♦ *Editorial*

Report of fifteen years contributions to radiological sciences: Future directions and prospects

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"Science is an integral part of culture. It is one of the glories of the human intellectual tradition."
Stephen Jay Gould

At the close of the 20th century, fundamental discoveries changed broadly the worlds of physics, biology and medicine. The rapid advancements achieved during recent years, mainly due to revolutionary methodological improvements, have led to an unparalleled explosion of information; often appear to overshadow the earlier works. However as more basic discoveries are made these separate scientific eras merged to contribute to the conquest of disease, especially cancer. The exponential growth of data has been so impressive that the conceptual evaluation of the material has seemed almost an insignificant part of the scientific process. All these achievements have allowed researchers to ask new questions or to rephrase old ones. The result is a virtual avalanche of new formed knowledge.

The need for sustainable research in radiation sciences

The trend of cancer incidence is increasing worldwide. Although radiation induced carcinogenesis is considered as a stochastic effect, but we are well aware of the involvement of ionizing radiation in increasing cancer risk. Moreover, one of the main modality for cancer treatment is using ionizing radiation externally or internally to combat cancer cells. However, in spite of years and year's hard work of researchers and scientists; there are still many unsolved questions in the field of radiation research. We still do not know the impact of health effects of low dose natural radiation received by population; is it really beneficial or harmful? Radiation dose received by the population is increasing due to medical radiology exposures because of increased demands from physicians for radiologic procedures, but we do not know the impact of low doses received by population on their ill-health. The search for new radiation treatment modalities such as proton therapy and ion therapy beside conventional radiotherapy with megavoltage linear accelerators to improve local tumor control continues to represent a major challenge in the management of localized human cancer. Although, the introduction of three- and four-dimensional conformal radiation therapy (3D or 4D-CRT) has heralded a new era in radiotherapy and it is now possible to plan and prescribe radiation doses with desired dose distribution to the entire tumor using computer aided techniques, we are still far from achieving a personalized cancer treatment. Targeted therapy is not a routine cancer treatment modality yet. After years of introducing Boron Neutron Capture therapy (BNCT), it is not a routine procedure yet. In spite of advancement of monoclonal antibody technology to deliver radioactive materials to tumor cells and also advancement in nano-technology, targeted cancer therapy is still in its infancy and the insight is not clear. In the field of radiobiology, the last three decades have seen a major shift from a DNA-centric view of radiation induced damage, to a biological view that appreciates the importance of cellular macro- and

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microenvironment as well as underlying genetics. Radiobiological phenomena such as radio adaptation, bystander effect and inherent radio sensitivity have changed classical belief of linear non threshold (LNT) model. While the mechanisms underlying these effects and responses are not well defined, it is apparent that their implications are more panoramic than the field of radiobiology. These biological paradigms might have major implications in radiation carcinogenesis and cancer radio- and chemo-therapy. For radiation accidents, we still need to search for biomarkers suitable for biological dosimetry order to estimate radiation dose received by victims for triage and treatment. Also we need to search for potent chemical radio-protectors to use in cancer radiotherapy and in the events of nuclear or radiological accidents in spite of 60 years efforts. Large scale nuclear accidents such as that happened in Chernobyl and recently (2011) in Fukoshima, not only threatened many lives but also provided a need for continual risk assessment from exposure due to radioactive pollution in the environment. Health hazards of non-ionizing radiation in which their applications are increasing rapidly should also be borne in mind.

The need for publication in the field of radiation research

Many scientists in various institutes, colleges and universities throughout the world are involved in research programs in the field of radiation research both from basic and applied aspects. Therefore, the results of their research should be shared with other scientists throughout the world in order to make benefits from the results and improve or not to repeat a research. To achieve this aim a platform should exist for the exchange of detailed scientific information concerning the latest developments in the fields. Although very high quality journals in these fields are published in the developed countries, there is not enough space to encompass all important research findings generated by scientists in developing and third-world countries. This made us to think about publication of a new journal in the field of radiation research.

The International Journal of Radiation Research was first published as the Iranian Journal of Radiation Research (IJRR) in June 2003. This journal was initiated to bring together the various disciplines of radiation oncology, radiation biology, medical physics, nuclear medicine and other related subjects to intensify the dialogue between basic and clinical researchers especially those work in Iran. This is a unique journal in the field of radiation research in Iran and in the Middle East region that meets the needs of scientists not only in the region but also throughout the world to publish their own findings.

IJRR has been one of the specialized scientific journals at the time of publication of its first issue. The executive committee of the journal has been anxious about the quality and quantity of papers received by the IJRR office. The reason was that, the research activities in these fields were unexplored. Then, we believed that there might not be sufficient numbers of articles to be published in a specialized magazine as IJRR. Now, only after 15 years we have realized potential peoples and centers working in this area, not only in Iran but also in other countries who contributed sincerely to the journal so that we are not worried about the materials to be published anymore. We have realized that the existence of such a unique journal is a must both for Iran and the researchers in other countries. After 10 years of publication in the various fields of radiation sciences, we realized the need for broader readerships and contributors throughout the world. Therefore we have decided to advance our scientific activities towards publishing the journal with a title change, "The *International Journal of Radiation Research*".

Through this continued efforts we could index the journal with the host of reputable indexing agencies and now IJRR has gained an international reputation and a strong emphasis on high academic standards. In addition to authors from Iran who contributed to IJRR, I should thank all the authors across the globe that helped us by submitting articles to this

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journal. Figure 1 shows the contribution of researchers from all over the world to IJRR since its first published issue. We have had contributions from different countries such as United States of America, Russia, Canada, Australia, Japan, China, Ukraine, Netherland, Germany, Azerbaijan, Greece, Poland, Jordan, Finland, Serbia, Kosovo, Italy, Mexico, Brazil, Oman, Saudi Arabia, Kuwait, India, Pakistan, Bangladesh, Turkey, Malaysia, Iraq, Thailand, Indonesia, Singapore, Korea, South Africa, Nigeria, Egypt, Syria, Palestine…. as well as Iran. It is evident from figure 2 that the number of published papers and worldwide contribution has increased during the years and dramatically after the name change of the journal perhaps because the researcher realized that this is not simply a local or a regional scientific journal and belongs to the researchers all over the world. In spite of some occasional barriers and obstructions from those who still believe that science is only for those who can afford paying huge amounts for access, we will persistently continue our global activities of publishing quality papers regardless of authors` geographical origin, gender, academic title, age, race or religion. Hence, hundreds of submissions by authors and researchers from six continents is an acknowledgement of our role and influence in the modern publishing processes. Thank you for your quality recognition. Indeed, you are motivating and nurturing the prominence of our work.

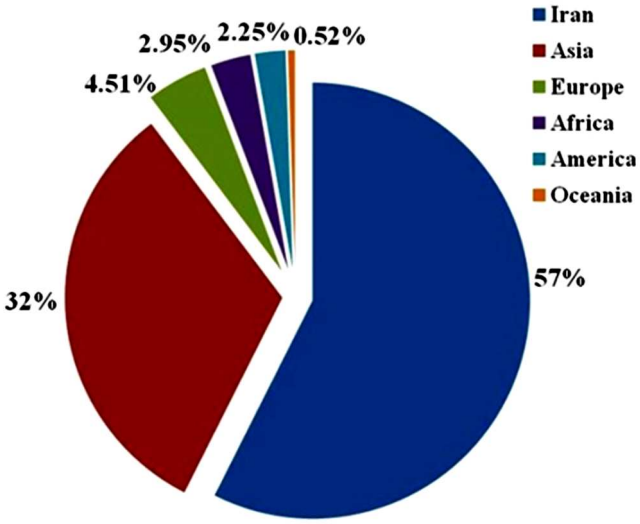

Figure 1. Contributions from various countries in different continents.

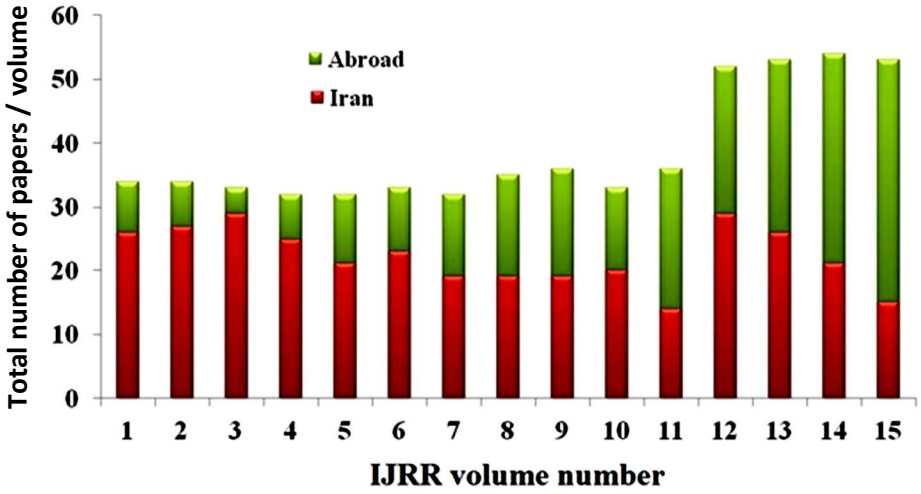

Figure 2. Number of papers published per volume and contributions from host country and abroad.

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However, in a scientific time course, 15 years was also ample time when we have been able to promote the journal to a greater height. The International Journal of Radiation Research is now indexed in international data bases such as ISI, Scopus, Index Copernicus, EMbase, Index Medicus for Eastern Mediterranean Region (IMEMR) and national data bases such as ISC (Islamic World Science Citation Center), SID (Scientific Information Database), Magiran, etc, therefore, there should be no hesitation for researchers to put their valuable works in the journal and work for the journal to become more visible internationally. We would like the IJRR to become a venue for original, rigorous and complete expositions of experiments that add to our knowledge about radiation science and a worldwide representative of all the scientists interested in this field. Young scientists are requested to contribute by sub mitting interesting observations, raising controversies and publish constructive criticisms on published articles as well as submitting original articles in the cutting edge areas of the radiation science. The Editorial board solicits quality manuscripts which will be subjected to vigorous peer review. We will maintain high standards of scientific quality and integrity for the journal and will expand the focus of the journal into new areas of radiation research and will try to make the journal more visible internationally. We will also monitor the quality of reviews for reviewer's responsiveness, scientific value and constructive comments. As a matter of fact we believe all research paper worth to be published and presented to other due to lots of time, thoughts, ideas, and expenses have been consumed behind the research paper to be produced. In this way we try to provide useful information to authors whose manuscripts need modifications to improve the presentation quality of accepted to publish manuscripts and also for those manuscripts have been rejected. In this way with the help of our valuable reviewers throughout the world we somehow try to teach the young investigators research methodology and presentation of their research findings. During the last 15 years we have benefited from our honorable reviewers throughout the world. Scientists from over 30 countries helped us to select manuscript for publication or rejection. For example for the volume 15 published during 2017 over 150 reviewers from 30 different countries helped us for manuscript review. Our rejection rate is now over 30%. The editorial board and the publisher of IJRR will work to expedite the publication of timely research and proceedings of national and international symposium and conferences. We will try to do our bests in order to gain the recognition and respect of oncologists, radiobiologists, medical physicists, and other scientists working in diverse field of radiation research.

The International Journal of Radiation Research (IJRR), a fully open access multidisciplinary journal, is devoted to the advancement and dissemination of fundamental knowledge concerning the radiation oncology, basic and clinical radiation biology, medical physics, nuclear medicine, tumor imaging, radio-sensitizers, radio-protectors, biological dosimetry, risk assessment, environmental sciences, epidemiology, new modalities in cancer treatment and health hazards of non-ionizing radiation. IJRR along with very high quality journals published in this field will try to bring all these various disciplines together and present a platform for the exchange of detailed scientific information concerning the latest developments in the fields. Our mission is to serve the needs of scientists and community by working with capable researchers and professionals from across the world to produce the most accurate and up to date scientific and technical resources.

I request all the scientists and researchers in the field of radiation science to visit the journal's website at www.ijrr.com. This journal's website has reached nearly 1000,000 unique visitors. Apart from free access to abstracts and full text articles in PDF format, each article has its individual statistics of utility. You can see how often the website has been visited and articles in the journal have been visited and how often the PDF article has been downloaded. Figure 3 clearly show that a large number of interested scientists and students visited and downloaded published articles in IJRR. The trends of

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downloads show that the quality of published manuscript has improved over the time and higher numbers of articles have been downloaded in a shorter time after publication. The impact factor and citations are two important indices for any journal and an individual article's utility. IJRR has now published enough papers in different fields of radiation research to be cited by authors in their forthcoming articles. However, I hope in the future, the number of times an article has been visited or PDF downloaded will also be used to understand the interest in a particular article by readers who do not publish articles. Visit and download of some articles published in IJRR is incredible. There are papers visited nearly 28000 times and downloaded more than 7600 times. These statistics as well as being indexed by main indexing agencies indicate the level of articles published in IJRR and its scientific importance of this journal. I am sure with all your help this journal will be able to immortalize itself.

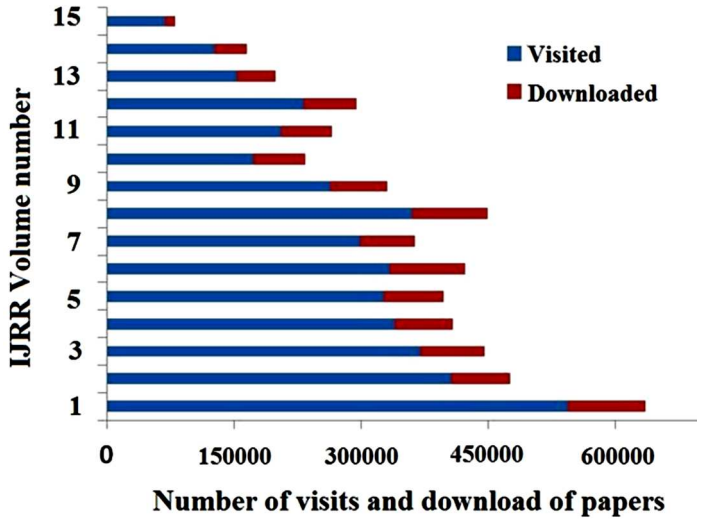

Figure 3. Frequency of papers visited and downloaded per published volume of IJRR.

Finally I would also like to thank to our honorable editorial board members for their continued help and suggestions, all reviewers for their sincere help and careful review of the articles and my colleagues at the editorial and publishing office. Also I express my special thanks and gratitude's to Professor Shahram Akhlaghpoor, Senior editor, Mr. Ali Dodange and his honorable colleagues at the Novin Medical Radiation Institute for their continued logistic and financial support to keep the journal alive. I also express my sincere thanks and gratitude's to the devoted colleagues at the editorial office, Ms. Miranda Firouzbakhsh and Mr. Sohail Mozdarani for their tired less day and night efforts at the editorial office to manage the articles from the first day of receipt until publication and Mr. Vahid Emdadi for Page-setting of articles. The contribution of all scientists and colleagues to IJRR is greatly acknowledged.

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