When knowledge hurts ...

_There is only one good, knowledge; and one evil, ignorance._
—Socrates

The success of modern medicine has generated uniform expectations of freedom from disease and disability. Hundreds of superspecialists practising in economically backward countries, whose eyes and minds are on the latest technological advances in the developed world, find their hands tied by the ground realities of their local environment. Little is written about the intense emotional strain on this segment of the medical fraternity and I wish to share my personal tribulations in this regard.

It is neither new nor surprising that some people have access to better things in life, including better medical care. The medical profession has traditionally underplayed such differences. The discrepancy was perhaps never so apparent as it is now, thanks to the information explosion. In the Third World, the realization that life-saving treatments exist, but only in journals, or for those few who can muster the required finances for the expensive treatment, preys heavily on every professional whose patient cannot receive such treatment. The doctors’ dilemmas very often add on a new dimension of financial viability. In my clinic, nearly half the patients requiring open-heart surgery cannot afford it, even at state-subsidized costs. Each passing day that brings the news of more sophisticated technologies, ever costlier drugs and devices, alienates me further. I yearn for respite so that I might restore my role as an effective caregiver. But where is that respite? Meanwhile, the story of the patient and his would-have-been ‘effective’ treatment morphose into a nebulous, unreal tale of the other-world, and the patient is lost to follow up. This scenario is all too familiar to doctors in India.

How does one cope with the frustration and indignation borne of the knowledge that in the final analysis even medical treatment is nothing but a class struggle? Is this a crisis of our own making, due to lack of research in solving our own problems, due to our continued intellectual slavery and reliance on the western paradigm of treatment; or are we helpless pawns in the ever-widening, industry-driven, profit-oriented medical markets? In any event, the burden of our alien intellectualism is heavy. Can our patients’ stoicism heal our wounds?

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The Newborn Health Agenda

I read with great interest the editorial entitled ‘The Newborn Health Agenda: Need for a Village-Level Midwife’. The editorial comprehensively describes the strategy required for achieving a reduction in the infant mortality rate (IMR), keeping in view the current health scenario. No doubt, to achieve any further reduction in the IMR we have to target our resources towards the care of the newborn at the community level. The different components required for adequate neonatal care are simple and achievable through primary health care functionaries. Dr Paul mentions that the interventions by Bang _et al._ have been successful in reducing the neonatal mortality rate by 62% through village-level workers. One of the important factors for the success of this pilot project is the strong leadership, commitment, dedication and sincerity of the team leader. Unfortunately, when such successful pilot projects are expanded to a larger area/population as a public health intervention, they fail primarily because of the lack of leadership and commitment of functionaries. The recommendation of creating a new cadre of mother and child workers may not be appropriate as it will require a large amount of additional resources in the health sector which is already facing a resource crunch. Today, even the more economically developed states in India are spending about 85% of their total health budget on staff salaries and only 15% is available for health care and other developmental activities. It would probably be unwise to create another cadre of honorary functionaries. The most appropriate intervention would be to utilize the existing team of village-level functionaries, i.e. auxiliary nurse midwife (ANM), _anganwadi_ workers and trained birth attendants (TBAs) for newborn care as well. These functionaries are trained in maternal and child health care. The ANMs in particular have specific job responsibilities and are trained for antenatal, intranatal, postnatal as well as neonatal care under the Child Survival and Safe Motherhood Programme.

In India, with a population in excess of one billion, we will need to appoint about one million new honorary mother and child care workers, if we appoint one worker per 1000 population. The training of these functionaries would be an impossible task. They would also have to be provided supportive supervision by the existing team of village-level and mother and child health (MCH) functionaries. This would require the training of existing MCH functionaries at the village level in neonatal care as the _panchayat_/community will not be able to provide supportive supervision to the new cadre of functionaries.

The National Population Policy has described the goals for reduction in IMR. However, it does not prescribe the targets to be reached for achieving this reduction. While goals are the ultimate aim of any policy, targets are realistic estimates and need to be achieved. There is a need for developing state-specific targets for reduction in IMR rather than national targets. There is also a need for providing funds and strengthening MCH care and delivery infrastructures according to the level of IMR in a particular state. The states of Madhya Pradesh, Uttar Pradesh, Rajasthan and Orissa have a high IMR and would require maximum inputs compared to Kerala, Himachal Pradesh, Goa and Maharashtra, which have a low IMR.

It is unfortunate that administrators, planners and scientists are searching for ‘quick-fix’ solutions to problems rather than looking for sustainable strategies. We must re-visit the training curriculum of the village-level MCH functionaries, with more emphasis on intranatal and newborn care and make them accountable for their performance to ensure that we achieve quality in neonatal care.

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REFERENCES

Reply

The main argument of Dr Kapil is that the existing team of village-level functionaries such as the auxiliary nurse midwife (ANM), anganwadi worker and trained (traditional) birth attendant can deliver adequate neonatal care. The fact is that these cadres exist today and yet the neonatal mortality rate is unacceptably high.

The job description of the ANM does include providing care to newborns, yet she seldom conducts any deliveries and almost never looks after low birth-weight and sick neonates. Even with improved training, can she be available to conduct a breech delivery or treat a sick neonate in the middle of the night? Often, she does not reside in her assigned field area that includes 4-5 villages spread over a large area.

Traditional birth attendants have limitations in their ability to look after the critical elements of newborn care. Although they may be trained to provide basic resuscitation at birth, their capacity to handle other life-threatening conditions such as sepsis is doubtful. Moreover, the institution of traditional birth attendants is expected to decline in times to come.

Anganwadi workers are not part of the health system. They can only be involved in promotive newborn care such as breastfeeding. They cannot be entrusted with other aspects such as conducting deliveries, and care of low birth-weight and sick neonates. At a recent national meeting to consider the future role of anganwadi workers, the suggestion to involve them in newborn care was not well received on the grounds that it was not practical.

It has been argued that a combination of the traditional birth attendant and anganwadi worker would be appropriate for the care of the newborn. This would also not work because the strength of the system depends on the ANM. Anganwadi workers and traditional birth attendants have to depend on the ANM for critical components such as high-risk deliveries and care of low birth-weight and sick neonates. She is the most skilled among them to handle newborns but because of her non-availability at critical times and her preoccupation with a multitude of other activities, she is not in a position to play an effective role. Thus I doubt if a combination of these three cadres has the potential to deliver the desired level of newborn care. The dilemma before us is evident. Do we let the situation remain as such or install a mother-child worker within reach of the community? There is a true gap in the available expertise at the grassroots level that cannot be filled by the existing functionaries. The proposed mother-child worker aims to bridge this crucial inadequacy of the system. It should also be emphasized that the proposed worker would be instrumental not only in reducing neonatal mortality but also in reducing maternal (by midwifery activities) as well as post-neonatal mortality (by providing care to children with diarrhoea and acute respiratory infections, and nutrition counselling).

There are about 600 000 villages in India. About 130 000 of them have sub-centres, each manned by an ANM. The ANMs expertise and work pattern can be reoriented to suit the needs of neonates. Mother-child workers should be envisaged for the rest of the 470 000 villages. This is indeed a gigantic agenda. But is there any choice? After all, India has the highest number of neonatal deaths in the world.

10 May 2001
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Tobacco and areca nut use in male medical students of Patna

Tobacco use is well established as the most important cause of ill-health and disease among adults. If the anti-tobacco advice comes from a physician who is a tobacco user, it has little impact. Medical students are the future health care providers. Therefore, an assessment of the use of tobacco among medical students is important.

In 1991, oral cancer detection camps organized at the Patna Medical College and Hospital revealed a high use of khaini (tobacco flakes mixed with lime) among college students. In 1979, a study among 416 students of the Patna Medical College and Hospital showed that 41.3% were smokers and 1.9% chewed tobacco. Among smokers, 66.3% were light smokers, 25.6% moderate and 8.1% heavy smokers. The few available studies on smoking among medical students in India are shown in Table I.

We conducted a survey from July 1998 to October 1998 among male students of the Patna Medical College and Hospital. Of the 509 male students, 400 (93.2%) responded to the questionnaire (mean age: 20.4 years).

Information on the prevalence of tobacco use was collected using three methods. Printed questionnaires were distributed to students in their classrooms. The students responded in the presence of the

<p>| Table I. Smoking habits of medical students in India |</p>
<table>
<thead>
<tr>
<th>Period of study</th>
<th>Author</th>
<th>Place</th>
<th>Study population (n)</th>
<th>Smokers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>Gupta et al.</td>
<td>Calcutta</td>
<td>First and second year medical students (148 males)</td>
<td>40</td>
</tr>
<tr>
<td>1981</td>
<td>Roy et al.</td>
<td>Calcutta</td>
<td>Fresh medical students (557 males and 148 females)</td>
<td>20.8*</td>
</tr>
<tr>
<td>1983</td>
<td>Sandell et al.</td>
<td>Uttar Pradesh</td>
<td>Medical students (1600)</td>
<td>26.5</td>
</tr>
<tr>
<td>1987</td>
<td>Behera et al.</td>
<td>5 medical colleges</td>
<td>First year students (241 males and 114 females)</td>
<td>7</td>
</tr>
<tr>
<td>1988</td>
<td>Pandit et al.</td>
<td>Bombay</td>
<td>Medical students (416)</td>
<td>21</td>
</tr>
<tr>
<td>1970</td>
<td>Motilal</td>
<td>Patna</td>
<td>Medical students (416)</td>
<td>41</td>
</tr>
</tbody>
</table>

* 17.6% reported smoking occasionally
first author who was not associated with the teaching programme of these students. The mean response rate in the classrooms was 98%. To ensure that students who were not present in the classroom were also surveyed, the first author went to their hostels and administered the questionnaire. After compiling the information provided, the first author interacted with small groups of students in playgrounds and hostels, ward boys, employees and neighbouring shopkeepers to reconfirm the findings regarding tobacco use. Those approached were asked to confirm the findings for individual students. Except for three students, all the findings were confirmed. These three students were requested to review their answer sheets. All of them then gave a positive history of tobacco use.

Knowledge regarding the specific ill-effects of tobacco and areca nut use was tested in a separate Tobacco Quiz Competition in October 1998 in which 300 students participated. There were three questions: (i) enumerate the harmful effects of tobacco chewing; (ii) enumerate the harmful effects of areca nut chewing; and (iii) enumerate the harmful effects of smoking. A panel of doctors examined the answers. A score >50% was considered to be satisfactory.

Among the 400 male medical students who had responded to the survey, 172 (43%) were regular tobacco users and 3 (0.7%) were areca nut users. In addition, 110 (27.5%) were occasional areca nut users and 37 (9.2%) were occasional tobacco users. Awareness regarding the specific ill-effects of different tobacco products among the first, second, third and fourth year students was less than 13%. This increased to 67% in the fifth year.

Among regular users, almost all used tobacco; smoking (20.7%) and chewing (20.2%) habits were nearly equal. In contrast, among occasional users, most (74.8%) used only areca nut products and only 11.6% reported smoking. Among regular users, 10 (5.7%) had started using tobacco before class ten and 56 (32%) during class ten. Fifty-seven (32.2%) students had started tobacco use in classes eleven and twelve, while 52 (29.7%) had started it in medical college.

While all non-users accepted that tobacco was harmful for health, 9.6% of tobacco users did not. More than 55% of regular users reported a history of tobacco use in their family while only 20% of non-users reported such a history (p<0.001).

Our finding of smoking among 20.3% of the students of the Patna Medical College and Hospital is comparable to the results of Sandell et al. where the subjects were first-year students, the prevalence of smoking varied between 7% and 41%. Compared to the findings of the study conducted in 1970 in the same medical college, the prevalence of tobacco smoking had decreased (from 41% in 1970 to 23% in 1998). However, the overall tobacco use has remained the same (Table II).

A new finding in the present study is the high use of manufactured smokeless tobacco products (MSTP) and areca nut that were not available prior to the 1970s. Fifty (12.5%) students were regular users of MSTP (gutka). Occasional users generally started with a chewing product without tobacco and later either became regular users of the same or graduated to MSTP and other tobacco-use behaviour. The high prevalence of MSTP and pan masala use may be due to poor knowledge regarding the ill-effects of these products.

This low percentage of non-users (18.8%) is alarming, as medical students are supposed to be knowledgeable about the ill-effects of tobacco and areca nut use. However, awareness regarding the ill-effects of different tobacco products and areca nut was unsatisfactory among medical students (Table III). Among students in the first three years, satisfactory answers to the tobacco quiz regarding the ill-effects of different tobacco products were given by <13%. This may be because the curriculum in these years hardly mentions tobacco- and areca nut-related disorders. There is some mention of these in the fourth year and, therefore, satisfactory answers were given by a larger number of fourth and fifth year students (Table III). Although no student reported initiating tobacco or areca nut use during the fifth year, 6.9% had initiated tobacco use during the fourth year. Thus, it appears that even after obtaining knowledge regarding the ill-effects of different tobacco products and their exposure to tobacco- and area nut-related disorders in the clinical setting, medical students do initiate tobacco use. These findings re-emphasize that undergraduate medical training does not deal adequately with the ill-effects of areca nut and tobacco use in the earlier years.

We found that the initiation of tobacco use peaked at class ten (32%) and classes eleven and twelve (32%), corresponding to 15–17 years of age. Sandell et al. opined that with the progression of time in medical college, the prevalence as well as daily frequency increases, but this does not appear to be true in our sample.

Some of the factors which may lead to a higher use of tobacco and areca nut among these students include: (i) lack of family supervision as the students reside in hostels; (ii) peer influence; (iii) lack of awareness of the ill-effects of different tobacco and areca nut products especially during the early years of medical school; (iv) no exposure to clinical cases of tobacco-related disorders especially in the initial 3 years; and (v) easy availability of tobacco and areca nut products in the vicinity of medical colleges.

Although regular tobacco use among medical students of Patna Medical College in 1970 (43.2%) and 1998 (43.7%) was comparable, the addition of 147 (36.8%) occasional (mostly areca nut) users adds a new dimension to addictive behaviour among medical students. There has been a change in the pattern of tobacco use from smoking to smokeless. This is perhaps due to: (i) change in social structure and behaviour; (ii) marketing effect of manufactured smokeless tobacco products; (iii) a commonly held belief that MSTP (gutka) is a comparatively less harmful substitute for smoking; and (iv) no increase in knowledge regarding the specific ill-effects of areca nut chewing among medical students.

Specific interventions that will help in preventing tobacco use not only among medical students but even earlier at high school and college levels may be needed. Specific interventions that will help in preventing tobacco use...
Phaeochromocytomas are functionally active catecholamine secreting tumours which also secrete enkephalins, somatostatin, calcitomin, oxytocin and vasopressin. Rarely, they may be the source of ectopic hormone production.

The anaesthetic management of patients with phaeochromocytoma continues to be a challenge. The high secretion of catecholamines is precipitated by postural change, sudden increase in intra-abdominal pressure, sexual activity, exercise, tight clothing, smoking, eating, micturition and sudden changes in temperature. These factors may occur in the preoperative, perioperative or postoperative period. During the perioperative period, increased catecholamine secretion may occur while shifting the patient, intubation, positioning, cleaning the abdomen and tumour manipulation. Following removal of the tumour, hypotension may occur. Postoperatively, arrhythmias, haemorrhage, acute renal failure, persistent hypertension, hypotension, cardiomyopathy or hypoglycaemia may occur.

Several anaesthetic regimens have been tried till date. All these are directed primarily towards preservation of cardiovascular stability and smooth withdrawal from the chronic excess catecholamine state. Almost all of them are associated with the occurrence of events related to excessive secretion of catecholamines in the perioperative period. We used a new perioperative regimen in 15 patients with phaeochromocytoma who underwent surgical removal of the tumour at our institution from 1987 to 2000.

**THE REGIMEN**

This was initiated with oral prazosin (1 mg as a test dose and repeated 3–4 times/day as required). Simultaneously, oral diltiazem, 30 mg 3–4 times/day as required, was started. The patients were advised to get up from bed and after squatting in three stages, only after contracting the calf muscles adequately to prevent occurrence of postural syncope. Serial measurements of the blood pressure and haemacrit were done to achieve a haematocrit level between 30 and 35 and good control of blood pressure, ablation of paroxysms with a postural fall of 20–30 mmHg and subjective sense of well-being of the patients as demonstrated by pink palms (suggesting vasodilatation).

In all the patients, alpha-blockade was achieved in 48 hours. At this time, labeletalol (α and β-blocker) or metoprolol (selective β-blocker) was started and continued for 2–3 days. The duration of complete preoperative preparation was 5–7 days in all the patients. A day before surgery, further volume expansion was achieved by administering 4–5 units of plasma.

All the above drugs along with diazepam (0.1 mg/kg) were administered on the day of surgery. Oral diazepam, in the same dose, was given on the night before surgery coupled with reassurance and psychological reinforcement. No additional premedication was given.

Perioperatively, peripheral venous (4 intravenous lines), arterial (radial artery) and central venous (internal jugular, triple-lumen) catheters were inserted under local anaesthesia. Haemodynamic monitoring along with pulse oximetry was established. The placement of a temperature probe, nasogastric tube and urinary catheter was done after induction of anaesthesia.

After this, infusions of both phentolamine and diltiazem were started. The dose was adjusted to maintain the blood pressure in the range of 130–140 mmHg and the heart rate at 80–90 beats per minute. The induction of anaesthesia was achieved with thiopentone sodium (5 mg/kg) administered slowly till the patient stopped responding to verbal commands. The patients were ventilated with oxygen, nitrous oxide and isoflurane, and orotracheal intubation was facilitated with vecuronium (0.1 mg/kg). Anaesthesia was maintained with oxygen, nitrous oxide and pethidine, and muscle relaxation was achieved with vecuronium. Circulatory fluctuations were minimized by adjusting the infusion rate of diltiazem and phentolamine to maintain the blood pressure and heart rate at pre-induction levels. The central venous pressure was maintained above 14–16 cm of water by administration of crystalloids and colloids (plasma). Drug infusions were stopped about 5 minutes before clamping the major vessel supplying the tumour and crystalloids were administered to maintain the central venous pressure at 10–12 cm of water after tumour removal. In all the patients, the blood pressure and heart rate remained stable throughout the procedure, and none of them required any inotropic or vasopressor support after removal of the tumour. The postoperative period was also uneventful. Preoperative drugs were tapered over 3–4 days. Analgesia was provided with parenteral diclofenac sodium. No sedatives were required.

With this regimen, all 15 patients had surgical excision of the phaeochromocytoma with an uneventful peri- and postoperative course. Optimum preoperative preparation was achieved in a week’s time. Moreover, the group of drugs used preoperatively was continued perioperatively. This regimen requires coordinated team work between the anaesthesitist, endocrinologist and endocrine surgeon.

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Resident doctors, bloodborne pathogens and universal precautions: Are we sitting on a volcano?

According to the World Health Organization, India and Thailand have the highest number of patients with human immunodeficiency virus (HIV) infection in Asia.\(^1\) Health care workers work in an environment which poses a constant threat of transmission of bloodborne pathogens. Prevailing practices in Indian hospitals regarding the containment of bloodborne pathogens continue to be medieval. We undertook a survey to evaluate the awareness of the risk of transmission of bloodborne pathogens and knowledge of universal precautions among surgical resident doctors.

A self-administered questionnaire was given to 125 residents (85 house surgeons and junior residents, and 40 senior residents) of various surgical specialties at the Postgraduate Institute of Medical Education and Research, Chandigarh.

Out of 125 questionnaires, 107 (86%) were completed and available for analysis. Three-fourths of the residents were not aware that the duration of infectivity of the hepatitis B virus (HBV) in dried blood is more than one week.\(^2\) About 23% of residents were not aware of the potential of serum to transmit these viruses. About 40% did not correctly estimate the risk of transmission after a needlestick injury. Most of the residents were not aware of which chemicals could be used to inactivate these viruses and 60% did not know that they are more sensitive to germicidal chemicals than spores, Mycobacterium tuberculosis, fungi and vegetative bacteria. Only 15% were aware that double gloving is effective in decreasing the amount of blood transmitted by a suturing needle by as much as 75%.\(^3\,^4\) Almost two-thirds (70%) were not aware of the availability of post-exposure prophylaxis for HIV, and most of them were not sure of the timing of its administration. None of the residents knew where to seek help in case of occupational exposure to these viruses. They were not aware of the helpline services available to guide them regarding universal precautions or post-exposure management. There was no statistically significant difference in awareness regarding bloodborne pathogens and universal precautions between junior and senior residents.

Previous studies\(^5\,^6\) have rightly emphasized the need for a structured system to impart knowledge to health care workers regarding HIV as it has a definite impact on the intent-to-care\(^7\) for AIDS patients. Underestimation of the duration of infectivity of HBV in dried blood increases its potential for transmission through indirect contact, especially in high-risk areas such as a haemodialysis unit, emergency ward and operation theatre. It is important to ensure prompt and proper disinfection. Fortunately, these viruses are very susceptible to heat and chemicals and conventional strategies for disinfection and sterilization are sufficient.\(^8\)

The International AIDS Society–USA Panel on Antiretroviral Therapy\(^9\) advocates the use of two or more drugs for high-risk occupational HIV exposure and a maximally suppressive regimen of drugs if a resistant virus is suspected. Lack of awareness of institutional guidelines in the event of occupational exposure gives rise to undue anxiety and delay in administration of prophylaxis.

We found the awareness among resident doctors regarding the infectivity of bloodborne pathogens and the importance of observing universal precautions to be inadequate. This is compounded by the fact that there is no clear-cut policy regarding the reporting of occupational injuries and post-exposure prophylaxis. Unless appropriate measures are taken to rectify these deficiencies, lack of awareness and training in prevention of bloodborne pathogens will continue to pose a serious threat to health care workers in India.

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