

## Reporting science correctly: Who is responsible?

'Autism, vaccines and editors' by Balamram<sup>1</sup>, comes as an eye opener. Connecting the MMR vaccine with the onset of behavioural disorders characteristic of autism, was indeed one of the most sensational pieces of research work, with the press playing a central role in 'sensationalizing' the concerned paper. As mentioned by Balamram, several reports questioning the results and study design by Wakefield *et al.* in 1998, appeared in a number of journals, in the years to follow.

Till date many reports investigating the connection between autism and MMR vaccine have failed to establish any convincing link<sup>2</sup>, though a number of studies have found positive association with homeobox genes like ENGRAILED<sup>3</sup>, FOXP<sup>4</sup>, etc. and several environmental factors<sup>5</sup>.

Autism is complex disorder, and till date no single, clear underlying cause is known. In such a scenario, correct and precise documentation of all the relevant studies becomes necessary.

Communicating science meaningfully to the general public has always been a

challenging task worldwide and more so in India. With such kind of public documentation, as was observed in 1998 for this particular report (by Wakefield *et al.*), the gap becomes wider. Probably MMR vaccine has nothing to do with the manifestation of autistic symptoms, but such news can prove to be potentially damaging to the mass immunization programmes and global health status. In addition, such a news can prove to be a great shock and mental burden for the affected individuals and their families.

The question which now arises is 'Who is answerable for misleading scientific documentations and their public awareness'? Is it the researcher, the journal (editor/editorial board) or the popular press? The truth is that the responsibility cannot be pinned on any single person/group. Public documentation of science is a crucial and delicate matter, which can affect a number of scientific and socio-economic aspects of a country. Thus it is necessary that such documentation in the popular press (outside the realm of the scientific press) becomes more responsi-

ble and accountable, free from the influence of interested parties, financially or otherwise. As far as scientific documentation is concerned, despite such reports, the success stories of vaccines like smallpox vaccine, are credible.

1. Balamram, P., *Curr. Sci.*, 2004, **86**, 887–888.
2. Muhle, R., *Pediatrics*, 2004, **113**, 472–486.
3. Gharani, N. *et al.*, *Mol. Psychiatry*, 2004, **9**, 540.
4. Gong, X. *et al.*, *Am. J. Med. Genet.*, 2004, **B127**, 113–116.
5. Szatmari, P., *Br. Med. J.*, 2003, **326**, 173–174.

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## Cost of research index: What is an SCI paper worth?

Recently, Biyani and Joshi<sup>1</sup> argued that [The] scientific force of nearly three lakh persons published 12,127 [SCI] papers in 2000. . . . The central government is spending Rs 13,000 crores on research. . . . if the cost of one [SCI] paper is calculated, then it would be more than rupees one crore per paper.

Prathap<sup>2</sup> calculated that this works out to approximately US\$ 200,000 a year.

Efforts to 'cost' a paper have an excellent pedigree, going back four decades to Derek J. de Solla Price<sup>3</sup>. The cost of research index, which he proposed, worked out roughly to US\$ 20,000 per published paper. It is not unreasonable to argue that in four decades, the cost of a paper has increased by a factor of 10, due to general price inflation and also due to the increasing costs of conducting academic

research. Thus, Biyani and Joshi have arrived at a ballpark figure that seems reasonable.

*Science and Engineering Indicators 2004* was officially released in early May this year (4 May 2004). Table 8–19 of the report<sup>4</sup> develops an indicator meant to show 'the relationship between the number of academic publications and the expenditure for academic research and development'. Publication counts were based on the number of articles appearing in the set of journals listed in the *Science Citation Index* of the Institute for Scientific Information (5262 journals in 2001), using the fractional counting method. It turns out that in 2001, academic researchers in the US produced an average of 4.5 publications per US\$ 1 million of academic R&D expenditure.

Using an exchange rate of Rs 45 per US\$ 1, we see that the cost of an academic article is nearly Rs 1 crore!

1. Biyani, A. and Joshi, M. N., *Curr. Sci.*, 2002, **83**, 1302.
2. Prathap, G., *Curr. Sci.*, 2003, **84**, 258.
3. de Solla Price, D. J., In *Journeys of Science* (ed. Arm, D. L.), The Twelfth AFOSR Science Seminar, 1967.
4. *Science and Engineering Indicators 2004*, National Science Board, National Science Foundation, Arlington, VA, USA (<http://www.nsf.gov/sbe/srs/seind04/start.htm>)

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