Science growth and human development index in Iran

Sir,

Promotion of science and technology is the driving force of social development in the world. Developed and developing countries should be increasingly more interested and give higher priority to research and development.[1]

We read with interest the paper by Kharabaf *et al.* and Abdollahi *et al.* about "science growth in Iran over the past 35 years." Authors show that scientific productivity in Iran has substantially improved over the past decade, with a record of 372 publications indexed in 1975 to 20,610 in 2010. The same trend of growth was obvious in a number of citations and H-index. It is then argued that according to available scientometric evidences and based on this trend, Iran is expected to become one of the most powerful countries in the field of science worldwide.[2]

However, in a recent paper coauthored by one of us, the relationship between human development index (HDI) and the number of scientific articles of countries was investigated (Asefzadeh *et al.*, 2013). This study considered the relationship in four groups of countries: Very high human development, high human development, medium human development, and low human development countries (167 countries). The results show that in developing countries, this relation increases directly with a gentle slope. That means an increase in human development cannot be related to the average number of scientific indexed articles, Institute for Scientific Information (ISI). Studies in selected oil producing and non-oil producing countries show that the relation between the average number of scientific articles and HDI is reverse. This inverse outcome proves that the rise of human development in these countries might not be due to, or associated with, the growth of indexed scientific articles. For example, in the United Arab Emirates, Qatar, and Kuwait, despite the high HDI, the number of indexed scientific articles is low, while in Brazil, with more number of articles, a lower HDI could be witnessed.

Thus, HDI might be related to factors other than knowledge generation in these countries. This can be due to, for example, high revenues from oil production, exports, and high gross domestic product (GDP) per capita purchasing power parity (PPP). On the other hand, an opposite relationship may be caused by the lesser application of research outcome and publications in these countries.[3]

In spite of an emphasis on high quality and quantity of Iranian publications in this article,[2] it should be noted that the complete cycle of science is not summarized in the first chain (science-production). Indeed, the production of technology and the achievement of economic development should be put in the context of scientific and research activities. Scientific progress as well, should be impressive in all components, including technology development, economic growth, decreasing unemployment, and increasingly absorbing unemployed graduates. In such a condition, the full impact of generated knowledge on human communities could be observed.[3]

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Conflicts of interest

There are no conflicts of interest.

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