Correspondence

Living donor for an adult-to-adult liver transplantation: Need for more regulation?

The Transplantation of Human Organs Bill was passed by Parliament in 1994 and became a law in 1995. Since then, brain death is recognized as death. In contrast to western countries, living donor liver transplantation (LDLT) is done more often in India than deceased donor liver transplantation (DDLT). Approximately 90% of liver transplants done in India are LDLT, while in western countries, 90% are DDLT.[1]

Living donor for a kidney transplant, liver transplantation for a child or for an adult has an increasing risk of mortality of approximately 0.02%, 0.1% and 0.5%, respectively.[2,3] The higher risk to a living liver donor is because a major surgical procedure is done to take a part of the liver and the risk is higher in adult liver transplantation as a larger part of the liver (usually the right lobe) of the donor is required. A minimum graft-to-recipient weight ratio of 0.8 is desirable. First performed in Australia in 1990,[4] LDLT for a child is widely practised as the donor mortality is 0.1%. However, there are some reservations in the case of adult LDLT, first performed in Japan in 1994,[5] as the donor mortality is 0.5%. Though adult LDLT is widely practised in Japan, South Korea, Singapore and India, among other countries, those who firmly believe 'Do no harm' are concerned about the mortality of a healthy, young donor being 0.5%.[6] A higher mortality is expected in centres with limited experience and hence, in the USA, guidelines have been drawn up for transplant centres for performing adult LDLT.[7]

There is a need to increase both DDLT and LDLT in India. For end-stage liver diseases, India needs at least about 100 000 liver transplants per year, but only about 1500 liver transplants (total) have been performed till date; the vast majority (88%) were LDLT.[1] I wish to draw attention to the fact that any mortality of a young healthy donor is a serious setback to a liver transplant programme in any country,[8] as was observed in the USA following the death of a donor at the Mount Sinai Hospital, New York (January 2002). The deaths of at least 5 living donors have been documented in India (Delhi, Hyderabad, Chennai, Mumbai)[1] and this is a matter of concern for all those who are interested in furthering liver transplant programmes. The medical fraternity in every country must make serious efforts to reduce donor mortality.

Are there any ways to reduce mortality of donors for adult LDLT? In India, the most obvious way is to encourage DDLT, as has been achieved by the efforts of a non-government organization in Chennai—Multi-Organ Harvesting Aid Network (MOHAN) Foundation (1997). DDLTs are increasingly being done at Apollo Hospital, Chennai (56/70), Global Groups in Chennai and Hyderabad (32/100) and Armed Forces Hospital in Delhi (31/45); this is a lesson for the rest of the country to follow.[1,9] In India, the figure for deceased organ donation is 0.05 per million population, compared to 20–30 per million population in western countries; the highest is in Spain (34 per million population).[10]

The next best thing to reduce the mortality of a donor for adult LDLT is for the authorities of new liver transplant centres to make some rules. For example, the surgeons of these centres should perform their first adult LDLT only after a minimum of 4 DDLTs with a reasonable success rate. Since LDLT is usually an elective surgery, this responsibility should be entrusted to the dean and/or ethical committee of the hospital. Such a rule for new low-volume centres should not be interpreted as an obstacle to liver transplant programmes but should be seen as a reaffirmation of the medical fraternity's firm belief in the centuries-old teaching, *primum non nocere* (do not harm). In fact, such a rule, by reducing donor mortality, will remove a major obstacle in the expansion of liver transplant activity. Further, it will not only increase the number of DDLTs but also restrain a few overenthusiastic surgeons.

REFERENCES

1 Nundy S, Soin AS. *Liver transplantation.* New Delhi:Elsevier; 2011.
2 Trotter JF, Adam R, Lo CM, Kenison J. Documented deaths of hepatic lobe donors for living donor liver transplantation. *Liver Transpl* 2006;**12:**1485–8.
3 Kaido T, Egawa H, Tsuji H, Ashihara E, Maekawa T, Uemoto S. In-hospital mortality in adult recipients of living donor liver transplantation: Experience of 576 consecutive cases at a single center. *Liver Transpl* 2009;**15:**1420–5.
4 Strong RW, Lynch SV, Ong TH, Matsunami H, Koido Y, Balderson GA. Successful liver transplantation from a living donor to her son. *N Engl J Med* 1990;**322:**1505–7.
5 Yamaoka Y, Washida M, Honda K, Tanaka K, Mori K, Shimahara Y, *et al.* Liver transplantation using a right lobe graft from a living related donor. *Transplantation* 1994;**57:**1127–30.
6 Cronin DC 2nd, Millis JM, Siegler M. Transplantation of liver grafts from living donors into adults—too much, too soon. *N Engl J Med* 2001;**344:**1633–7.
7 Bonham CA, Gerber DA, Grewal H. Live donor transplantation: Strategies for expanding the adult organ donor pool. *Medscape Transplantation* 2001:2.
8 Miller C, Florman S, Kim-Schluger L, Lento P, De La Garza J, Wu J, *et al.* Fulminant and fatal gas gangrene of the stomach in a healthy live liver donor. *Liver Transpl* 2004;**10:**1315–19.
9 Ramamurthy A, Shrivastava A, Khakhar A. Deceased donor liver transplantation in India: Emerging horizons. *Liver Transplantation* 2010;**16:**S203.
10 Matesanz R, de la Rosa G. Liver transplantation: The Spanish experience. *Dig Liver Dis Suppl* 2009;**3:**75–81.

H. G. Desai
Department of Gastroenterology
Jaslok Hospital and Research Centre
Mumbai
Maharashtra
desaihg@hotmail.com

Defensive approach of physicians not inexplicable

The editorial on 'Tuberculosis control in India: Time to get dangerously ambitious?' correctly points out the widespread unjustified use of immunological tests for tuberculosis.[1] While the sputum smear is the gold standard for diagnosing tuberculosis, there are a number of patients of sputum smear-negative/bronchoscopic aspirate-negative/biopsy-negative non-resolving pneumonias and lymphadenopathy in day-to-day practice. Many of them eventually respond to antitubercular therapy, which they receive in the absence of a confirmatory test for tuberculosis. It is usually in such patients that a clinician tries to gather as much corroborative evidence as possible to start antitubercular therapy. Though not scientifically justifiable, the use of non-specific tests such as QuantiFERON-TB Gold may not be completely inexplicable.

While empirical antitubercular therapy has been in vogue for a long time, guidelines have always laid emphasis on proving the diagnosis, for obvious reasons. Empirical treatment has its own drawbacks, the most important being the serious adverse effects of antitubercular therapy and the long duration of treatment. Initiating antitubercular therapy in patients without definite microbiological and histological proof is a difficult problem, particularly in an urban set-up and corporate hospitals where patients are educated, well-informed and more demanding. The widespread use of the Internet is often responsible for the little information that patients have. In case of a missed diagnosis, they do not shy away from questioning the physician, on the basis of their information and hearsay, as to why a particular test was not done if the diagnosis was not clear. The added dimension of medicolegal issues makes the clinician more defensive in his approach towards treating such cases. This is often responsible for so many non-specific serological tests being done. These tests serve the psychological purpose of convincing the patient about the treatment, which the physician does not want to delay.

While it is true that in developing countries like India, doctors should avoid unnecessary and non-specific investigations, the changing socioeconomic and sociopolitical scene is sometimes responsible for deviation from scientific guidelines in clinical practice.

REFERENCE

1 Pai M. Tuberculosis control in India: Time to get dangerously ambitious? *Natl Med J India* 2011;**24:**65–8

Chandrashekhar A. Sohoni
403, Shivam Apts, Sector 20
Plot No B27, 28, 35 36
Navi Mumbai
Maharashtra
sohonica@rediffmail.com

ALARA— are we really following it? An ALARM…

Although it could be assumed that levels of radiation exposure in dental practice are relatively low, one should consider the cumulative effect of repeated exposures. While some epidemiological studies do not show any increased cancer induction in the dentist population,[1] others show a relatively higher prevalence of thyroid[2] and breast cancer[3] in women dentists and melanomas in men dentists.[4] Until now, no data have been published on the status of the use of radiography and radiation exposure in the dental clinics of Nashik. We surveyed private dental clinics to gain an insight into the knowledge and attitude of dentists in Nashik towards radiation protection.

A written questionnaire consisting of 15 questions was distributed among 171 dental clinics in Nashik. The questions pertained to demographic information and the use of intraoral radiography (equipment, technique, frequency of use and radiation protection).

Of the 171 respondents, 114 were men and 51 had more than 10 years of experience in dental practice. Ninety-six dentists did 5 or more radiographs in a day.

In most clinics, the exposure settings of the intraoral radiation tube were 65–70 kVp and 10–12 mA, with an average exposure time of 0.6–01.25 seconds. In 150 dental clinics (88%), the radiographic unit was equipped with an electronic timer.

Most dentists using digital radiography adapted the exposure time according to the faster digital receptors in the range of 0.1–0.4 seconds. Twenty respondents (12%) worked with digital image receptors. One hundred and fifty-seven dentists (92%) never used film holding devices to hold the film and direct the radiation tube and 101 (59%) even assisted in holding the radiograph inside the patient's mouth for almost every exposure. A positioning indicating device was used by only 17 dentists (9%) and 154 (91%) used the conical one. The American Dental Association discourages the use of short, closed, pointed cones because of the increased scattered radiation close to the face and adjacent areas of the patient's body.

There were large variations, with 59% of the dentists (holding the film inside the patient's mouth) staying next to the patient. Most dentists did not wear a lead apron—71 (42%) wore a lead apron, while 96 (56%) did not have any protective barrier in their clinics. Only 3 dentists (2%) had lead barriers in their clinics and 116 (68%) were not able to follow the position distance rule in their clinics because of lack of adequate space. Fifty-six (33%) dentists knew the meaning of ALARA (as low as reasonably achievable), but only 17 (10%) knew what each letter in the acronym stood for! Most dentists (154; 90%) did not check for radiation leaks. Only 13 (8%) had an established radiographic quality assurance programme for their clinics and 158 (98%) did not use any device to monitor the radiation dose. Only 2% of dentists had thermoluminescent dosimeter badges. The International Commission on Radiological Protection (ICRP) regulations state that individuals who operate dental radiographic systems should use radiation monitoring devices.

The results of our survey revealed that dentists in Nashik lacked knowledge and understanding of radiation protection safety procedures and radiation standards. The implementation of standards for radiography and radiation protection must be improved. An educational programme in dental radiography is a must.

REFERENCES

1 Eklund G, Izikowitz L, Molin C. Malignant tumours in Swedish dental personnel: A comparative study with the total population as well as with some specific occupational groups. *Swed Dent J* 1990;**14:**249–54.
2 Wingren G, Hallquist A, Degerman A, Hardell L. Occupation and female papillary cancer of the thyroid. *J Occup Environ Med* 1995;**37:**294–7.
3 Eriksson M, Hardell L, Malker H, Weiner J. Increased cancer incidence in physicians, dentists, and health care workers. *Oncol Rep* 1998;**5:**1413–18.
4 Rix BA, Lynge E. Cancer incidence in Danish health care workers. *Scand J Soc Med* 1996;**24:**114–20.

Rajeev M. Gadgil
Ajay R. Bhoosreddy
Ujwala A. Brahmankar
Department of Oral Medicine and Radiology
M.G.V.'s K.B.H. Dental College and Hospital
Nashik
Maharashtra
drrajeevgadgil@rediffmail.com

A patient of multidrug-resistant tuberculosis on category IV treatment regimen presenting with psychosis

Multidrug-resistant tuberculosis (MDR-TB) has emerged as a major problem globally in the past few decades. India contributes to 20% of the global burden of MDR-TB and had the highest number of MDR-TB cases (131 000) in the world in 2007.[1] DOTS (directly observed treatment short course)-plus guidelines recommend the category IV treatment regimen for MDR-TB patients.[2] The regimen comprises 6 drugs—kanamycin, pyrazinamide, ofloxacin, ethionamide, ethambutol and cycloserine. These are given for 6–9 months in the intensive phase and the last 4 drugs are used for 18 months in the continuation phase. Although it is well known that psychiatric symptoms occur with the use of antitubercular drugs such as isoniazide, some of the antitubercular drugs used in the treatment of MDR-TB may also cause psychiatric manifestations which could further complicate its arduous treatment and course.

An 18-year-old boy, who was a student of class X and came from a family of middle socioeconomic status, presented to the psychiatry department of the All India Institute of Medical Sciences with acute-onset fearfulness of a duration of 2 weeks. He had a well-adjusted pre-morbid personality and no past history of psychiatric illness. He had been diagnosed to have pulmonary tuberculosis and his sputum was positive despite treatment with category II of DOTS. He was put on the category IV regimen for MDR-TB at Lala Ram Swarup Institute of Tuberculosis and Respiratory Diseases, New Delhi. A week after starting the category IV drugs, he was found to be sleeping and interacting less than before. He appeared anxious and fearful. When his family members asked him what the matter was, he reported that their neighbours were talking ill of him and were plotting to kill him; the family members believed this to be untrue. He was seen muttering to himself. There was a marked loss in his appetite and a deterioration in his level of personal care. He would refuse medicines at times. He did not have features suggestive of depression or confusion. On physical examination, he was found to be thin and poorly nourished, and had mild pallor and prominent bilateral bronchial sounds. His mental status examination showed that he was poorly kempt and a rapport was not established. His psychomotor activity was reduced and the reaction time was increased. His affect was anxious. Delusions of reference and persecution, along with visual and auditory hallucinations, were present. The higher mental functions were within normal limits. His judgement was impaired and he lacked insight. The onset of his psychotic symptoms had a clear temporal association with the start of the category IV regimen. He was diagnosed as a case of organic delusional disorder (F60.2).[3] Of the drugs in the category IV regimen, the most commonly associated with psychiatric manifestations is cycloserine, followed by ethionamide, ethambutol and fluoroquinolones. Psychiatric manifestations such as anxiety, depression, euphoria, psychosis, confusion, and suicidal ideation and attempts have been reported in patients receiving cycloserine. Factors such as high dose, older age, co-morbid medical diseases, alcoholism, concomitant use of antitubercular drugs causing psychiatric symptoms and past psychiatric history increase the likelihood of developing these symptoms. In our patient, the use of cycloserine in combination with ethambutol, ethionamide and ofloxacin might have resulted in the psychotic symptoms.[4,5] The presence of psychotic symptoms had caused poor nutrition, refusal to take medications and poor personal hygiene, all these factors complicating the treatment of MDR-TB. The recommended intervention in such cases is discontinuation of the offending drug. However, it was decided to continue the antitubercular drugs as the patient had MDR-TB. He was simultaneously started on oral olanzapine 5 mg/day. The dosage was increased to 10 mg/day within a week. Two weeks later, his sleep, appetite and interaction with others improved, and the fearfulness, delusions and hallucinations decreased. He was compliant with the antitubercular treatment.

This case highlights the fact that psychiatric manifestations may develop in patients on treatment for MDR-TB and these can be treated with the addition of appropriate psychotropic drugs without discontinuation of the antitubercular regimen.

REFERENCES

1 WHO report 2009. Global tuberculosis control. Available at *www.who.int/tb/publications/global_report/2009/key_points/en/index.html* (accessed on 16 May 2011).

2 Revised National Tuberculosis Control Programme. DOTS-Plus Guidelines. New Delhi: Central TB Division, Director General of Health Services, Ministry of Health and Family Welfare, Feb 2009. Available at *http://www.tbcindia.org/pdfs/DOTS-Plus%20Guidelines%20Feb%2009.pdf* (accessed on 16 May 2011).

3 World Health Organization. *ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines.* Geneva:WHO; 1992.

4 Fujita J, Sunada K, Hayashi H, Hayashihara K, Saito T. A case of multi-drug resistant tuberculosis showing psychiatric adverse effect by cycloserine. *Kekkaku* 2008;**83:** 21–5.

5 Vega P, Sweetland A, Acha J, Castillo H, Guerra D, Smith Fawzi MC, *et al.* Psychiatric issues in the management of patients with multidrug-resistant tuberculosis. *Int J Tuberc Lung Dis* 2004;**8:**749–59.

Siddharth Sarkar
Mamta Sood
Department of Psychiatry
All India Institute of Medical Sciences
Ansari Nagar
New Delhi
soodmamta@gmail.com

Government policies for traditional, complementary and alternative medical services in India: From assimilation to integration?

The traditional, complementary and alternative medical (TCAM) sector in India is constituted by a multitude of systems and traditions. Of these, 6 are formally recognized by the government: Ayurveda, Unani-Tibb, homeopathy, yoga and naturopathy, Siddha and Sowa-Rigpa, often collectively known as AYUSH. It is estimated that there are as many registered practitioners of TCAM (approximately 700 000) as of western medicine in India—TCAM constitutes a large part of India's flourishing private outpatient market.[1,2] TCAM practices frequently approximate local health traditions and beliefs more closely than western medicine, an important factor contributing to their popularity.[3–5]

Even as TCAM has been mainstreamed, *de jure,* by the institution of the national department of AYUSH, a national AYUSH policy, and boards and councils in the states, *de facto* government policies in India have vacillated between general neglect and sporadic assimilation of TCAM practitioners in the health services. Various government schemes, such as the National Rural Health Mission (NRHM), have created intermittent opportunities for TCAM practitioners, typically entailing replacement of allopathic services.[6] In these settings, the dominance of the allopathic sector makes TCAM providers vulnerable to power imbalances, with adverse consequences for the integrity of their knowledge systems, and on the quality of the services provided.[2,3,7] Consequently, for the most part, Indian TCAM practitioners function outside the mainstream health architecture, disconnected from financial protection and regulatory mechanisms, with attendant negative repercussions on patients.

As India moves towards universal health coverage, it has become critical to consider the value of TCAM practitioners as widely utilized and preferred providers of primary care. Moving away from erstwhile ad hoc and assimilative approaches, a more inclusive model of 'integration' presents itself as a policy alternative for the Central and state governments. Integration, as opposed to assimilation, implies wholesale policy and health systems reforms to enhance the participation of TCAM providers in the mainstream health system.[8] Successful experiences of TCAM integration in other countries hold the following key lessons for Indian policy.

1. *Attentiveness to health goals and to stakeholder needs.* Integration serves multiple public health and societal goals, including: enhancing access to care by expanding the reach of publicly provided or stewarded services;[9] optimizing the roles of TCAM providers, including enhancing performance, improving the quality

of care provided and mitigating potential harms;[10] and promoting the development of alternative systems of knowledge.

2. *Comprehensive, multi-level reform.* Integration implies several steps at all levels of the system—changes in policy design and oversight of the health workforce; changes at the administrative level through the creation of organizational structures for mobilizing and training the health providers in question, and providing stewardship to enable them to perform their roles; promoting basic and operational research; and engaging TCAM providers in essential health services.[9]
3. *Reorienting systems values*. Integration has an operational component, but also implies a broader political and cultural transformation[9] in which the role of appropriate, scientifically upheld TCAM practices is universally acknowledged, and communities of providers are drawn into the mainstream of the national health agenda, in service of shared goals.

REFERENCES

1 Central Bureau of Health Intelligence, India (CBHI). National Health Profile (NHP) of India, Ministry of Health and Family Welfare, Government of India, 2007. Available at *http://cbhidghs.nic.in/writereaddata/linkimages/Health%20Human%20Resources4484269844.pdf* (accessed on 21 Jul 2011).
2 Priya R, Shweta AS. *Status and role of AYUSH and local health traditions under the National Rural Health Mission. Draft for Discussion*. New Delhi:National Health Systems Resource Centre; 2010.
3 Lohokare M, Davar BV. The community role of indigenous healers. In: Sheikh K, George A (eds). *Health providers in India: On the frontlines of change*. New Delhi:Routledge; 2011:161–81.
4 Lambert H. Popular therapeutics and medical preferences in rural north India. *Lancet* 1996;**348:**1706–9.
5 Zhang X. Challenges and progress for integration of TM/CAM into National Health Systems. 2008. Available at *http://189.28.128.100/dab/docs/eventos/seminario_pnpic/dia13_05/dra_xiaorui_zhang_china.pdf* (accessed on 21 Jun 2011).
6 Mainstreaming AYUSH under NRHM. Available at *http://203.193.146.66/hfw/PDF/ayus.pdf* (accessed on 21 Jun 2011).
7 Khan S. Systems of medicine and nationalist discourse in India: Towards 'new horizons' in medical anthropology and history. *Soc Sci Med* 2006;**62:**2786–97.
8 Beijing Declaration on Traditional Medicine. Adopted 8 November 2008. Available at *http://www.who.int/entity/medicines/areas/traditional/TRM_BeijingDeclarationEN.pdf* (accessed on 21 Jun 2011).
9 Xu J, Yang Y. Traditional Chinese medicine in the Chinese health care system. *Health Policy* 2009;**90:**133–9.
10 Onuminya JE. Performance of a trained traditional bonesetter in primary fracture care. *South Afr Med J* 2006;**96:**320–32.

Kabir Sheikh
Devaki Nambiar
Public Health Foundation of India
New Delhi
kabir.sheikh@phfi.org

Should doctors learn to teach?

The title 'doctor' originates from 'doctoris' (Latin), which means teacher. Medical professionals are called upon to play the role of clinicians, researchers and teachers. While the medical curriculum can inculcate clinical competence and possibly some excellence in research, it does not prepare one to be a teacher, and good teaching is difficult to assess reliably.[1] Additionally, while an educational degree is a prerequisite for teaching in schools, college teachers (including medical teachers) are not required to have similar teaching qualifications; and this continues to be a problem. There are currently more than 10 peer-reviewed journals dedicated to medical education, indicating the quantity of research that is being done in this field. Good teaching is now regarded as more than a mere 'transfer of knowledge' from the teacher to the learner. It involves stimulating students to explore new ideas and concepts to attain their full potential.[2,3] The realization that it is not what teachers do but what students learn that is important[4] has led to a paradigm shift from a teacher-centred educational environment to a learner-centred one.

Good teaching practices can be learnt,[3] contrary to the notion that teaching skills are always innate, and can consequently improve the learning experience of students. Clinicians with educational training possess a greater knowledge of pedagogic principles than their colleagues who have not undergone similar training.[5] Nevertheless, experienced medical teachers with no formal educational training have tacit pedagogical knowledge[5] which can be converted into explicit knowledge that influences teaching performance by an understanding of the principles of pedagogy.[6] A 10-month part-time training programme provided participants with significant skills in curriculum development, implementation and evaluation[7] and the trained teachers encouraged students to develop a deeper understanding of concepts.[8,9] Faculty with educational training are more student-focused, thus improving the quality of the students' learning outcomes, and the students rated these teachers better than those without educational training.[8,10]

Although many faculty development programmes aim to train teachers in the practical skills of teaching (how to lecture, how to conduct assessments, etc.),[10] it is a knowledge of pedagogical theory that should guide one's choice of teaching strategy.[11] An understanding of learning and teaching and their interrelationship is essential for a university teacher.[12] Dandavino *et al.*[13] suggested that medical students should learn to teach as they are likely to have future teaching roles, and it may help them become more effective communicators, and also improve their learning skills. A knowledge of effective learning habits[4,14] will encourage students to adopt these habits. Residents who attended a teaching skills workshop were more confident, improved the learning climate, adopted a more learner-centred approach than non-participants[15] and received higher ratings from students.[16]

The learning experience of students can be improved by providing educational training to teachers. Additionally, the introduction of educational training into the undergraduate and postgraduate curriculum will better equip our next generation of doctors to teach and learn.

REFERENCES

1 Miller GE. On training medical teachers. *Can Med Assoc J* 1965;**92:**708–11.
2 Markert RJ. What makes a good teacher? Lessons from teaching medical students. *Acad Med* 2001;**76:**809–10.
3 Seabrook M. Learning to teach. *Postgrad Med J* 2001;**77:**361–2.
4 Biggs J. What the student does: Teaching for enhanced learning. *Higher Education Res Develop* 1999;**18:**57–75.
5 McLeod PJ, Meagher T, Steinert Y, Schuwirth L, McLeod AH. Clinical teachers' tacit knowledge of basic pedagogic principles. *Med Teach* 2004;**26:**23–7.
6 McLeod PJ, Brawer J, Steinert Y, Chalk C, McLeod A. A pilot study designed to acquaint medical educators with basic pedagogic principles. *Med Teach* 2008;**30:** 92–3.
7 Windish DM, Gozu A, Bass EB, Thomas PA, Sisson SD, Howard DM, *et al.* A ten-month program in curriculum development for medical educators: 16 years of experience. *J Gen Intern Med* 2007;**22:**655–61.
8 Steinert Y, Mann K, Centeno A, Dolmans D, Spencer J, Gelula M, *et al.* A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME Guide No. 8. *Med Teach* 2006;**28:**497–26.
9 Kjellgren KI, Hendry G, Hultberg J, Plos K, Rydmark M, Tobin G, *et al.* Learning to learn and learning to teach—introduction to studies in higher education. *Med Teach* 2008;**30:**e239–e245.
10 Gibbs G, Coffey M. The impact of training of university teachers on their teaching skills, their approach to teaching and the approach to learning of their students. *Active Learn High Educ* 2004;**5:**87–100.
11 Balla JI. Insights into some aspects of clinical education—II. A theory for clinical education. *Postgrad Med J* 1990;**66:**297–301.
12 Ramsden P. *Learning to teach in higher education.* 2nd ed. London, New York:Routledge Falmer; 2003.
13 Dandavino M, Snell L, Wiseman J. Why medical students should learn how to teach. *Med Teach* 2007;**29:**558–65.

14 Marton F, Säljö R. Approaches to learning. In: Marton F, Hounsell D, Entwistle N (eds). *The experience of learning.* 2nd ed. Edinburgh:Scottish Academic Press; 1997:39–58.
15 Spickard A 3rd, Corbett EC Jr, Schorling JB. Improving residents' teaching skills and attitudes toward teaching. *J Gen Intern Med* 1996;**11:**475–80.
16 Morrison EH, Rucker L, Boker JR, Gabbert CC, Hubbell FA, Hitchcock MA, *et al.* The effect of a 13-hour curriculum to improve residents' teaching skills: A randomized trial. *Ann Intern Med* 2004;**141:**257–63.

Thomas J. Kishen
Ashish D. Diwan
Spine Service
St George Hospital and Clinical School
University of New South Wales
Sydney
Australia
thomaskishen@hotmail.com

Age at initiation of tobacco use in India: A note of caution

While in the twentieth century most tobacco-related deaths occurred in industrialized countries, in the twenty-first century, most deaths are likely to occur in developing countries.[1] Tobacco is already a major public health problem in India. The Global Adult Tobacco Survey India (GATS India) conducted in 2009–10 follows the global standard for systematically monitoring tobacco use.[2] Employing a standardized methodology, the survey sought to obtain estimates of the prevalence of tobacco use (smoking and smokeless tobacco); exposure to second-hand smoke; cessation; the economics of tobacco; and knowledge and perceptions of tobacco use from a nationally representative sample of 63 613 men and women aged 15 years or more.

The findings from the GATS survey are largely in consonance with previous large, nationally representative surveys conducted over the past decade—the Special Fertility and Mortality Survey (SFMS, 1998),[3] National Family Health Survey (NFHS-2, 1998–99),[4] Million Death Study-Phase I (MDS, 2001–03),[5] Sample Registration System (SRS, 2004)[6] and National Family Health Survey (NFHS-3, 2005–06).[7] The results from GATS India show that about one-third (35%) of adults used tobacco—21% used only smokeless tobacco, 9% only smoked and 5% both smoked and used smokeless tobacco. Tobacco use among men was 48% and that among women, 20%. Nearly 2 in 5 (38%) adults in rural areas and 1 in 4 (25%) adults in urban areas used tobacco. The prevalence of smoking was 24% among men and 3% among women; the use of smokeless tobacco was 33% among men and 18% among women.

While most questions were asked of all adults of the age of 18 years and above, the question on the age at which tobacco use was initiated was restricted to tobacco users belonging to the younger age group of 20–34 years. The mean age at which tobacco use was initiated was reported to be 18 years, with no significant differences by sex, urban–rural place of residence, type of tobacco used and state of residence. The fact that the survey was based on a younger cohort is, however, not acknowledged in the GATS India factsheet which is widely disseminated.[8] This is potentially misleading because it tends to convey the message that the initiation of tobacco use starts at a young age in India. This is contrary to evidence from the larger SFMS study on 3.7 million persons.[3] This study obtained information on all age groups and found the overall mean age at initiation of smoking to be 22 years.[9] Among men, the mean age at initiation for cigarette smoking was 22 years, compared to 20 years for *bidi* smoking. Further, there was a direct association with the education level, with smokers who were illiterate starting smoking 1.5–2.0 years earlier than those with graduate education. Thus, the overall age at initiation in India is in the twenties, whereas it is during adolescence in the industrialized countries.

As tobacco epidemiology in India is known not from cohort studies but from a series of cross-sectional studies,[2–7] utmost caution needs to be exercised in interpreting the findings from a single survey. There is already enough confusion in the field of tobacco control due to obfuscation by the tobacco industry; we could well live without such potentially misleading information based on incomplete information released from research findings.[8] A clearer understanding of the age at initiation is essential because it has implications for policy-making and tobacco control in India. The prevention of initiation needs to be targeted not only at adolescents, but also at young adults in their twenties as this is the age at which most Indians start using tobacco.

REFERENCES

1 Jha P, Chaloupka FJ, Moore J, Gajalakshmi V, Gupta PC, Peck R, *et al.* Tobacco addiction. In: Jamison DT, Breman JG, Measham AR, Alleyne G, Claeson M, Evans DB, *et al.* (eds). *Disease control priorities in developing countries.* 2nd ed. Washington, DC:World Bank; 2006:869–86.
2 Global Adult Tobacco Survey (GATS) India: 2009–10. Available at *http://mohfw.nic.in/global_adult_tobacco_survey.htm* (accessed on 31 Mar 2011).
3 *Special Fertility & Mortality Survey, 1998: A report of 1.1 million Indian households, Volume I.* New Delhi:Registrar General; 2005:302.
4 International Institute for Population Sciences (IIPS) and ORC Macro. *National Family Health Survey (NFHS-2), 1998–99, India.* Mumbai:IIPS; 2000.
5 Jha P, Gajalakshmi V, Gupta PC, Kumar R, Mony P, Dhingra N, *et al.* RGI-CGHR Prospective Study Collaborators. Prospective study of one million deaths in India: Rationale, design, and validation results. *PLoS Med* 2006;**3:**e18.
6 *Sample Registration System (SRS): Baseline Survey Report 2004.* New Delhi:Office of the Registrar General of India; 2004.
7 International Institute for Population Sciences (IIPS). *National Family Health Survey (NFHS-3), 2005–06, India.* Mumbai:IIPS; 2006.
8 Global Adult Tobacco Survey (GATS) India: 2009–10 Factsheet. Available at *http://cdc.gov.in/tobacco/global/gats/countries/sear/fact_sheets/india/2009/pdfs/india_2009.pdf* (accessed on 31 Mar 2011).
9 Mony P. *Geographical epidemiology of cardiovascular disease in India: An exploratory study.* MSc thesis, University of Toronto, Canada, 2009, Publication no MR67504. Available at *https://tspace.library.utoronto.ca/handle/1807/18899/3/Mony_Prem%20kumar_200911_MSc_Thesis.pdf* (accessed on 1 Mar 2011).

Prem Mony
Division of Epidemiology and Biostatistics
St John's Research Institute
Koramangala
Bengaluru
Karnataka
premkmony@gmail.com