

wheat, maize, sundry millets and pulse grains. Most Indian families, including farmer's families, store rice, pulse grains, legume, cereal and millet flours over several days to many weeks. In North India, some families store wheat and other grains in quantities sufficient to meet their yearly requirement and get the grains ground into flours periodically, at weekly or monthly intervals. These traditional habits of the Indian people should now be channelled towards bolstering India's food security.

A survey has revealed that an average Indian family of four persons consumes up to three quintals of cereals and one quintal of legume/pulse grains. About 50% of Indian families live in homes where grains can be stored in metal or earthen containers, safe from water seepage. The stored grains, however, need to be protected against pests. A variety of grain-storage metal containers of different sizes and configurations that protect grains from moisture and allow them to be drawn have been developed by Indian agricultural institutions¹. Tablets prepared using certain traditional ayurvedic formulations have been found to provide safety to grains against insect infestation^{2,3}. Some preparations developed from herbal materials through recent

experimentation have been found to be likewise effective⁴⁻⁶. The targeted R&D in safe storage of grains in household environments should aim at giving more economical and effective grain storage structures and safe, pest-control devices for the stored grain.

To meet India's yearly demand for food grains, the Indian families living in seepage-proof homes should be encouraged to store grains in amounts at least two times of their yearly need. Families with low level of income may require one time loan for the procurement of storage vessel(s) and small yearly loans for obtaining grains and pest-control materials. Non-government organizations (NGOs) could develop small/cooperative grains-storage facilities in remote/tribal areas. A national effort involving individual families and NGOs along the outline given above is bound to give a sound second line of support to the Indian government's centralized system of food grain storage and supply.

A strong correlation is observed between economic and political strength and food security among various countries. Food security as a national goal, through participation of people in storage of grains and of farmers for higher agricultural yields, with the use of scientific

methods, can create conditions for the growth of gross national product and employment in the country.

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Diabetes research in India

This refers to the recent article by Arunachalam and Gunasekaran (*Curr. Sci.*, 2002, **82**, 1086-1097). This is an excellent summary of the current scenerio of diabetes research in India. The authors' efforts in carrying out a critical and nearly-thorough analysis of the research outcome are highly commendable. I am sure this will form an authoritative basis on which future research (and possibly funds) can be directed. I agree completely that there is enormous mismatch between the disease incidence and the quantum of research in our country. It would be important to analyse the reasons behind the poor performance of our country compared to Western countries.

Although overall conclusions arrived by the authors are based on the analysis of publications, this could be influenced by the choice of keywords used. There

seems to be a clinical bias in choosing the keywords; 12 out of 14 keywords used can be related more in the 'clinical context' and therefore only clinical (and not basic) research articles are likely to be retrieved by any abstracting service. A slightly greater share (1.60%) by *BBCI* than by *PubMed* (1.0%) indicates more basic papers are indeed published and therefore retrieved. If the authors wanted to capture basic research papers also (as claimed), the best way to go about is to include keywords such as insulin signaling, insulin sensitivity, glucose transport, metabolism, insulin receptor, leptin and resistin to name a few. Whether the authors are interested in comparing only 'clinical research' in our country is another matter. Besides this, international collaboration has been cited as an index of successful research outcome while the

data do not seem to support this, at least for Indian institutions. The only benefit I see in these collaborations listed in the article, is the timely publication of the data themselves which the foreign authors have done. Finally, I agree with the authors' recommendations of increasing investment and cross-disciplinary research between basic life sciences researchers and medical researchers. For a successful research programme, high quality manpower/expertise and finances are the major requirements, which are (can be made) available in institutions like IISc, CCMB, TIFR, NCBS and ICGB among others. If we could only convince the medical research workers (including those from institutions already identified in the article) to collaborate with basic researchers from the above institutions, we can improve both the quality and

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quantity of research. Countries like the US and UK have been doing this anyway to further their research output. It is high time that Indian researchers/policy makers encourage such an interdisciplinary collaboration within India, rather than going for international collaboration.

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Response:

As far as we know, we have captured close to 100% of papers pertaining to diabetes written from Indian laboratories and indexed in anyone of the three data-

bases. I wish the author had indicated what other keywords she would want us to have included. In fact she could try using other keywords along with the ones we have used and see if she could obtain a few more relevant papers by searching the same three databases.

Her point that because of the clinical bias of our search strategy we have been able to retrieve a higher share (of the world's publications) using *BBCI*, is not acceptable. Actually a higher share in *BBCI* than in *PubMed* indicates that we have captured the basic research papers well. *BBCI* has a higher basic research orientation than clinical orientation. *PubMed* covers a larger number of medical and clinical journals.

We have not said or indicated that international collaboration is an indicator of successful research outcome. We gave data on international collaboration to make our mapping exercise complete. Also, we were unable to look at international collaboration in papers indexed

only in *PubMed* (as this database only lists the address of the first author).

China has international collaboration in 45% of papers in tuberculosis. In diabetes, the figures are 16% for India and 30% for China. In diabetes research, considering the 56 papers from China with international coauthors, the Chinese are first authors in 20 papers; this works out to 35%. Indians are first authors in 27 of the 86 internationally coauthored papers; this works out to 31%. There is not much of a difference between India and China, especially if we consider the rather small number of papers from China.

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NEWS

Regional Engineering Colleges go national

Major and welcome changes have come into effect in the area of engineering education in the country. Whereas the brand image status of the Indian Institutes of Technology remains untouched, there is to be a restructuring of the Regional Engineering Colleges (RECs). Out of the seventeen RECs, ten are to be converted into National Institutes of Technology (NITs); those at Allahabad, Bhopal, Calicut, Hamirpur, Jaipur, Kurukshetra, Nagpur, Rourkela, Silchar and Surathkal. Eventually, all of the RECs would be converted into NITs. The newly formed institutes are to be governed by a professional board whose members would be eminent persons from the fields of academics, industry and technology as is being done in the case of the IITs, according to Murli Manohar Joshi, Minister for Human Resource Development, Science and Technology and Ocean Development, while announcing the restructuring. These NITs would

be granted a 'Deemed to be University' status and would be administered from a national perspective rather than a region-specific focus.

Keeping in mind the need for quality technical education, the restructured RECs would be able to increase their intake of aspirants for engineering courses, creating a much larger pool of well-trained engineering graduates.

The NITs would be financed in full by the Central Government, with the admission quota remaining the same as at present, i.e. 50% seats reserved for State-based students and the rest selected on an all-India basis. The NITs would closely interact with the IITs and industries to augment joint research activities, curriculum design, and develop specialized programmes in emerging areas at undergraduate and postgraduate levels.

Placid Rodriguez, Recruitment and Assessment Centre, Defence Research and Development Organization, New

Delhi welcomed the move to restructure the RECs which he felt would further raise the quality of engineering graduates in the country. About 8000 students are currently trained in the RECs every year out of the 400,000 engineering graduates. He however said that while restructuring RECs to NITs, due attention should be paid to ensuring the formation of sound basic sciences departments in the NITs. This would give a well-rounded science-cum-engineering education to graduating students, especially in emerging fields. This change, according to Rodriguez, if introduced, would be in keeping with the pull of the market place and its requirements, and would help move away from the old-fashioned compartmentalized engineering education.

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