produces the most clinical research, but per capita output is higher in European nations.

Clarke...etal, 61 studied health promotion research literature in the EEA to inform the collaborative study-SPHERE (Strengthening Public Health Research in Europe) during the period of 10 years from 1995 to 2005. The output was analysed by country, population, gross domestic product (GDP) and health need (disability-adjusted life years, DALYs).

They identified 18,862 papers out of which One-third was identified as health promotion. The results were as follows:

- Nordic countries were highest producers per million populations; the UK the largest net producer.
- Weak relationship between health promotion publication and population size ($r(2) = 0.38$); a weak inverse relationship with relative health (DALYs per million population) ($r(2) = 0.07$) and a slightly stronger

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relationship with GDP ($r(2) = 0.45$).

- Intervention studies were a minority; with less aimed at the regional/national or policy or legal and fiscal levels.

Ugolini D… etal.\textsuperscript{62} compare the scientific production in the field of cancer molecular epidemiology among countries and evaluated the publication trend between 1995 and 2004 with 13,240 abstracts from Medline database. The study evaluated the number of publications and the impact factor (mean and sum), absolute and normalized by country population and gross domestic product.

The findings were:

- A total of 3,842 citations were finally selected for the analysis out of which 37\% came from the European Union (UK, Germany, Italy, France and Sweden ranking at the top), 31.6\% from USA and 9.7\% from Japan.

- The highest mean impact factor was reported for Canada (6.3), USA (5.9), Finland (5.8) and UK (5.2). Finland, Sweden and Israel had the best ratio between scientific production and available resources.

- They concluded that, Cancer molecular epidemiology in

\textsuperscript{62} Ugolini D … etal., A bibliometric analysis of scientific production in cancer molecular epidemiology, \textit{Carcinogenesis}, 2007, Vol.28(8), Pp.1774-9
an expanding area attracting an increasing interest.

Falagas...etal,\textsuperscript{63} aimed to study the published research in several biomedical fields during the years 1995 to 2003. They found that Western Europe led the world in published research on infectious diseases-microbiology (82,342 articles [38.8%]) and in it was cardiopulmonary medicine (67,783 articles [39.5%]). United States ranked first in the fields of preventive medicine, public health and epidemiology both in quantity (23,918 articles [49.1%]). However, they identified that the developing regions had only small research contributions in all of the biomedical fields they examined.

Soteriades and Falagas \textsuperscript{64} studied the research in the fields of Preventive Medicine, Occupational/Environmental Medicine, Epidemiology and Public Health cited in the Journal Citation Reports (JCR) database of the Institute for Scientific Information (ISI) during the period 1995 and 2003.

The findings were

\begin{itemize}
  \item Out of the \textit{48,861} articles, USA led the research production in all three subcategories. The percentage of articles published by USA researchers were 43%, 44%
\end{itemize}

\begin{itemize}
\item \textsuperscript{63} Falagas ME... etal., A bibliometric analysis by geographic area of published research in several biomedical fields, 1995-2003, CMAJ.21; 2006, Vol.175(11),Pp.1389-90.
\item \textsuperscript{64} Soteriades ES and Falagas ME, A bibliometric analysis in the fields of preventive medicine, occupational and environmental medicine, epidemiology, and public health, BMC Public Health., 2006,Vol.15;6,Pp.301.
\end{itemize}
and 61% in the Preventive Medicine, Epidemiology, and Public Health subcategories, respectively.

- Canada and Western Europe shared the second position in the first two subcategories, but Oceania researchers were found to be ranked second in the field of Public Health.

Michalopoulos and Falagas \(^{65}\) analysed 48,614 numbers of global research production in respiratory medicine during 1995 to 2003. The leaders in the production of respiratory medicine research were found to be from Western Europe and the United States but Canada, and Oceania was also found to be the best performer after adjustment for population and GNIPC.

Enk and Levy \(^{66}\) studied the differences of achievement in dermatological research between Denmark and Israel by means of bibliometric analysis, and to attempted to elucidate the causes of these differences. Employing MEDLINE searches for the 10-year period 1988-97, quantitative and qualitative comparisons of the dermatological publications from these two countries were conducted by the authors. They found that achievements of Danish dermatological research to be superior to those of

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Israel, and suggested that the large proportion of case reports and reviews was the cause of the relatively low ranking of Israeli dermatological research efforts.

Grossi F… etal., studied 3124 papers on geography of publications in clinical cancer research from 1995 to 1999 limiting to antiblastic chemotherapy, either alone or in combination with other treatments. They found that, United States ranked first by number of papers (37.7% share), followed by Italy (9.8%), the United Kingdom (8.5%) and Japan (6.9%). The mean IF of North American papers was found to be higher than that of European address (3.54 versus 3.14).

Grant observed the impact of research on health care and characterized the papers cited on clinical guidelines applying Bibliometric techniques. Most papers were published by authors living in either the United States (36%) or the United Kingdom (25%) and clinical guidelines did not cite basic research papers were their findings. Analysis of the evidence base of clinical guidelines was found to be a way for tracking the flow of knowledge from the laboratory to the clinic.

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68 Grant J, Evaluating "payback" on biomedical research from papers cited in clinical guidelines: applied Bibliometric study, BMJ, 2000, Vol. 320 (7242),Pp.1107-11
Brambrink 69 aimed to identify articles on clinical practice in Paediatric Anaesthesia from selected countries during a period 1993 to 1998. They studied 2259 articles in 295 medical journals. The articles were written in English (85.1%) and the majority originated from the USA (35.4%) and the UK (12.6%). Around (77.7%) of publications appeared in 29 Anaesthesia journals, all referenced in Medline, with 46% being published by only five journals. Most authors published in journals of their home country/region. Authors from the UK ranked highest in publication activity, followed by those from Canada, Switzerland, Sweden and Denmark.

Lewison and Devey 70 evaluated the magnitude and quality of publications in arthritis research in the UK and compared it with other countries during 1988 and 1995. Their study revealed that UK had a strong presence in arthritis research when compared to other countries. The researches in UK in the field of arthritis were supported by different funding sources, including government, private-non-profit and industry. Papers with funding acknowledgements were of significantly higher impact and less clinical than those without.

Gotzsche... etal,71 conducted a bibliometric study on Danish medical research. The productivity of major Danish research milieus were compared with Norway and Sweden. They found that

- Number and proportion of articles published in the 200 and 500 most cited journals found increase over the years (p < 0.0001).
- Sweden was found to have approximately twice as many articles as Denmark which had twice as many as Norway.
- The universities, private companies and societies and Steno Diabetes Centre were identified to have relatively most publications in the best journals.
- The municipality and county of Copenhagen, Alborg and other provincial hospitals contributed relatively most to clinical trials; Rigs hospital was found to contribute least.

López-Muñoz...etal, 72 applied bibliometric laws such as Price’s Law, Bradford’s Law and Lotka’s Law to literature on pineal gland and melatonin for a period from 1966 to 1994. The study showed an exponential increase of the scientific literature on the pineal gland. The number of publications on melatonin was found to be less than those on

other aspects of pineal research until 1991. The most productive country was USA, followed by Japan, United Kingdom, Germany, France, Italy and Spain. Of the total number articles published, 86.9% were in English.

2.5 AUTHORSHIP PATTERN

Ferriols R...etal.\textsuperscript{73} carried out a bibliometric analysis of the Farmacia Hospitalaria journal from 2001 to 2006. They analyzed 416 articles by 1,515 authors and found that original articles were the most predominant with a growth of 30%. There were 4.6 +/- 2.3 authors per article. Four authors were found to have productivity index of > 1, with one group of 15 authors having an index of > 0.75. Only 14% of articles were included in presentations to congresses and 17% had funding.

Estrada Lorenzo JM... etal.\textsuperscript{74} analysed the geographical area of the authors' productivity and the original articles published in the Revista Española de Salud Pública throughout the 1991-2000 period. The findings in their study were as follows.

- The total number of authors involved in their study were 1,052 of which 1,000 were Spanish and 52 were foreigners. The ratio of male authors to female authors for


the period in question was 1.29.

- The institutions by which the authors were employed were located most often in Community of Madrid (16.5%), in Community of Valencia (11.3%) and Andalusia and Catalonia (10.5%).

- A total of 37.6% of the authors were observed to work at centers devoted to health care, followed by authors who work at Universities (26.3%).

- The Revista Española de Salud Pública was a scientific journal, The productivity of the authors were found to be greater when compared to other public health magazines or other countries.

Jacard M… et al.,\(^75\) evaluated the temporal trends in the number of authors per article in Rev Med Chile and authors' compliance with the International Committee of Medical Journal Editors (ICMJE) criteria of authorship (updated 2001) during 1969 and 2000. The results of their researcher were

- The number of authors in research articles increased from 3.9 +/- 1.6 (mean +/- SD) in 1969 and 4.9 +/- 2.0 in 1989 to 5.7 +/- 2.5* in 1994, 5.2 +/- 2.6* in 1999 and 5.4 +/- 2.2*.

In 2000 ("p < 0.05 compared to previous years).

- In contrast, it remained stable in case reports (4.1 +/- 1.9) and in reviews, public health or medical education articles (3.3 +/- 1.8).

- Among 921 authors surveyed (90% of authors in the year 2000), 51.2% qualified for "justified authorship", 42.3% for "partial authorship" and only 6.4% for "unjustified authorship".

- They concluded that in a medical journal from a developing country, multiauthorship has increased mildly in research articles.

Contreras... etal,76 (1997) studied the National and international diffusion and authorship pattern in Anales de Medicina. The predominant professional affiliations among authors were found to be clinical (hospital) and they identified that the geographical origin of the authors (expressed as a percentage of all authors) approximately paralleled the volume of scientific publications generated by each of Spain's 17 autonomous regions.

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Baena and Pórpez\textsuperscript{77} evaluated the 812 articles published by Revista Española de Anestesiología y Reanimación (REDAR) between 1996 and 2001. The results were

- The researchers found that the mean number of authors per article was analyzed to be 4.26. Institutional collaboration led to 259 articles and the collaboration index was noted as 1.5.
- The number of references per article, the rate of journal self-citation and the rate of citation authors' own work were noted to be as follows respectively 19.4, 6.42\%, and 2.73\%.
- REDAR was the most-cited journal and the authorship indexes for REDAR were similar to those of other Spanish publications.

López\textsuperscript{78} studied the Spanish scientific publications on tobacco use during the period 1970-1996. Out of the total of 405 papers, the degree of collaboration between authors, research centres and institutions were found to be 88.6\%, 30.7\% and 21.8\%, respectively. The average number of authors per paper was 4.02+/−2.46 in Spanish journals and 4.96+/−2.26 in

foreign ones. The total number of authors were 1633, of whom 1162 (71.2%) contributed a single paper.

2.6 BIBLIOMETRIC ANALYSIS OF BIBIOMETRIC LITERATURE

Clarke A…etal., 79 a bibliometric overview of public health research literature for Europe during the period between 01/01/1995 and 31/12/2004 in any language. Out of the total 210,433 publications were identified after duplicates were removed, a world total of about 20,000 per year. 7,000 papers per year were produced in Europe and 9,400 by the USA. Publications per capita were highest in northern European countries. In multiple regression analyses, GDP was a modest predictor ($r^2 = 0.53$, $P < 0.02$) of publications for European countries, while population size and disability adjusted life years were not significantly related. Smaller countries and lower producers of public health research were more likely to collaborate with other countries. Of the publications, 3.5% were published in a non-English language, with German the most common.

Miguel-Dasit 80 aimed to study the scientific activity of the activity, structure, and evolution of radiology in Spain during 1994-1998. Positive correlation between collaboration and scientific productivity was observed by the researcher with respect to both in national and international

congresses. Collaboration among radiologists from different institutions or
countries and between radiologists and clinicians were found to increase
the percentage of publications. The researcher identified that Hierarchical
groupings with the participation of residents were more stable from year to
year in scientific production, and the group residents + associates had the
highest percentage of authorship (21%).

Schreiber…etal, 81 aimed to study the original molecular biology
research in anaesthesia during the period 1986-2002. 1265 identified
original articles that used molecular biology techniques out of which 223
(18%) of the articles were found to be published in anaesthetic journals and
1042 (82%) articles in 556 other biomedical journals. The result revealed
that during late 1980s only a few molecular biology articles were found to
be published each year by anaesthetic institutions and worldwide the
number reached approximately 200 basic science articles by the end of
2002. USA clearly dominated the field of anaesthesia with respect to
molecular biology research with 839 (66%).

Collins…etal,82 studied the articles on radiologic education
quantitatively and qualitatively, comparing those published in 1987-1997
with those published in 1966-1986. A chi2 test for independence was used

81 Schreiber K, …etal., Bibliometric analysis of original molecular biology research in
82 Collins J, …etal., Journal publications in radiologic education: a review of the literature,
to assess whether the relative distribution of articles was similar for the two periods. The findings were

- More articles per year were published during 1987-1997 was observed (n = 12.6, P < .01) compared with 1966-1986 (n = 9.2).
- Articles pertinent to radiologic resident education predominated (50.7% vs 29.9% in the prior study, P < .01).
- During both periods, most articles were expository (37.7% vs 49.5%), and the most common topic was program description (34% vs 35%).
- The fastest-growing topic of study was technology (30.4% vs 17.5%, P < .01).

Solar et al. 83 aimed to describe Spanish scientific production in primary care in medical periodicals indexed in the Indice Médico Español during the years 1988-1992. The scientific production on primary care was noted to have an exponential increase according to Price’s Law. The first ranked periodical was found to be Atención Primaria. Most of authors were found to be family doctors or interns of such specialty, who work in units of family medicine. Collaborative studies among institutions were not common.

2.7 Bibliometric Analysis of Specific Subjects

Karagiannis\textsuperscript{84} discussed the principles of radioimmunotherapy. The scientific advances that have lead to the acceptance of radioimmunotherapy as a therapeutic modality in cancer were highlighted. Various limitations of radioimmunotherapy particularly for the treatment of solid tumors are considered and future directions for this treatment modality are examined.

Camilleri M\textsuperscript{85} summarises the clinical research advances in gastroenterology and hepatology that were reviewed during the Plenary Session of the American Gastroenterological Association's Annual Meeting in May 2004 in New Orleans, Louisiana. The clinical research advances included the efficacy of infliximab in the treatment of fistulizing Crohn's disease, the potential role of gastrointestinal factors in the development of obesity, and, the newly appreciated condition, autoimmune pancreatitis with associated cholangitis. He concluded that the Clinical research advances had an impact the management of digestive diseases.

Calvillo...etal.,\textsuperscript{86} studied the past, the present and the future of anti-idiotype vaccination which is directed against the tumor idioype. The

\textsuperscript{86} Rodríguez Calvillo M, ...etal., 2004, Past, present and future of anti-idiotype vaccination, Rev Med Univ Navarra.,48(3), Pp.14-23
researchers noted that Anti-idiotype vaccines to have demonstrated clinical benefit against follicular lymphoma and were currently being evaluated in two different phase III clinical trials. They concluded that the production of vaccines via molecular means will surely allow them to draw important conclusions concerning the treatment of cancer patients.

Kobayashi T…etal, 87 observed trends in the incidence of gastric cancer by sex and 20-year age groups during the period 1976 to 1996. They also observed changes in the prevalence of Helicobacter pylori infection and in serological atrophy of the gastric mucosa, and compared the results with those involving changes in the incidence of gastric cancer. The findings were

- A slight decline was observed in all age groups over 40 years old, in both men and women, between 1986 and 1996.
- Decline in incidence was observed for those aged 20-39 years.
- The frequency of serological atrophy of the gastric mucosa significantly declined in all age groups between 1989 and 1996, with young age groups experiencing a more marked decrease.
- They concluded that a marked decline in gastric cancer incidence observed in the young population will also begin to occur in the elderly population in the future.

Levi F... etal.\textsuperscript{88} analysed the trends in mortality from benign prostatic hyperplasia (BPH) during 1950s and late 1990s in Europe and, for comparative purposes, the USA and Japan and found that

- Overall mortality from BPH in the European Union (EU) fell from 5.9 to 3.5 per million, and the decline since the late 1950s was over 96%.
- Comparable falls were observed in the USA and Japan, and BPH mortality rates in the late 1990s were lower than in the EU (1.8/10(6) in the USA, 1.4 in Japan).
- BPH rates have been steadily declining in developed countries. The excess BPH mortality in Eastern Europe indicates the scope for further reduction too.

Bonneux LG... etal.,\textsuperscript{89} aimed to quantify the medical consequences of the tobacco use in the Netherlands for the period from 1950 to 1999 and the near future. The smoking intensity was defined as the difference between the expected lung-cancer mortality if no one smoked and the observed lung-cancer mortality. The findings were

- In 1999, 18% (women) and 32% (men) of all mortality before the age of 70 was attributable to smoking.

\textsuperscript{88} Levi F, ... etal., 2003, Recent trends in mortality from benign prostatic hyperplasia, Prostate, 56(3), pp.207-11

\textsuperscript{89} Bonneux LG... etal., 2003, Mortality due to smoking in the Netherlands: 1.2 million tobacco-related deaths between 1950 and 2015, Ned Tijdschr Geneeskd., 147(19), pp.917-21.
If no one had smoked, Dutch life expectancy for men and women would have been 3 years and 1 year higher, respectively.

Between 1950 and 1999, 13% of all deaths were caused by smoking, the large majority (> 90%) of which occurred among men.

The future prediction was that between 2000 and 2015, slightly more deaths are to be attributed to smoking (14%), 62% of which will be among men. And in 2015, women will have caught up with men in terms of absolute numbers of lung-cancer mortality.

DiMatteo MR\textsuperscript{90} examined the emerging issues in consumer-provider communication and patient adherence to cancer prevention, screening, diagnosis, treatment, and coping with survivorship. The researcher identified that many factors to affect adherence can be supported or hindered by provider-patient communication, including the provider-patient relationship, patients' beliefs, social and cultural norms, family and social support, mood, and behavioral management. Six research questions were posed, and substantive and methodological recommendations are offered for empirical research on the measurement and achievement of patient adherence.

\textsuperscript{90} DiMatteo MR, 2003, Future directions in research on consumer-provider communication and adherence to cancer prevention and treatment, Patient Educ Couns., 50(1), Pp.23-6
Smith LK,...et al.,\textsuperscript{91} studied the Latest trends in cancer incidence among UK South Asians in Leicester using cancer registry data. They found that although South Asians had lower rates of cancer than the rest of the population, which was found changing with age and time. Younger South Asians, particularly children, were at increased risk. While generally cancer rates had fallen over the previous decade, but they were found increasing among South Asians.

Hosny G and Elkaffas SM\textsuperscript{92} studied the descriptive epidemiology for cancer incidence to identify and clarify the role of etiological factors and environmental exposure in cancer during the period 1972 to 2001. The researchers found the following results:

- The incidence of lymphatic and haemopoietic cancers increased dramatically over the specified period.
- The lymphatic and haemopoietic cancer incidence in 2001 was found to have increased approximately 11 times cancer incidence in 1972.
- Brain and central nervous system cancers showed an increase of 4.5 fold during the 30 years period of study.

\textsuperscript{91} Smith LK,...et al., 2003, Latest trends in cancer incidence among UK South Asians in Leicester, Br J Cancer.89(1),Pp.70-3.
\textsuperscript{92} Hosny G and Elkaffas SM , 2002, Patterns in the incidence of pediatric cancer in Alexandria, Egypt, from 1972 to 2001, J Egypt Public Health Assoc. 77(5-6),Pp.451-68
They also suggested that a closer examination of the underlying factors and environmental contaminants leading to the disease in children.

Cameron DA\textsuperscript{93} attempted to study about the current research and future prospects in Breast cancer vaccines. The researcher identified that the possibility of effective control of micro metastatic disease remains unproven although the immune system can clearly recognize cancer cells with little evidence that it does so to any effective consequence in patients with advanced breast cancer. The researcher noted down that no shortage of target antigens for immune cell recognition of breast cancer but it is less certain whether the route to an effective therapeutic strategy lies with enhanced recognition of an individual target or a more general route to enhanced immune cell activation.

Roder DM\textsuperscript{94} analyzed the Gastric cancer mortality. The researcher found that Gastric cancer remained to be the second leading cause of cancer death worldwide, probably accounting for about 10\% of newly diagnosed cancers. The further the findings were

- High rates apply to Japan, China. Central and South America, Eastern Europe, and parts of the Middle East, and low rates to

North America, Australia and New Zealand, Northern Europe, and India.

- Rates usually were found to be higher in lower socioeconomic groups.
- Male-to-female incidence ratios generally were in the 1.5-2.5 range, with higher ratios for intestinal than diffuse cancers and higher-risk populations.
- In South Australia, the ratio has been 1.8 to one, although higher at 4.6 to one for cardia lesions.
- Increase in cardia cancers, was noted especially in males in populations of European extraction, which often were accompanied by increases for esophageal adenocarcinoma.

The researcher concluded that the global burden of gastric cancer could be reduced by up to 50% by dietary changes that included an increased intake of fruit and vegetables.

Igisinov N...etal.,95 estimated trends of change in cancer morbidity for the breast, uterine corpus, cervix uterus, and ovaries of the female population of Kyrgyzstan as a whole and in separate regions over a 10 year period (1989-1998). The retrospective study after applying descriptive and analytical methods of modern oncoepidemiology, established that breast cancer occupies the first place, neoplasia of the cervix uterus the second,

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of the ovaries the third and the uterine corpus the fourth, within the range of malignant neoplasms of the female reproductive system. On the whole the indicated cancer incidence rates tend to growth in dynamics and different regional specificities.

Gibbons L...etal,\textsuperscript{96} examined the recent trends in the incidence of and mortality from colorectal cancer among Canadian men and women, then further analyzes trends by three sub sites. Age-standardized incidence and mortality rates were calculated for men and women. The findings were

- Colorectal cancer incidence has been declining with steeper rates of decrease among women since the mid of 1980s.
- Decreasing rates of colorectal cancer are limited to tumours located in the distal colon and rectum; the incidence of cancers of the proximal colon were not changed over time.

Qiao YL...etal,\textsuperscript{97} analyzed and predicted the trends of incidence and mortality rates of esophageal cancer in areas of Taihang Mountains, and explore the strategies for facilitating the reduction of the incidence and mortality of esophageal cancer during the period 1988 to 1997. The findings were:


Declining trends for both incidence and mortality rates during past 10 years in Taihang Mountains was recorded.

The predicting rates of the esophageal cancer incidence in 2,002 were 115.70/100,000 for male and 79.88/100,000 for female; mortality rates were 94.00/100,000 and 56.29/100,000 respectively.

The researcher recommended implementing a large-scale secondary prevention strategy in the areas.

2.8 SUMMARY

As regards to research in medical areas, there is considerable difference between Europe and USA. Major citation analysis showed that the Journal articles are mostly cited. The scientific literature is published mainly in English language. USA is the dominating country in scientific research.