

THE ASSESSMENT OF IRANIAN SCIENTIFIC JOURNALS

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Abstract - The rate of scientific articles published in scientific journals is one of the indicators of assessing the status of science and technology. An increase in these publications is a sign of the movement of the society towards development and promotion. In this article, the rate of scientific publications in scientific journals (types A and B) during the years 2002 and 2003 will be analyzed. In order to investigate the statistics of the published articles in these journals, several indicators have been used. In spite of the fact that these analyses are based on two types of scientific journals, the statistics of journals in six scientific groups have also been distinguished and considered. The results showed that amongst the six scientific groups, Medical Sciences had the highest number of scientific type-A journals and articles and Humanities had the highest number of scientific type-B journals and articles in Iran.

Keywords - Scientific Journal, Article, Assessment, Scientific Fields, Iran and Publication.

INTRODUCTION

Nowadays, there is a deep and ever-increasing gap among the people's quality of life in developed & industrial countries and undeveloped countries which is the result of technical and scientific gap among them. During the recent years, identification, strengthening and preparing the required background to use scientific sources, in each country, have been considered to be some of the most important duties of authorities and programmers in each country.

Producing science is one of the basic foundations to develop wisdom, and wisdom is the basis of power. Only development based on wisdom and scientism is a permanent development. Producing science causes an increase in wisdom and technology and, as a result, creates employment and wealth and eventually causes peace, power and social security [4].

In the first step, a piece of science is published in the form of a scientific article and promoted in a scientific journal. An article is, in fact, the result of a scientific and research action which is published in a scientific journal where all researchers in the world can find and study it. The research and higher education institutioes essentially present the results

of their scientific productions to scientific journals. Scientific journals are of the most valid sources that show the scientific progress. Scientific journals can be considered as one of the ways of establishing scientific communication i.e. the application of scientific journals is necessary for holding relationship among researchers. Scientific journals are considered as one of the aspects of today's communications and as one of the characteristic features of development in a social system.

In order to define scientific journals, it is necessary to give a definition of the term 'journal'. A journal is a publication with a certain title which is published in serial numbers in regular periods and for an unlimited period of time, and contains articles on different subjects by different authors. A journal can be restricted to a special subject or it can contain articles and topics related to various fields. A journal can consider various subjects or be limited to a special subject. In this case, it is a expert journal. The scientific journals are in this category i.e. the journals that are organized on the basis of scientific and research subjects. In other words, scientific journals are those which transfer new and innovative issues and present them in a specific method. Generally, a scientific journal has a new approach toward science and its future, and according to most authorities, scientific journal should be considered as a collection of knowledge and information that are presented specifically and academically in the society [3].

According to the regulation of formation of the Commission for the Supervision of Scientific Journals approved on August 11, 2003, two types of scientific journals have been defined:

1. Type A, which includes articles presenting new research findings and scientific society accepts it as the result of a research including basic, applied or developmental works.
2. Type B, which includes articles or papers concerning the promotion of one or more scientific subjects.

According to the above definitions, it is quite clear that scientific type-A journals are better than scientific type-B journals scientifically.

The objective of publishing scientific journals is to spread research in different subjects and to promote and elevate the level of theoretical knowledge and to create communication among different sages and researchers. The number of published articles in scientific type- A&B journals is one of the most important indicators to assess S&T condition of a country. An increase in a country's scientific publications indicates the promotion of knowledge and the status of S&T in national and international levels. Knowing the number of published articles in domestic scientific journals and their distribution in different fields of study can help effectively to assess the share of each field in creating knowledge. The purpose of this article is to consider the quantitative status of the publication of scientific articles in scientific type-A&-B journals in 2002 and 2003 by field of study in Iran.

The main fields of study in Iran are six: Medical Sciences, Humanities, Engineering,

Agriculture, Basic Sciences and Arts. Publication license for the journals of Medical Sciences field is given by the Medical Journals Commission in the Ministry of Health, Treatment and Medical Training and for the other fields by the Commission for the Supervision of Scientific Journals in the Ministry of Science, Research and Technology.

RESEARCH METHOD

The general objective of this article is to describe and analyze the present situation of publication of articles in domestic journals in different scientific fields. In order to reach this objective, the statistics of published articles in all scientific type-A&-B journals were gathered. Since the number of these articles by themselves doesn't give useful information to decision-makers of higher education and researchers, it was necessary to prepare indicators for quantitative analyses and investigations of article publication. In order to compare the publication status of articles in different fields and journals, the following indicators have been used:

1. The percentage of journals in different scientific fields
2. The number of scientific type-A&-B journals
3. Total number of published articles in journals
4. The percentage of articles in different fields
5. The percentage of scientific type-A articles in each field
6. The percentage of scientific type-B articles in each field
7. The proportion of total articles to the number of journals in each field
8. The proportion of scientific type-A articles to the number of scientific type-A journals
9. The proportion of scientific type-B articles to the number of scientific type-B journals

After gathering the statistics of published articles and using Excel and SPSS software, the aforementioned indicators were calculated, and their graphs and tables in scientific fields and scientific type-A&-B journals were drawn.

FINDINGS

- THE PERCENTAGE OF JOURNALS IN DIFFERENT SCIENTIFIC FIELDS

The number of journals which have been evaluated by the Ministry of Science, Research and Technology and the Ministry of Health, Treatment and Medical Training up to 2003 and have gained scientific type-A&-B grades are 147 and 81 respectively. 179 journals i.e. 78% have scientific type-A grade and the remaining journals have scientific type-B grade. Among different scientific fields, Medical Sciences with 81 journals has the most number of scientific journals. Humanities with 67 journals, Engineering and Agriculture with 31 and 27 journals are in the next ranks respectively. Basic Sciences with 19 and Arts with only 3 journals have the least ranks.

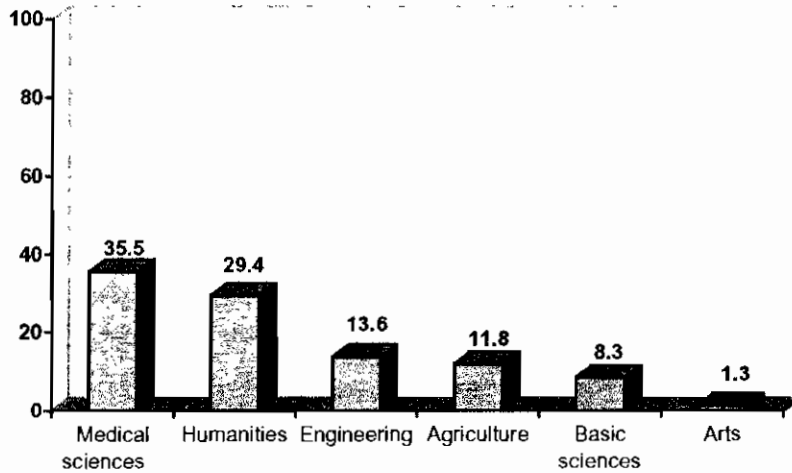


Figure 1: The percentage of journals in different scientific fields.

- THE NUMBER OF SCIENTIFIC TYPE-A&-B JOURNALS

Medical Sciences, Humanities and Agriculture with 45%, 18% and 15% of the scientific-type-A journals publish the most scientific type-A journals respectively. Engineering and Basic Sciences with 13% and 8% are in the next ranks. In Arts only one such journal is published.

In the case of scientific type-B journals, Humanities with 34 journals has 69% of these journals, and Engineering and Basic Sciences with 14% and 10% hold the second and third ranks. In Arts and Medical Sciences there are 4% and 2% of these journals. In the field of Agriculture no such journals are published.

As mentioned in the definition of scientific type-B journals, the purpose of publication of such journals is to promote and spread subjects and views in different scientific fields. Besides, as experimental research has less application in Humanities than in other fields, the number of scientific type-B journals is only considerable in this field because of the nature of this field.

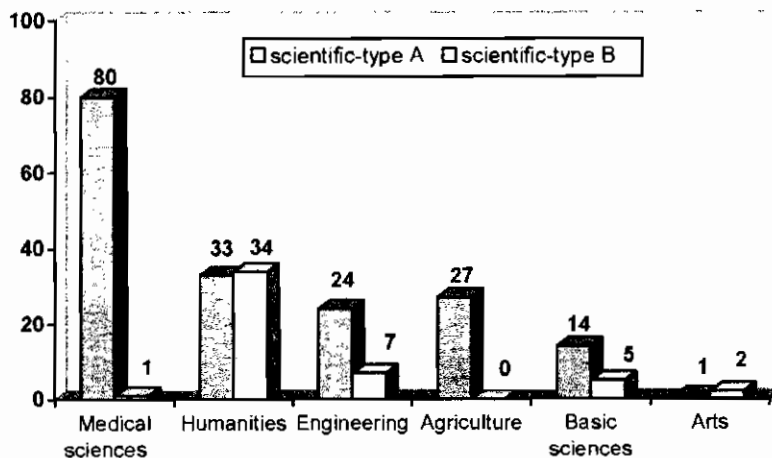


Figure 2. The number of scientific type-A&-B journals.

- TOTAL NUMBER OF PUBLISHED ARTICLES IN THE JOURNALS

Total number of articles published in the journals in 2002 was 7435 articles, which reached 8041 in 2003, about 8% increase. The percentages of scientific type-A articles and scientific type-B articles among all articles in 2002 were 82.4% and 17.6% respectively, and in 2003 were 84% and 16%. The total number of scientific type-A articles in 2003 increased 10% compared to 2002 while the total number of scientific type-B articles decreased 1.5% compared to the preceding year. Of course, because changes in the number of journals in these two years are marginal, and certain number of articles are published in a journal, lack of a substantial increase of articles could well be justified. But a 10% increase in scientific type-A articles and 1.5% increase in scientific type-B journals is a sign of more attention to scientific type-A journals.

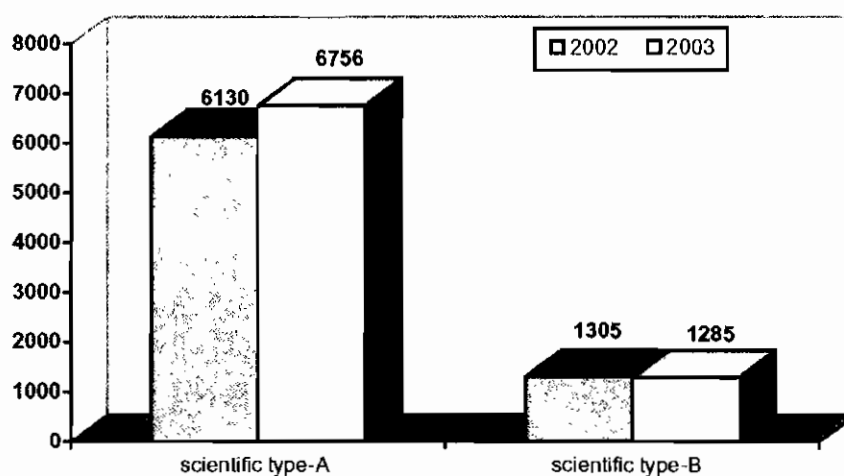


Figure 3. Total number of published articles in journals.

- THE PERCENTAGE OF ARTICLES IN DIFFERENT FIELDS

Figure 4 shows that in 2002 journals in Medical Sciences, Humanities and Agriculture published 3201, 1821 and 1106 articles respectively and in 2003 with 3680, 1902 and 1126 articles they embodied the highest percentage of articles. Also in journals of Engineering, Basic Sciences and Arts 951, 288 and 68 articles in 2002 and 946, 300 and 87 articles in 2003 were published.

Table 1: The number of articles published in journals of different fields.

No.	Field of Study	Number of articles 2002			Number of articles 2003			Annual growth rate of all articles
		Scientific type-A	Scientific type-B	Total	Scientific type-A	Scientific type-B	Total	
1	Medical Sciences	3154	47	3201	3637	43	3680	15
2	Humanities	857	964	1821	907	995	1902	4.5
3	Engineering	755	196	951	796	150	946	-0.5
4	Agriculture	1106	0	1106	1126	0	1126	1.8
5	Basic Sciences	239	49	288	252	48	300	4.2
6	Arts	19	49	68	38	49	87	27.9
	Total	6130	1305	7435	6756	1285	8041	8.2

Compared to the year 2002, an increase was observed in the number and percentage of published articles in journals of Medical Sciences and Arts in 2003. With regard to Engineering a decrease was observed. The number of published articles in Humanities, Agriculture and Basic Sciences increased a little in 2003 as compared to the previous year but its percentage decreased. This shows that the growth in the number of articles in these fields, compared to Medical Sciences, has been less substantial. The comparison of the rate of increase in the number of articles in different fields showed that there was only a considerable increase in Medical Sciences and Arts in 2003 compared to the preceding year. The total number of published articles in Medical Sciences in 2003 compared to the preceding year increased 15% but this increase was only 4% for Humanities.

A comparison of the percentage of the faculty members and Ph. D. students in different fields with the percentage of articles published by them in domestic journals shows that the percentage of published articles in Engineering and especially Basic Sciences and Arts has been less than the percentage of the faculty members and Ph. D. students in those fields [1]. For instance, despite the fact that about 16% of faculty members are in the field of Basic Sciences, only 4% of the articles belong to this field. Although the number and percentage of published articles in foreign Basic Sciences journals are considerable, they are expected to participate even more in the domestic journals.

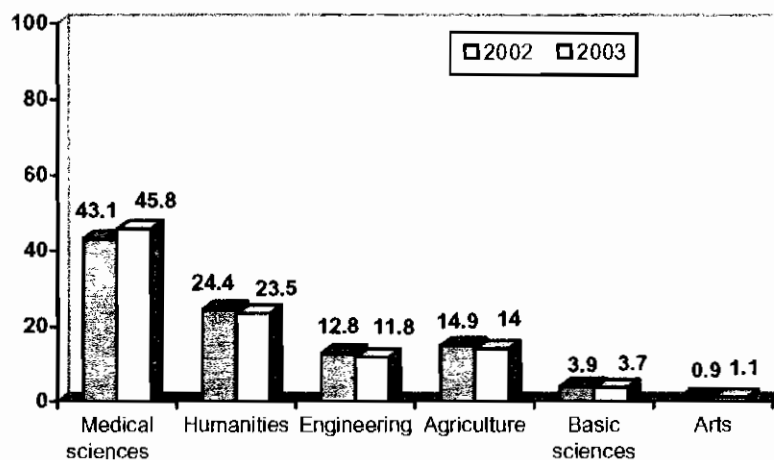


Figure 4: The percentage of articles in different fields.

- THE PERCENTAGE OF SCIENTIFIC TYPE-A ARTICLES IN EACH FIELD

According to Figure 5, the fields of Medical Sciences and Agriculture, by publishing 3154 and 1106 scientific type-A articles in 2002 and 3637 and 1126 scientific type-A articles in 2003, had the highest percentage of these articles. Humanities and Engineering with 857 and 755 articles in 2002 and 907 and 796 articles in 2003 are in the next ranks. Basic Sciences and Arts, with 239 and 19 articles in 2002 and 252 and 38 articles in 2003, have the least percentage. Despite the low number of articles related to Basic Sciences inside the country, the articles of this field (1072 articles in 2002) comprised 50% of the whole scientific productions of Iran indexed in ISI database. [2]

The number of scientific type-A articles in all fields in 2003 as compared to 2002 decreased except in the two fields of Medical Sciences and Arts where a marginal increase was observed compared to the year 2002. This shows that the rate of growth of the number of scientific type-A articles in Medical Sciences and Arts is a lot more than the other fields.

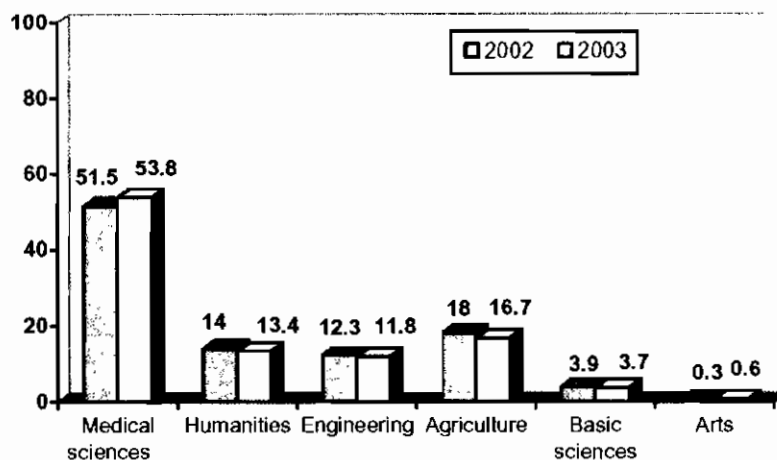


Figure 5: The percentage of scientific type-A articles in each field.

- THE PERCENTAGE OF SCIENTIFIC TYPE-B ARTICLES IN EACH FIELD

Figure 6 shows that the majority of scientific type-B articles are published only in Humanities so that this field with 964 and 995 scientific type-B articles in the two successive years of 2002 and 2003 has published more than 70% of the whole collection of scientific type-B articles. Engineering with 196 and 150 articles in the above years is in the second rank. The fields of Basic Sciences and Arts by publishing about 49 scientific type-B articles in 2002 and 2003 showed statistics similar to that observed in Figure 5. In all, 47 and 43 articles were printed in the single scientific type-B journal of Medical Science in 2002 and 2003. In Agriculture, no scientific type-B articles were published.

The number of scientific type-B articles in Humanities in 2003 as compared to 2002 had a 3.2% growth and in Engineering and Medical Sciences a 23.5% and 8.5% decrease was observed and there were almost no changes in other fields.

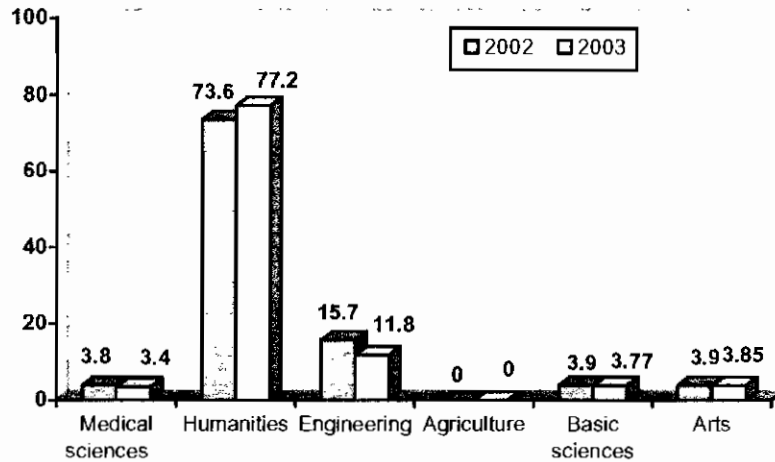


Figure 6: The percentage of scientific type-B articles in each field.

- THE PROPORTION OF TOTAL ARTICLES TO THE NUMBER OF JOURNALS IN EACH FIELD¹

The fields of Agriculture and Basic Sciences with 41 and 17 articles per one journal in 2002 had respectively the highest and the least proportion of total articles to the number of journals. In 2003 this proportion increased in all fields except Engineering. Of course, the rate of this growth has been considerable only in Arts and Medical Sciences so that Medical Sciences with 13.5% growth and 45 articles per one journal had the highest proportion in 2003.

The proportions of the number of articles to the number of journals in various fields are different. One of the important reasons of this difference is the acceptance of a certain and limited number of articles in each volume regarding the limited available pages of each journal and the publication of different numbers of journals in specific periods like Monthly, Bimonthly, Quarterly, etc. By the publication of more articles in each volume and the publication of more volumes of each journal in one year, the proportion of the number of articles to the number of journals in each field can be increased.

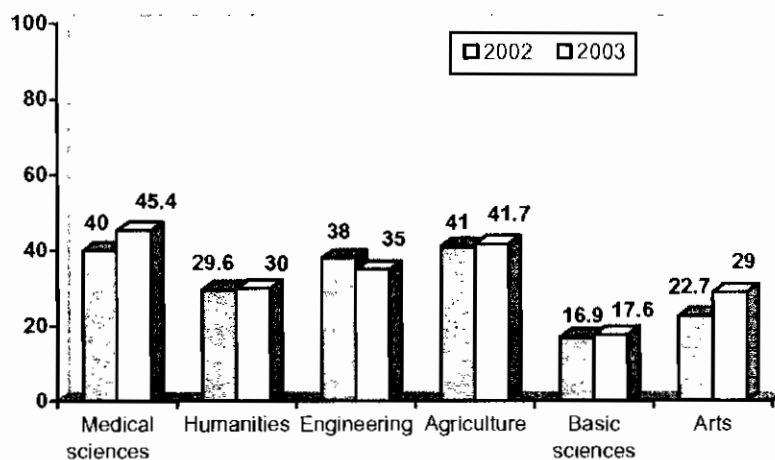


Figure 7: The proportion of total articles to the number of journals in each field.

- THE PROPORTION OF SCIENTIFIC TYPE-A ARTICLES TO THE NUMBER OF SCIENTIFIC TYPE-A JOURNALS

The proportion of scientific type-A articles to the number of scientific type-A journals in each field and year shows the average number of published articles in each journal in that field and in a certain year. The field of Engineering with 42 articles per one scientific type-A journal had the highest rate in 2002. Agriculture, Medical Sciences and Humanities with 41, 40 and 29 articles per one scientific type-A journal were in the next ranks. Arts and Basic Sciences were in the last ranks. Medical Sciences with a 14% growth in 2003 compared to the preceding year and by the publication of 45.5 articles per one scientific type-A journal had the highest ratio. This proportion was doubled in Arts, and increased 5% in Basic Sciences, and decreased 5% in Engineering. In other two groups, this proportion had little changes. Of course, it should be mentioned that since there is only one scientific type-A journal in the field of Arts, a change in the number of its articles causes fluctuation of this proportion.

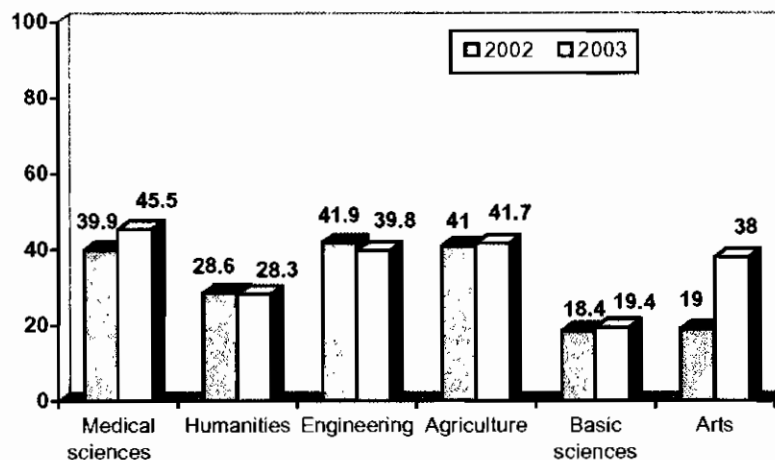


Figure 8: The proportion of scientific type-A articles to the number of scientific type-A journals.

In Table 2, the titles of three journals in each field which have published the highest number of scientific type-A articles have been mentioned. As seen in Figure 8, the average number of articles published in each scientific type-A journal in Medical Sciences and Agriculture in 2003 were 45.5 and 41.7 respectively, while the journals “*Research in Medical Sciences*” and “*Research and Construction*” in these two fields published 139 and 261 articles in 2003 respectively. The journals “*Amir Kabir*” in Engineering and “*Daneshvar*” in Humanities published 116 and 80 scientific type-A articles in 2003 which is three times more than the average number of scientific type-A articles in those fields. Of course, it should be mentioned that there are some journals in these fields which have published less than 10 articles in a year.

Table 2: The title of scientific type-A journals with the highest number of articles in each field in 2003.

No.	Field of Study	Title of scientific-type A journals	Number of articles in 2003	Average of articles of each field
1	Medical Sciences	Research in Medical Sciences	139	45.5
		Journal of Medical Sciences University	120	
		Journal of Dentistry-Medical Sciences University of Shahid Beheshti	110	
2	Humanities	Dancshvar	80	28.3
		Humanities	54	
		Literature & Humanities	48	
3	Engineering	Amir Kabir	116	39.8
		International Journal of Engineering Science	79	
		International Journal of Engineering	75	
4	Agriculture	Research & Construction	261	41.7
		Agriculture Sciences	100	
		Veterinary Medicine	82	
5	Basic Sciences	Ecology	31	19.4
		Sciences	30	
		Research Bulletin of Isfahan University	27	
6	Arts	Fine Arts	38	38

The presence of difference and irregular dispersion in the number of published articles by the journals has effected the distribution of journals in each field and has taken it out of symmetric position. The investigation of distribution of the number of scientific type-A journals according to the number of articles in different fields in 2003 shows that in three fields of Medical Sciences, Humanities and Engineering, a higher number of journals (about two-third of journals) have published articles less than the average articles of the field. In Agriculture, the presence of a journal with 261 articles, i.e. six times more than the average of the articles in this field, has increased lack of symmetry in this field. In this area about three fourth of scientific type-A journals have published articles less than the average number of articles of the field. This shows lack of symmetry in the scientific type-A journals in view of the number of published articles. Among them only scientific type-A journals of the field of Basic Sciences have had a symmetric distribution and the distribution of its journals has been normal. By observing the coefficient of skewness on Table 3 we can find that the most dispersion exists in the number of articles in the journals of Agriculture as the least exists in Basic Sciences.

Table 3: Distribution of scientific type-A journals in view of articles in each field in 2003.

No.	Field of Study	Journals with articles less than the average in each field		Skewness	Distribution
		Number	Percentage		
1	Medical Sciences	52	65%	1.64	Skewed to right
2	Humanities	20	62.5%	1.62	Skewed to right
3	Engineering	12	60%	1.2	Skewed to right
4	Agriculture	20	74%	3.7	Very skewed to right
5	Basic Sciences	7	54%	-0.03	Nearly normal & symmetric
6	Arts	-	-	-	-

- THE PROPORTION OF SCIENTIFIC TYPE-B ARTICLES TO THE NUMBER OF SCIENTIFIC TYPE-B JOURNALS

Figure 9 shows that in the only scientific type-B journal of Medical Sciences, the highest proportion of scientific type-B articles are published. Of course, according to the policy of the Medical Journals Commission, this journal must try to take scientific type-A grade as soon as possible. Humanities and Engineering, with 31 and 25 articles respectively, in each journal have the highest proportion among journals taken their licenses from the Ministry of Science, Research & Technology. The field of Basic Sciences with 12 articles in each journal in 2002 and 2003 had the least articles. Therefore, it is necessary for the specialists in this field to find the reason and improve their present status. It should be mentioned, that Agriculture has no scientific type-B journal. The proportion of scientific type-B articles to the number of scientific type-B journals in Humanities increased more than three percent in 2003 compared to the preceding year. This proportion remained unchanged in Arts in these two years and in Basic Sciences and Engineering decreased 2 and 24 percents respectively.

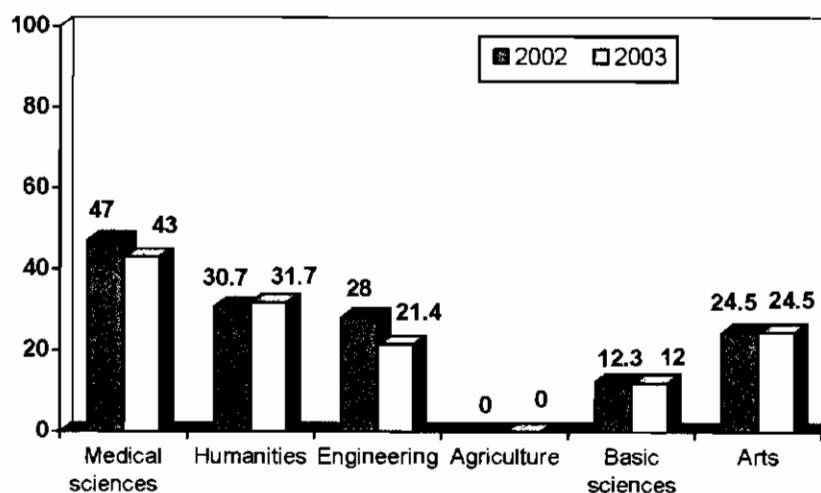


Figure 9: The proportion of scientific type-B articles to the number of scientific type-B journals.

DISCUSSIONS AND CONCLUSIONS

Journals published in English comprise 10 percent of all journals. Regarding the necessity of introducing the country's scientific productions to the global society, an increase in these journals will help effectively. A consideration of the number of present journals, in different fields indicates that Medical Sciences and Humanities have the most articles. This may be due to the availability of a variety of scientific subjects in these fields. Growth of the number of scientific type-A articles in 2003 compared to the preceding year and the reduction of scientific type-A articles show that there is an inclination towards scientific type-A articles. The percentage of the articles in different fields indicates that the highest increase in the number of articles is in Medical Sciences, which caused this percentage to decrease in most of other fields. Of course, the annual growth of articles only in Engineering (because of their severe reduction of scientific type-B articles) has been negative. In view of the proportion of total articles (especially scientific type-A articles) to the number of journals, Humanities and Basic Sciences have the least proportion. Basic Sciences with much difference had the highest level of international scientific productions. The most and the least dispersion in the number of published scientific type-A articles are in Agriculture and Basic Sciences respectively. The distribution of articles in Agriculture according to the average of the field is a non-symmetric distribution and is symmetric in Basic Sciences. Of course, it should be mentioned that publication of a large numbers of articles in some journals is due to the publication of more volumes in each year which shows their financial power. For instance, the journal named *Research and Construction* which belongs to the Ministry of Jihad-e-Daneshgahi and had the highest number of articles among various journals in 2003, publishes 12 volumes per year due to the financial support of the Ministry.

Finally, it is predicted that observing the following propositions is useful to promote the condition of the country's scientific productions:

- Regarding the movement of Iran's scientific development and the necessity of increasing scientific productions, the number of scientific journals in different fields should be increased.
- Scientific type-A journals, which have a license from the Ministry of Science, Research and Technology, should increase their share in the scientific articles through taking suitable policies. Scientific type-B journals in Engineering also need more attention to increase their articles.
- Humanities and Basic Sciences with regard to their low proportion of total articles to the number of journals should try to improve their situation through publication of more articles.
- With regard to immensity of articles awaiting for printing in journals, the number of

published articles per journal and the volumes of journals in one year should be increased.

- In order to increase the average of published articles in each field and to reduce the dispersion of journals in view of the number of their articles, all journal, but not a few of them, should financially be supported.

Acknowledgement

This paper has been prepared on the basis of a research [5] done in the Committee for the Supervision and Assessment of Cultural and Scientific Affairs (of the Supreme Council for Cultural Revolution). Hereby we wish to express our sincere gratitude to this Committee.

ENDNOTE

- 1- The journals which have published no articles in each year have not been considered.

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