

# Scientific Journalism and Output of the Iranian Nuclear Medicine Community: The Past, Present and Future

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During the past decade, medical and scientific community of Iran in order to compensate its shortcomings and deficiencies in scientific labors during 1980s and 1990s (due to the unpleasant consequences of the imposed war, which affected significantly the whole Iranian scientific community) began an expanding progress in research and knowledge production. The progress had brilliant outcomes, including the promotion of knowledge and placed our country in the second rank among the Islamic and the Middle East countries regarding the rate of science production. According to the ISI (Institute for Scientific Information) statistics, the number of published scientific articles of Iranian scientists in the field of medical sciences from 1999 to 2005 was 4249 and the number of citations on Iranian medical articles was estimated to be 1113 (1), which are significantly higher than the respective numbers during the 1980s and 1990s.

## Past: An Overview on Iranian Community of Nuclear Medicine

It was in 1961 that for the first time “Nuclear Medicine” was introduced to the Iranian medical community. Introduction of “Nuclear Medicine” to the Iranian medical society was indebted to the late “professor Sadeh Nezam Mafi” activities. In 1968 with encouragement and perseverance of professor Nezam Mafi and donation by the late Mr. Ebrahim Gharegoozlou the groundwork foundation of “Research Institute for Nuclear Medicine and Endocrinology” at “University of Tehran” was established (2).

Evidences suggest that till 1972, there was no published scientific paper of “Nuclear Medicine” in international medical journals from our country. In this year, Nezam Mafi et al published an article entitled “Diagnostic Value of Liver Scan in Operated Echinococcus Cyst” in a German journal known as “Strahlentherapie Sonderb”.

This article was published with “Gharegoozlou Medical Isotope/University of Tehran” affiliation (3). The publication of this journal however, was discontinued since 1986.

Although till 1978 and 1995 two other articles were published in international journals by Iranian nuclear medicine specialists, but all these investigators merely worked as co-investigators in the research teams of American and Japanese medical universities and no affiliation of our country was made in their papers (4, 5). After a long period (1972-1995) eventually one of the current faculty members of Tehran University of Medical Sciences published an article in the journal of “Health Physics” with the affiliation of “Research Institute for Nuclear Medicine/Tehran University of Medical Sciences” (6). Subsequently, he published a new article in the same journal in 1997, although there was no mention of “Research Institute for Nuclear Medicine” affiliation in the article and simply “Tehran University of Medical Sciences” had been pointed out as the source of the paper (7).

In 2000-2002, the Iranian investigators published four papers in the field of basic sciences in international journals indexed in PubMed and/or ISI bibliographical databases (8-11), but still there were no published articles in the field of “Clinical Nuclear Medicine”. So, ignition point of clinical article production was started in 1997 when “Nuclear Medicine” scientific and investigational activities led to publication of many articles in local journals mainly in “*Iranian Journal of Nuclear Medicine*”.

Despite all the shortcomings and difficulties, the *Iranian Journal of Nuclear Medicine* was established by faculty endeavors of the Research Institute for Nuclear Medicine, Tehran University of Medical Sciences in 1993 (12). This journal has been acted as the main research promoting basis among the nuclear medicine investigators leading to publication of 203 articles until the present

time. In fact this journal is the most important representative of scientific products of our country in the field of “Nuclear Medicine”. The journal honored to achieve indexing its articles in the scientifically invaluable bibliographic databases, such as Scopus, EMBASE, Index Copernicus, EBSCO, IMEMR, SID, Magiran and IranMedex. The journal is honored to have a number of outstanding national and international investigators as the editorial board (12).

Table 1 shows the total number of published articles from Iran in the field of “Nuclear Medicine” and 16 other medical disciplines since 1999 to 2005 (1). According to the table, the total number of scientific articles in the fields of radiology and “Nuclear Medicine” was 75 the share of “Nuclear Medicine” was 16 papers.

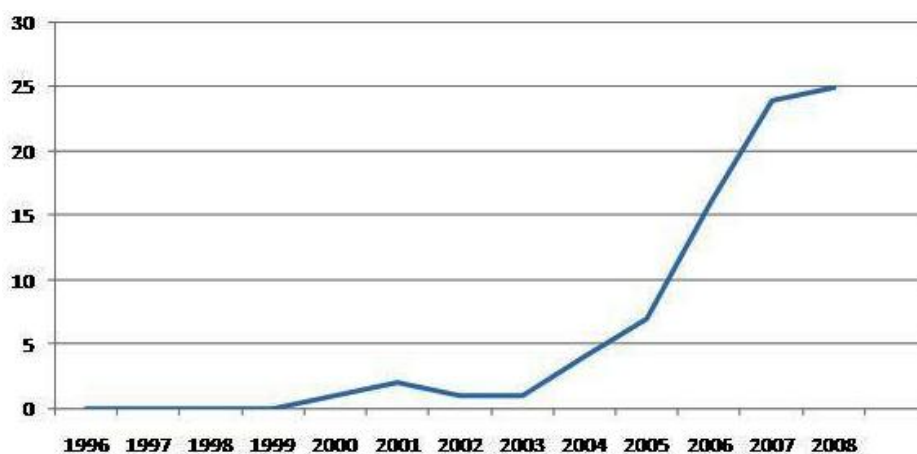
#### **Now: Bounce of Nuclear Medicine**

Thanks to approval of nuclear medicine as an independent medical specialty in our country and training of qualified specialist and investigators in this field by Research Institute for Nuclear Medicine, Tehran University of Medical Sciences, a new era of modern nuclear medicine has emerged. Since 2004, a new initiative was started by the young investigators of “Nuclear Medicine” community and increased flow of science production was begun. It is of interest to know, scientific production in the field of “Nuclear Medicine” has increased from three articles in 2004 to 25 in 2008. From 1972 up to the time of drafting this manuscript, 116 papers from Iranian medical investigators of “Nuclear Medicine” (Indexed in Medline and/or ISI) have been published. Considering successful publication of 116 articles in international journals by nuclear medicine investigators, it seems that within the recent 4 year period, a significant jump has occurred in the process of scientific production in this specialty (Figure 1). Even Iranian investigators have succeeded in publishing

an article (although as an editorial) in one of the most reputed journals, Journal of Nuclear Medicine (Impact factor: 6.662; the highest impact factor of any medical imaging or radiology journal worldwide), recently (13).

**Table 1.** Comparison of published scientific output among 17 specialty fields since 1999 to 2005 in Iran.

Ranking	Specialty	Total articles
1	Urology	169
2	Gastrointestinal and Liver Diseases	158
3	Gynecology & Obstetrics	173
4	Dermatology	137
5	Neurology	135
6	Ophthalmology	88
7	Cardiovascular System	84
8	Radiology	59
9	Nuclear Medicine	16
10	Pathology	74
11	Infectious Diseases	64
12	Rheumatology	57
13	Respiratory system	34
14	Anesthesia	28
15	Otorhinolaryngology	26
16	Physical Medicine and Rehabilitation	24
17	Orthopedic surgery	21



**Figure 1.** The growth pattern in the number of Iranian scientific articles produced from 1995 to 2008 in the field of nuclear medicine.

The most active Iranian institutes regarding training and contributing in production of science have been Research Institute for Nuclear Medicine/Tehran University of Medical Sciences, Mashhad University of Medical Sciences and Nuclear Medicine Research Group/Agricultural, Medical and Industrial Research School (AMIRS).

This promotion has occurred while "Nuclear Medicine" community of our country has been facing numerous constraints: Lack or severe restriction of important practical radiotracers such as Indium-111, Iodine-123 for research purposes and also lack of modern dedicated nuclear medicine imaging equipments such as PET and PET-CT or even SPECT/CT created a situation in which the Iranian "Nuclear Medicine" community cannot fully benefit from its aptitudes and capabilities. This community has shown potential of producing knowledge even in the face of all limitation and constrains.

Comparison of the scientific production in the field of "Nuclear Medicine" with other professional fields show that the growing trend in this field with many other professional disciplines is comparable and even higher. The importance of this issue becomes much higher when considering that Iranian society of Nuclear Medicine with about 130 members is one of the smallest professional associations of the country. This progressive path needs to be supported; especially the young generation investigators of "Nuclear Medicine" who are motivated for research should be highly encouraged.

#### Future: Suggestions

-Unfortunately, community of "Nuclear Medicine" seems to be a non-communicating non-interacting society with little interests and efforts for mutual communication and interaction with other specialized disciplines. This problem should properly be addressed to create a suitable bed for future disciplinary collaborations.

-Ties with the "Nuclear Medicine" societies in the developed countries which can provide very productive opportunities should be encouraged.

-The "Nuclear Medicine" community at least should attempt to introduce nuclear medicine to medical students at under graduate level to familiarize the future medical community with opportunities in the field of nuclear medicine.

-Iranian Society of Nuclear Medicine and other relevant authorities should recognize the enthusiasm and talent of the young investigators and find an appropriate way to encourage their efforts.

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