

Schizophrenia brain research

The suggestion that research should be pursued in the area of schizophrenia using the brain-bank facility to understand the anatomical basis of the disease, and the need for a greater synergy between research teams comprising various disciplines of neurosciences in pursuit of a larger goal are relevant (see, Sen, Nirupa, *Curr. Sci.*, 2002, **83**, 544–545). The statement that ‘at present, teamwork in achieving a targeted goal is missing’ is true.

There has been a steady decline in clinical research in all branches of medicine, some of the reasons being; lack of training in research in residency programmes; a general de-emphasis on research created by changes in health care in respect of funding and importantly medical research being a less attractive career as against its practice. A widening gap is being witnessed between clinical perspective and research undertaking.

In modern psychiatry, diagnosis and treatment are becoming brain-oriented. In this context, Nobel Laureate, Eric R. Kandel says, ‘All functions of the mind reflect the functions of the brain’. The central tenet of this is that what we call mind is a range of functions carried out by brain. The actions of the brain underlie not only simple motor behaviour such as walking and eating but all of the complex cognitive actions, conscious and unconscious, that we associate specifically with human behaviour, such as

thinking, speaking and creating works of literature, music and art. As a corollary, behavioural disorders that characterize psychiatric illness are disturbances of brain function even in those cases where the causes of disturbances are clearly environmental in origins¹. The concept of brain–mind relationship has come down to us from Hippocrates (5th century BC) who declared that the ‘Brain is the interpreter of consciousness’. With this new understanding, the distinction between functional disorders (with no structural brain changes, e.g. schizophrenia–manic depression) and organic syndromes (like Alzheimer’s disease, Parkinson’s disease, etc.) is being erased. The term ‘functional’ (a coinage of the 19th century neuropathologists who observed gross brain changes at autopsy in the brains of some patients (organic brain disorders) and no change in others (functional) is out of the medical lexicon.

Modern neuroscience has moved from the concept of ‘One neuro-transmitter, one locus’ model to a formulation that –ranging anatomical sites of dysfunction with accompanying abnormal connectivity². Such observations have raised the question as to how abnormalities in disparate brain regions are related to each other, to contribute to the clinical phenomenon of schizophrenia³. Ultimately, any study of abnormalities in different brain areas must answer three

questions: Are they the primary cause? Are they the consequence? Or are they compensatory changes? Distinguishing these three components helps towards diagnosis and treatment which can target the specific abnormality.

Recent demonstrations of brain changes (in caudate nucleus) in obsessive compulsive neurosis (hitherto a functional disorder) and identical brain changes resulting from pharmacotherapy and non-pharmacotherapy of the disorder support this changing concept. ‘Thus psychotherapy and pharmacotherapy may induce similar alterations in gene expression and structural changes in the brain’¹.

To address the complex problem of schizophrenia, clinical psychiatrists, psychologists and basic science researchers should march together.

1. Kandel, E. R., *Am. J. Psychiatry*, 1998, **155**, 457–469.
2. Braft, D. L., *Arch. Gen. Psychiatry*, 1999, **56**, 791–793.
3. Lewis, D. A., *Am. J. Psychiatry*, 2000, **157**, 1–2.

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M. P. Government orders closure of Hoshangabad Science Teaching Programme

Madhya Pradesh (MP) government’s recent order regarding closure of Hoshangabad Science Teaching Programme (HSTP), being implemented in Hoshangabad, Harda and 13 other districts of the state, has shocked educationists and scientists across the country. Ostensibly, the decision has been taken on the basis of a resolution passed by the Hoshangabad District Planning Committee (DPC). However, subsequent to the decision, the government has circulated a Review Report, which presumably has been the basis of this unfortunate decision.

Started as an experiment in 16 government middle schools of Hoshangabad district in 1972 by two voluntary organizations, HSTP is a response to the dismal picture of science teaching in our schools, which is mainly textbook-based with little emphasis on understanding concepts or processes in science and virtually no scope for experiments, explorations or discussion. HSTP seeks to encourage the students to discover scientific principles by interacting with their environment, engaging in activities, doing experiments and analysing their

observations. To facilitate this inquiry approach, a set of work books called ‘Bal Vaigyaniks’ have been designed and an appropriate science kit has been made available to the schools. An examination system has also been evolved in accordance with the goals of science education. It is an open-book examination and tests the acquisition of concepts and skills and their application to new situations rather than memorized information. It also has a component of practical exams. Around 2000 teachers have been especially oriented to apply this app-

roach in the classroom. What makes it a unique experiment is the fact that it is designed to run in ordinary government or private middle schools.

After the successful experimental phase and evaluation, the MP government decided to expand the programme to all the middle schools of Hoshangabad district in 1978. Subsequently, in 1983, as a preparatory phase for further expansion, the programme was 'seeded' in schools in thirteen other districts.

In fact, in 1991 a committee under the chairmanship of B. Ganguly, Head, Department of Science and Mathematics Education, NCERT appointed by the Ministry of Human Resource Development, Government of India had recommended the expansion of HSTP to the state level with some modifications in the teaching-learning material, to achieve a better balance between process and content aspects.

Encouraged by the success of this collaboration, the HSTP resource group, drawn from scientific institutions, universities and colleges came together to establish 'Eklavya', a non-governmental organization, to work collaboratively with the government structures in the field of education, not only in science but also in other subjects and at different levels.

In the meanwhile, five prominent organizations in Gujarat showed interest in adopting this approach for the state, under the name of 'Abhinav Vigyan Shikshan Karyakram', running in Vadodara district. Similarly, Rajasthan government, under the leadership of Lok Jumbish Parishad, also adopted the Bal Vaigyanik.

The Review Report prepared by the Education Department states two kinds of arguments in favour of the closure decision. One set of arguments is 'educational' and the second set concerns what can be called 'governance issues'.

The educational issues first. The Report states, 'a fair and objective assessment of any enterprise in education can only be done on the basis of the learning outcome of children'.

However, instead of a systematic evaluation, the government Review Report uses the 10th Board Examination and the professional examination (PET/PPT/PMT) results as a proxy for 'learning outcomes' and concludes that learning outcomes of children in Hoshanga-

bad district have been even below average. On the contrary, Eklavya had conducted a study and found that HSTP children were on par with, if not better than, other students. The organization has also requested the Board to make available results of the 10th standard exams for the last five years.

Regarding professional board exam results, the Report, while acknowledging that these results 'are often more indicative of out-of-school preparation', chooses to use them selectively. The fact is that in terms of selections per lakh population Hoshangabad stands 4th in Madhya Pradesh, save 5 metro districts, namely Bhopal, Gwalior, Jabalpur, Indore and Ujjain, which together send almost half the candidates to professional courses.

Also, the internal consistency of these data is virtually nil. For example, Bhopal, Gwalior and Indore which rank first, second and third respectively in professional exams are placed 16th, 11th and beyond 17th respectively, in the 10th board exam. Which of two exams should be taken as 'objective', is a moot question.

Let that be so, but what about literacy rate in Hoshangabad, asks the Report. It would seem that the lower growth rate of literacy in Hoshangabad compared to some other districts shows that HSTP has had no impact. And not to forget Gender Development Index, which also fares poorly in Hoshangabad district and shows HSTP in poor light according to the government Report! It is unbelievable, but the educational quality of HSTP has actually been judged on the basis mentioned above.

If this issue makes a mockery of education, the next does the same or worse to concepts like civil society, democracy, collaboration between government and NGOs, etc. The proponents of HSTP always believed that educational change in the country can only be brought about by interacting with the mainstream ordinary school. Therefore, right from the inception and at every subsequent stage, emphasis was given to working in collaboration with government systems. However, the Report seems to think that Eklavya, the collaborating NGO, was not an equal partner, but a mere tenant. It emphatically says, 'The issue of illegitimacy of space that Eklavya occupied in government schools, though historical, is now an issue that would be dangerous if

left unsettled.' The Report also points out that Eklavya's 'prescription for change based on the small sample would have limited empirical validity for the larger system, even if, unlike the data presented here, the performance was outstanding'. What is most alarming is the final conclusion of the Report, wherein Eklavya has been advised to open their own school on the ground that, 'Just as a tenant in a small part of the building has no right to alter the design of the building, Eklavya, even if it had performed well would not have the legitimacy to ask for the entire design to be changed on their pattern.' Thus the citizen and civil society have been reduced to tenants residing in a building owned by the government. Moreover, the Report says, 'this has been the reason why agencies that seek to introduce alternative vision of education create their own schools'. It is a very clear statement telling everybody that the government is immune to change and if they want to improve things, privatization is the route they must take.

Lately, the government has said that Eklavya must help in improving quality of education throughout the state, rather than confine itself to one or two districts. Bizarre as it may seem in the face of the closure of an ongoing programme, Eklavya has sent a concept note outlining the steps needed to start this process, including reinstating HSTP, as this would provide the human resource and ideas necessary for the same. Everyone concerned with quality of education, must hope that this process takes a concrete shape.

HSTP has been a path-breaking experiment, which can show a way to improve the quality of science education in mainstream school system. To close such a programme on the basis of half-baked and mostly irrelevant data and frivolous arguments would be to lose an excellent opportunity because, as Rousseau says, 'Perhaps people would at length seek to cure the evil if they realized that there was a cure' (Emile).

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