Correspondence

Photosensitive epilepsy in India

Epilepsy is a major health burden globally with a paradigm shift in prevalence after the introduction of visual media. In India, with approximately one-sixth of the world's population, the prevalence of epilepsy is in the range of 2.5 to 11.9 per 1000 population.[1] It is the second most common neurological problem in both urban and rural areas.[1]

Reflex epilepsy consists of seizures induced by environmental factors of which visual stimuli are common triggers, the most potent being television.[2–4] Affected people are likely to experience a generalized tonic–clonic seizure.[2,3] Cartoons broadcast in Japan caused photoconvulsive attacks in children of whom 76% had no past history of epilepsy[5] and 685 young people were admitted to emergency rooms.[6] In the UK, discotheques,[2] cinema shows,[4] television programmes[7] and many video games[8] are compelled to issue verbal and written warnings before broadcasting potentially seizure-inducing flashing images or strobe lightning.

In discotheques, the flicker rate of banks of lights has been kept to a maximum of 5 flickers per second (fps) whereby only 5% will remain at risk of a photoconvulsive attack in contrast to 96% at 15–20 fps.[2] Furthermore, the seizure threshold can be reduced with consumption of alcohol, emotional stress and sleep deprivation.[9,10]

Since it is unclear whether someone with epilepsy is at risk of photoconvulsive seizures, education at grassroots level should be the main aim for prevention through mass media advertisements, information leaflets besides advice from healthcare professionals. All patients with epilepsy, regardless of age and especially those with a family history,[3,9] should be advised to look away or to cover one eye if faced with sudden strobe lightning. Generally, sensitivity to visual stimuli is proportional to the total amount of retina and hence visual cortex being stimulated.[9] Since monocular occlusion reduces the epileptogenic effects of flickering in most, but not in all,[9] people have found that this reduces the likelihood of suffering from seizures.[4]

In India television channels, commercial cinemas and nightclubs do not formally warn their audiences against strobe lightning or flash photography. Such dismissal of social duty is both unacceptable and unethical, especially because the harm is avoidable and preventable. Instead, such ignorance leads to increasing disability and necessity of antiepileptic drugs with side-effects. Relevant government departments must keep a vigil of entertainment sectors that remain non-compliant; and consequently, impose monetary penalties on them.

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Kapil Sugand
School of Medicine
Imperial College London
UK

Gokulan Phoenix
Oxford NHS Trust
Oxford
UK

Shamim Chowdhury
School of Medicine
Imperial College London
UK

Seroprevalence of immunity to rubella in pregnant women

Rubella in pregnant women, especially in the first trimester, can lead to foetal death, abortion and teratogenic effects which include congenital hearing loss and congenital rubella syndrome (CRS) consisting of heart defects, deafness, cataract and mental retardation.[1,2] These defects following rubella infection can be effectively prevented by vaccination of 1-year olds, adolescent girls and women of child-bearing age groups. Rubella vaccination is not yet part of the Universal Immunization Programme (UIP) of the Government of India.

We investigated the prevalence of rubella immunity in a cross-sectional study of 485 pregnant women in their first trimester attending the antenatal clinics of 3 government maternity hospitals in the city of Thiruvananthapuram, Kerala, during 2003–06 after getting institutional ethical approval and obtaining informed consent. We obtained information on socioeconomic and demographic variables by personal interview (Table I) and collected 7 ml of blood from each of them. ELISA technique with Euro immune ELISA kit was used to detect maternal IgG and IgM antibodies in blood samples from 431 women (54 samples were lysed). Women who were IgG-negative were followed up and their blood samples were tested again at the time of delivery.

Of the pregnant women studied, 283 (65.7%) were IgG-positive and thus had immunity against rubella and 13 women (3%) were IgM-positive. The results did not differ significantly for antibodies by age, religion, household income, education, parity and history of measles, mumps, rubella (MMR) vaccination. We could follow up only 37 women who were initially IgG-negative; among these 28 (75.7%) were IgG-positive and 2 (5.4%) were IgM-positive; these women might be exposed to rubella during pregnancy and only 3 women brought their babies who had normal hearing for further assessment.

The overall immunity to rubella in our study was similar to that elsewhere in India [4,5] but was lower than that in developed countries with a high coverage of MMR vaccination.[3] If rubella vaccination is given without good vaccination coverage, the level of herd immunity will decrease and the risk of CRS may increase during an epidemic of rubella.[6,7] Inconsistent immunization practices and poor pre-pregnancy

TABLE I. Characteristics of the study population

Characteristic	*n* (%)
Age (in years)	
15–19	41 (9.5)
20–24	221 (51.3)
25–29	118 (27.4)
≥30	51 (11.8)
Education	
Illiterate	11 (2.6)
School	260 (13.7)
Completed secondary school	202 (46.9)
College	159 (36.9)
Income <₹2000 per month	318 (73.8)
Housewife by occupation	403 (93.5)
Type of house	
Thatched	205 (47.6)
Tiled	118 (27.4)
Concrete	108 (25.1)
Parity	
0	263 (61.0)
1	150 (34.8)
≥2	18 (4.2)
Consanguineous marriage	55 (12.8)
Pets in the family	171 (39.7)
Contact with nursery children	261 (60.6)
Handling soil	152 (35.3)
Past history of abortion/still-birth	95 (22.0)
In childhood	
Measles	149 (34.6)
Exanthematous fever	93 (21.6)
Immunization	242 (56.1)
Measles, mumps, rubella vaccination	9 (2.1)
Present pregnancy	
Diabetes mellitus	13 (7.4)
Hypertension	32 (7.4)
Fever	88 (20.4)
Family history	
Measles during pregnancy	115 (26.7)
Deafness	5 (1.2)
Congenital anomalies	32 (7.4)

counselling in Kerala has led to lowering of rubella immunity in pregnant women from 74% in 1982 to 66% in 2003–06[8] and has made them prone to an increased risk of CRS during an epidemic of rubella. There is a need to include rubella vaccine in childhood vaccination and immunize all adolescent girls as part of the UIP in India to prevent CRS. The steady increase in immunity against rubella in women of child-bearing age group from 49% in 1988 to 87% in 2002 and the decline of reported cases of CRS in a study by the National Institute of Communicable Diseases[9] and 92.3% rubella immunity status in Malaysia[10] indicate the effectiveness of such an approach. Pre-pregnancy and pre-puberty counselling will also help in improving awareness and in preventing birth defects. Meanwhile all pregnant women should be screened for rubella if a fever or rash occurs in their family.

This project was supported financially by the Kerala State Council for Science Technology and Environment.

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Padmaja M.
Department of ENT
National Institute of Speech and Hearing
Karimanal P.O.
Thiruvananthapuram
padmajaramdas@gmail.com

Radhakrishna Pillai M.
Laboratory Medicine Department
Regional Cancer Centre
Rajiv Gandhi Centre for Biotechnology
Poojappura
Thiruvananthapuram

Sam John Varghese
Department of Obstetrics and Gynaecology
Women and Children Hospital
Thycaud
Thiruvananthapuram
Kerala

Of the Medical Council of India and industry freebies

The Medical Council of India (MCI) has recently quantified punishment for medical practitioners accepting favours and gifts from the pharmaceutical industry, sending a strong message to the medical fraternity.[1,2] Whatever reservations I had to this announcement, not that I had many, were eroded by what I witnessed in the medical ward recently. While taking rounds, I was surprised when a patient walked up to me and showed me a bottle of a 'tonic' that I had never heard of before and asked me in what frequency and dose this was to be consumed. The patient appeared to be from the lower socioeconomic strata and it would seem that she could ill afford two meals a day. I asked her why she wanted to give this 'tonic' to her son, who was suffering from an acute illness. She responded that she did not know much about it and that the sister had prescribed it. At a loss for words, I asked her to locate the sister and ask her to see me. I expected her to return with a staff nurse and prepared in my mind what I would tell the latter. However, I was surprised when she came back with a lady intern. I asked my intern colleague what pressing indications had made her prescribe this tonic to the patient. I felt I had lost all touch with reality when I heard her response. She said that she had no clue,

but a man whom she did not know had approached her and asked her to prescribe the 'tonic' to every patient in the ward who complained of weakness, as it was an excellent drug for weakness. Obviously, our efforts to locate this 'well-meaning' gentleman were futile. Probably, he was a medical representative playing tricks with the easily malleable mind of a young new intern who was eager to comply and oblige. I asked the young lady if she had received any gifts from this pharmaceutical vendor agent. While she vehemently denied it, I would never know. Yet, I had no reason to doubt her integrity and sincerity. While she may not have received any freebies from the drug industry, she had prescribed the medicine to several patients in good faith. Perhaps, the pharmaceutical companies are wiser and have realized that fresh interns are easy vehicles for marketing their products to the poor helpless patients who populate our hospital wards and comply without question.

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Ashish Goel
Department of Medicine
University College of Medical Sciences
New Delhi
a.goel@ucms.ac.in

Bachelor of Rural Health Care: Cutting the root and watering the stem!

Recent reports in the lay press about starting the Bachelor of Rural Health Care (BRHC) course brings up the vexed question for discussion: Do we need another substandard undergraduate degree to help our rural population because most of our trained doctors are unwilling to serve them?

For certain, the government will be able to convince our rural citizens that they should not mind being served by doctors who do not have adequate training. However, unless we find an answer to the question as to why doctors in India do not want to serve in a village, while they are more than willing to serve under-privileged areas in, say, the USA, we will not be able to make even BRHC doctors stay in villages. This is amply demonstrated by the thousands of quacks, many of whom are from rural areas, who have a roaring practice in major cities under the very nose of the medical councils of the country.

The West Bengal government had started a similar experiment more than 30 years ago with its 'Barefoot Doctor' programme, but had to abandon it after 3–4 years. The colleges set up for the programme are lying abandoned and the teachers have long been relocated in existing medical colleges in the state. One might wonder where those 3 or 4 batches of barefoot doctors are working now. Are they serving the rural hinterlands of West Bengal? Far from it—immediately after getting their degrees these barefoot doctors agitated for parity with MB,BS doctors and managed to get a condensed 'MB,BS' degree and came back to the city. We should also ask ourselves why thousands of homeopathic and Ayurvedic doctors have not gone to rural areas in spite of the best efforts of the government and the fact that many states have recognized them at par with MB,BS doctors?

The Medical Council of India (MCI) and health ministry mandarins believe that if candidates for the BRHC course are selected from a rural background, they will serve rural areas after qualification. This is a myth which has long been exploded. There was a time when many states selected candidates for the MB,BS course through district quotas in the belief that candidates from backward districts would go back to serve their own districts after graduation. Though some states (Andhra Pradesh) still have district quotas, candidates from backward districts rarely go back to serve their own district. Many medical colleges (both government and private) in Karnataka and Maharashtra are located in rural areas. How many graduates from these medical colleges ultimately serve rural areas even though their entire medical training takes place in a rural setting? To be fair to these doctors, do primary and secondary health centres have adequate infrastructure for a fresh medical graduate to practice the craft which she/he has painstakingly learnt? Will there be job satisfaction?

In our opinion, the solution lies in improving road communication with villages; making the basic amenities of life, including quality education for children, available within reach of rural areas; evolving a fair system of posting and transfer (some doctors who are posted to a rural area are never posted to a town for years because of administrative lethargy and the desire of rural citizens to hold back good doctors); and making provisions for certain standard medical facilities so that a trained doctor has something more useful to do than keep himself busy with administrative tasks.

A look at Kerala's healthcare system should convince the authorities that the solution to the shortage of doctors in rural areas lies not in developing a new abridged system, but in providing better infrastructure and amenities, better pay packages, and incentives in the form of an assured postgraduate seat 2 years after rural service. The shortage of doctors should be made good by opening many more good quality medical colleges—a necessity in India at present.

Now that there is enough money in rural areas through the National Rural Health Mission and various other programmes, hopefully there will be a re-appraisal of the situation.

Kinjalka Ghosh
K. Ghosh
Village and PO Gurulia
Via Kharagram
Dist. Murshidabad
West Bengal
kinjalka@yahoo.co.in

Proposed bachelor's degree in Rural Health Care: An unmixed blessing for the rural population or for the graduate or neither?

Recently, there has been some publicity in the lay press about a new course to be started by the Medical Council of India (MCI), to be named the 'Bachelor's degree in Rural Health Care' (BRHC). The name contemplated earlier, Bachelor of Rural Medicine and Surgery (BRMS), seems to have been abandoned. The duration of the course would be 3–4 years and it would include 6 months of internship. The candidates would be recruited from among those passing the senior secondary examination with chemistry, botany and zoology from schools in notified rural areas. The curriculum is being worked out by the MCI. After graduating, the candidate is expected to go back and serve the rural community from which she or he has come. The degree would be registered by the MCI in a separate schedule. Registration

would be extended on an annual basis, subject to certification by the competent authority that the candidate is actually 'living in and serving the rural community'.

The training would be modular and competency-based,[1] and would be carried out in institutions called 'rural medical schools', as opposed to medical colleges. The number of students admitted annually in each school would be restricted to 50. These schools would be attached to district hospitals in districts without medical colleges. It is proposed that the training will consist of 1 year at a primary health centre, 1 year at a district hospital and 1 year at a teaching hospital. This, however, along with the details of the curriculum, does not seem to have been finalized yet. There is an assurance that the quality of training will not be inferior to MB,BS, with the shortening of the course being at the expense of subjects such as surgery, which are not considered that important at the level of primary healthcare.[1] At the end of 5 years, these practitioners would be free to migrate and practise in cities or seek postgraduate seats, as they would then be deemed to be equal to MB,BS graduates as per the statement of the Union Health Minister.[2] It is not known whether there would be a qualifying examination, as is being held by the MCI for Indians trained in foreign countries for the MB,BS course or equivalent, before the graduates are declared equal to MB,BS graduates.

With 70% of India living in villages, there is no denying the fact that the healthcare provided to the rural population is grossly inadequate. It is also a fact that MB,BS graduates are reluctant to go and work in villages. This has been attributed to the lack of facilities in rural areas, which affects the basic quality of life of the MB,BS graduate. Hence, the decision of the government to introduce a new class of allopathic medical practitioners who would be hand-picked to serve in rural areas.

The pros and cons of the scheme need to be debated so that what finally emerges is the best available solution in the prevailing scenario. As yet, there is little publicity and even less discussion in the profession on these issues.

The stated advantages of the decision are obvious. There will be a new cadre of adequately trained allopathic practitioners who would be willing to work in villages where MB,BS doctors are reluctant to go. This new cadre will serve to provide or improve healthcare of the rural community, which is underserved or ill-served at present. However, there are many questions which need consideration.

1. Will there be an adequate number of high school graduates in the notified rural areas with the required subjects of chemistry, botany and zoology? For want of numbers, if they are recruited from other villages, will they be willing to relocate after graduation?
2. How many medical schools will be started in each district? If only one, would 50 graduates per year be sufficient to provide healthcare to that district's rural population?
3. How can it be ensured that the BRHC graduates remain and practise in the community from which they have been recruited? In a country where corruption is rampant, a certificate from the competent authority testifying that the graduate has been working in the area can be easily 'acquired' and thus has no meaning.
4. Who will monitor the quality of work of the BRHC graduates?
5. With 20%–30% of PHCs not having a doctor with an MB,BS qualification and 50%–60% of the community health centres having vacancies for specialists,[3] who will be responsible for training these students?
6. What will be the role of the existing rural practitioners of alternative systems of medicine? Can the difficulty of shortage of healthcare in the rural community not be served better by utilizing their services and training them to provide better care?
7. Will working in the rural community for 5 years give the BRHC graduates sufficient knowledge and skill to be equal to MB,BS doctors thereafter? It must be remembered that the MB,BS degree is awarded after a rigorous formal course in a medical college. In the 1960s, there was a 3-year course called Diploma in Medicine and Surgery (DM&S) in Tamil Nadu. After several years of work, for want of career opportunities, there was a clamour among these candidates for improvement of their prospects. This resulted in the creation of a new course, called the condensed MB,BS course, at the end of which the candidates were declared equal to MB,BS graduates. To acquire equality, they had to undergo further training and pass several examinations, and the mere experience of having worked in a rural community did not suffice. The DM&S course subsequently died an unsung death for want of takers.
8. Is the duration of training of 3+ years adequate to practise in the rural setting, which is, as it is, more demanding than urban practice since often there is no one to help and nowhere to refer patients?
9. What will be the acceptability of these graduates, who will be of the age of 20–21 years and in competition with established practitioners of alternative systems of medicine? Will they be able to provide an adequate standard of care or will the oft-expressed concern regarding second-class medical care to the rural population prove to be true?
10. Will the proposed reservation or weightage for rural service[4] alone enable the candidates to compete with fresh MB,BS graduates for postgraduate seats? Even if they are admitted to postgraduate courses on the basis of a quota, will they be able to put up with the rigors of the postgraduate course, considering that they will be at a disadvantage compared to MB,BS graduates as regards basic knowledge? It may be better to earmark courses such as Family Medicine or General Practice or Maternal and Child Health exclusively for these graduates.

There are many other issues. Surprisingly, these are not yet in the public domain for discussion.

When the curriculum for this course is drawn up, it should be ensured that it remains modular, as promised, and competency-based. The evaluation system should also be competency-based, with sufficient emphasis on applied basic sciences and ethical issues.

Such an issue of major national importance needs to be debated in all professional associations and not merely left to some bureaucrats in the ministry of health, the MCI or a group of health secretaries and vice-chancellors of medical universities. No one denies the need for provision of good healthcare to the rural community. Maybe this is the best solution possible. What requires to be ensured is that we are really providing good care to the rural community and not merely indulging in a gimmick for political gains.

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N. Ananthakrishnan
Department of Surgery
Mahatma Gandhi Medical College and Research Institute
Puducherry

An autoimmune disease in an immune deficiency disorder

Human immunodeficiency virus (HIV) infection typically presents with clinical features of immunodeficiency. Highly active anti-retroviral therapy (HAART) in HIV patients results in restoration of immune function. However, in some patients it can result in a pathological rise in immunity termed as immune reconstitution inflammatory syndrome (IRIS). This may be associated with protean manifestations ranging from infections to autoimmune diseases.[1] We encountered a patient who developed autoimmune thyroid disease after starting HAART.

A 30-year-old man was diagnosed with HIV infection in March 2000. He was started on HAART comprising zidovudine, lamivudine and nevirapine in 2006. However, he developed hepatitis and protease inhibitors (atazanavir and ritonavir) were substituted for nevirapine in 2007. His CD4 count at this time was 267 cells/cmm and he was asymptomatic. In February 2009, he presented with weight loss and increased appetite. On examination, he had tachycardia (heart rate 120/minute), exophthalmos, a palpable goitre and fine tremors of his hands. His thyroid function tests were suggestive of primary hyperthyroidism with suppressed thyroid stimulating hormone (TSH) levels of 0.01 (0.34–5.6) i.u./ml and elevated free T4 levels of 2.32 (0.61–1.12) ng/dl. The antithyroid peroxidase titre (anti-TPO) was >1000 (normal <9) units/ml and technitum^{99m} scan of the thyroid showed increased uniform tracer uptake suggestive of Graves disease. His CD4 count at this time had improved to 497 cells/cmm. He was started on methimazole 30 mg/day and is currently euthyroid with periodic thyroid function tests and dose adjustments.

In India, only one published study has reported thyroid dysfunction in patients with HIV.[2] There was a direct correlation between the CD4 count and free T3 and T4 values as well as an inverse correlation with TSH. These patients were ART-naive and there was no hyperthyroidism reported in this cohort.

Originally described by Graves, Basedow and Parry in the eighteenth century, Graves disease is now recognized to be an autoimmune thyroid disorder which is multifactorial in aetiology. Recently, Graves disease has increasingly been reported in patients with HIV infection receiving HAART.[1] Chen *et al.* studied 234 men and 1289 women from 4 treatment centres and reported the prevalence of immune reconstitution autoimmune thyroid disease as 3% in women and 0.2% in men. In this study the mean duration from commencement of HAART to Graves disease was 17 months (8–33 months) and the mean increase in CD4 count was 355 cells/cmm (range 44–840 cells/cmm).[3]

In our patient, the rise in CD4 count was 230 cell/cmm and Graves disease occurred approximately 2 years after the changed regimen. While *de novo* Graves disease cannot be ruled out, the time interval and the rise in CD4 count point to the development of this condition secondary to HAART. He was on atazanavir and a predominance of protease inhibitor-based ART was observed in some reports.[4] The possible role of this drug in the pathogenesis of the condition has not been elucidated so far.

The mechanisms involved in the pathogenesis of Graves disease in IRIS have not been fully understood.[5] It occurs during the second phase of T cell reconstitution (naïve cell) which sets in approximately 6 months after starting HAART. It is postulated that at this stage altered thymic milieu with deranged maturation, relative lymphopenia and changed T cell repertoire disturb peripheral tolerance leading to autoimmunity.[3,4] The homology between human TSH receptor and HIV regulatory protein nef might explain the thyroid-related autoimmunity.[6]

It should be noted that symptoms of hyperthyroidism such as weight loss, anxiety and diarrhoea may be similar to those caused by HIV infection itself, oppurtunistic infections, malignancies or a failing HAART regimen. Awareness of Graves disease in this context is important for appropriate investigations to diagnose and treat this condition. We believe this report of Graves disease in HIV to be the first from India.

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Joe Mullonkal Jose
Jyothi M. Idiculla
G. D. Ravindran
Department of Medicine
St John's Medical College Hospital
Bangalore
drjoemjose@hotmail.com