SHORT COURSE

[0-20 YEARS]

Night shifts linked to miscarriages and preterm births

PREGNANT WOMEN who work nights or long hours may be more likely to have a miscarriage or preterm delivery than mothers with day jobs, a research review suggests. With night shifts, pregnant women were 21 per cent more likely to have preterm deliveries and 23 per cent more likely to have miscarriages than women who worked days, the analysis found.

Working more than 40 hours a week was also associated with a 38 per cent higher risk of miscarriages and a 21 per cent higher risk of preterm deliveries than working less. Long work hours were also tied to a 43 per cent higher risk of underweight babies and a 16 per cent higher chance that infants would be small for their gestational age.

Compared to women who work fixed day shifts during pregnancy, those who work rotating shifts were 13 per cent more likely to have a preterm delivery and 18 per cent more likely to have an undersized baby, the analysis found. They were also 75 per cent more likely to develop dangerously high blood pressure known as preeclampsia. **REUTERS**

[20-50 YEARS]

Habit of workouts at same time tied to meeting goals

People who always work out at the same time of day get more exercise overall and are more likely to get the recommended minimum amounts of weekly activity, a small US study suggests. Among 375 people who had lost weight and kept it off for at least a year, those who typically worked out at the same time every day averaged about 350 minutes of exercise per week, versus 285 minutes for those with inconsistent exercise schedules.

More than two-thirds of study participants worked out at consistent times of day, mostly in the morning, the study authors report in the journal *Obesity*.

"On average, those with high physical activity levels have a consistency with their routine, and that includes finding an optimal time to perform their daily routine," said senior study author Dale Bond of The Miriam Hospital/Brown Alpert Medical School Weight Control and Diabetes Research Center in Providence, Rhode Island. **REUTERS**

[50+ YEARS]

Osteoarthritis may increase death risk from heart disease

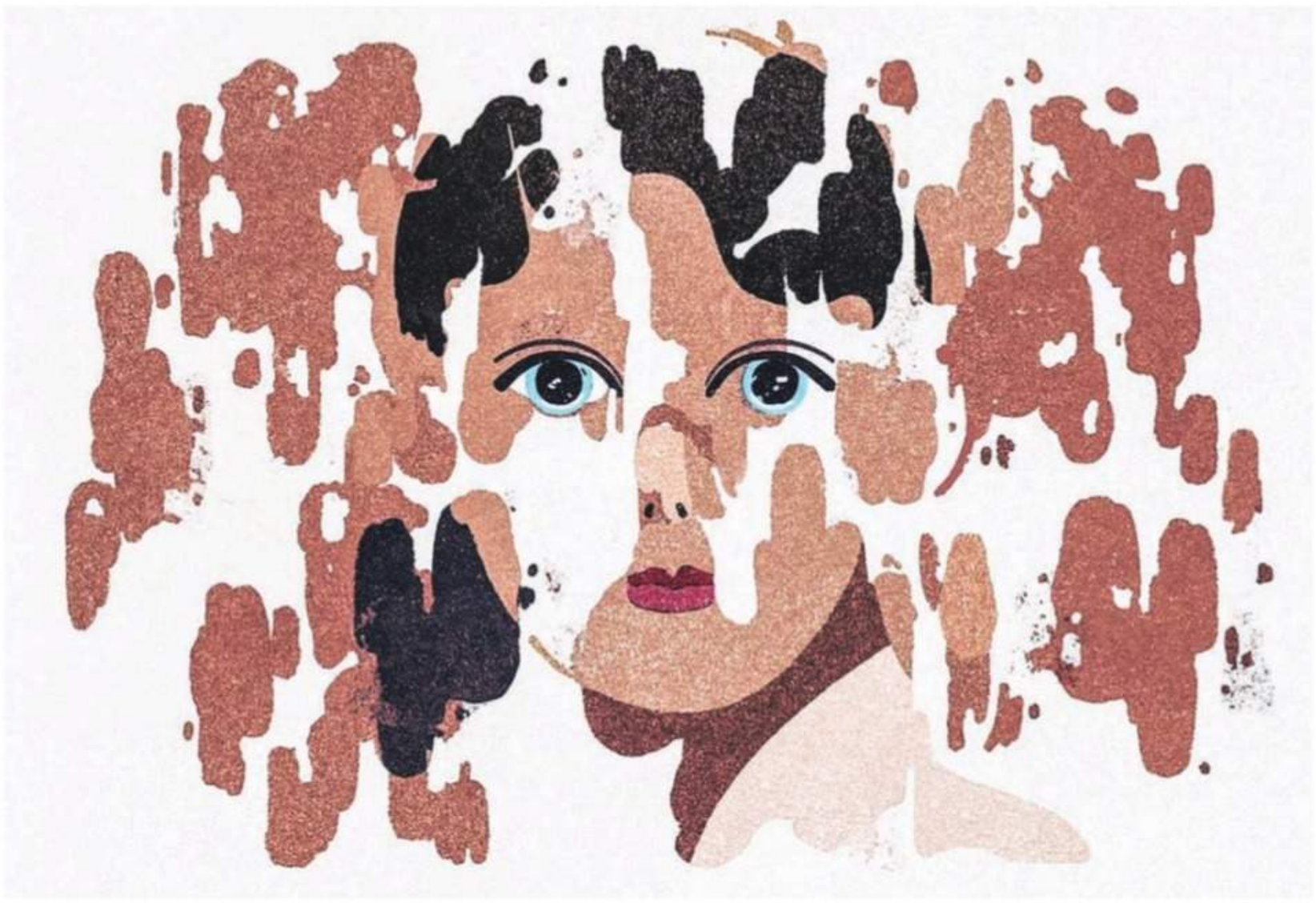
Having osteoarthritis may increase the risk of death from cardiovascular disease. The painful degenerative disease of the joint cartilage and bones that progresses with age, affects about 10 per cent of men and 13 per cent of women over 60. There is no cure.

Researchers studied 4,69,177 residents of southern Sweden who ranged in age from 45 to 84. They tracked their health for up to 11 years and identified 29,189 patients with osteoarthritis of the knees, hips, hands and other joints.

For most cases of osteoarthritis, there was no association with causes of death. But the scientists found that people with knee or hip osteoarthritis were almost 20 per cent more likely to die of chronic heart disease or heart failure. **NYT**

For vitiligo patients, new treatments offer hope

Experts say there is a better understanding of immunological pathways involved in vitiligo is providing insight on how to treat it better



Gracia Lam

JANE E BRODY

STELLA PAVLIDES has vitiligo. It's an autoimmune condition in which the body attacks the cells, called melanocytes, that give skin its colour. She was 22 years old and studying to be a court reporter when she first developed unsightly white patches on her hands and feet, then around her mouth, eyes, arms, legs and groin.

"People say vitiligo doesn't kill you, but it kills your spirit," she told me. "Kids get stared at, spit on, beaten up." Although the condition is most obvious and often most emotionally and socially devastating when it afflicts dark-skinned people, Pavlides said her disorder was painfully apparent on her light tawny Greek skin.

"I wouldn't go out with my friends," she told me. "I never went to the beach. I became a recluse. I even contemplated suicide. When I did go out in the summer in New York City, I wore long-sleeved tops, long pants and socks."

When she wasn't covered head to toe, she said, "People would stare at me and whisper to one another. They wouldn't put money in my hands because they were afraid to touch me. I dropped out of school. How could I be a court reporter with vitiligo all over my hands?"

Today Pavlides, now 73 and living in Clearwater, Florida, is a different person. She still has vitiligo, but she no longer wears long sleeves and long pants and walks around in sandals. She does, however, always wear sunscreen. Should her normal skin get tan, it would make the depigmented areas more obvious, and the sun would easily burn the white patches.

Pavlides's life was turned around at age 55 by a 9-year-old girl with vitiligo who told her: "God made you and God doesn't make mistakes," suggesting she rise above the reaction of others and stop covering herself top to bottom. Now, as founder and head of the American Vitiligo Research Foundation, Pavlides is a role model for the young people who come to the organisation's summer retreat.

I first wrote about vitiligo 18 years ago. It is still incurable, but significant progress has been made in treating it and recognising and reducing the tremendous emotional toll it can take, especially in children and adolescents, who represent half of the approximately 1 per cent of the affected population.

"We now have a much better understanding of the immunological pathways involved in vitiligo, which is providing insight on how to target and treat the disease better," said Dr Seth J Orlow, chairman of dermatology at New York University School of Medicine. "Although most of the latest treatment studies have involved only a small number of patients, there have been some very promising results," he said in an interview.

Vitiligo is still incurable, but significant progress has been made in treating it and reducing the emotional toll it can take, especially on children and adolescents

Most promising have been two drugs already on the market for other conditions, tofacitinib and ruxolitinib, used in combination with one of the oldest vitiligo treatments: targeted exposure to a narrow band of ultraviolet B light, the rays that cause tanning and sunburn. The drugs, called JAK inhibitors, block the body's misdirected immunological attack on melanocytes, and the UVB light stimulates residual pigment cells to restore color to the bleached patches of skin, Orlow explained.

The approach is especially effective if people are treated before all the melanocytes in the affected areas of skin are destroyed. "If 10 per cent of the cells remain, they can be induced to creep in and repopulate the depigmented area," Orlow said.

Another therapy that relies on medication used for other conditions is topical application of prostaglandin E2, a glaucoma therapy, on localised areas of vitiligo. In two studies, six months of this treatment produced moderate to complete repigmentation in a majority of patients, Orlow and colleagues reported in F1000 Research.

And in a study that used the topical glaucoma treatment latanoprost in combination with narrowband UVB, greater repigmentation occurred than with either substance used alone.

Like most autoimmune conditions, vitiligo is an acquired disorder. Rarely are children born affected, though they may be genetically susceptible to developing an autoimmune disorder. People with vitiligo, including Pavlides's 51-year-old son, often have other autoimmune disorders like thyroid disease, rheumatoid arthritis, diabetes or alopecia areata. In some families, premature greying of the hair results from an autoimmune loss of melanocytes in the hair follicles.

"There are families in which people are prone to autoimmune conditions, but each member gets a different one, and there are other families in which multiple people have vitiligo, perhaps because of something different about their pigment cells," Orlow said.

Vitiligo can first show up in early childhood or as late in life as one's 80s. It involves no microorganism and is not contagious, even though in some countries vitiligo patients are treated as if they had leprosy. The disorder typically starts as small irregular white patches on the skin that gradually enlarge and change shape. Its expression is often provoked by a physical, physiological or emotional stress, like a sunburn, certain chemical exposures, a car accident or a divorce. However, most of the time the triggering event is unknown.

A common underlying mechanism is oxidative stress, an inability of the body to neutralise damaging molecules like free radicals with antioxidants. This may explain the case of a man whose vitiligo regressed when he was taking a high dose of a statin to treat high cholesterol. Statins have, among their effects, the ability to scavenge free radicals.

If medication is not effective, another option involves taking healthy skin cells, for example, from the buttocks, and grafting them to the depigmented areas. And if vitiligo is especially severe and too extensive to treat directly, there remains the government-approved option of total depigmentation therapy, using monobenzone to bleach the unaffected skin, an approach Michael Jackson was said to have used to make his vitiligo less obvious.

But treatment of the vitiligo alone may be insufficient to limit the psychological toll vitiligo can exact. Dr Brett King, associate professor of dermatology at Yale University School of Medicine, who conducted a successful study of tofacitinib and UVB light therapy, said that "vitiligo affects the way the world interacts with you. It can be frustrating and embarrassing, and for some, it leads to clinical depression and anxiety." In two cases known to the American Vitiligo Research Foundation, people with the condition committed suicide.

Experts urge that, when needed, patients should be referred to therapists for psychological support, which might have lessened the emotional distress Pavlides experienced for so many years. **NYT**

DIET DIARY

Eating right to fight air pollution

Several studies have suggested impacts of pollutants may be reduced by intake of anti-inflammatory constituents

BY ISHI KHOSLA

AIR POLLUTION is staring in the face as a huge threat to public health. The truth is that this has not happened suddenly. Even in the 1970s and early 1980s, the World Health Organization (WHO) and Indian government had initiated steps to control air pollution in the country.

Air pollution worldwide has been associated with increased risk of respiratory and cardiovascular illnesses and other diseases, including cancer and auto-immune disorders. Among the most commonly studied air pollutants are fine particulate matter capable of moving through bronchioles of the lungs to the alveoli (air sacs in the lung lining), hindering oxygen exchange and depositing metals and other toxic compounds in the blood stream.

Several scientific studies have suggested that health impacts of some air pollutants may be reduced by the intake of dietary components such as antioxidants and anti-inflammatory constituents. These include vitamins such as Vitamin A, beta carotene, B complex vitamins (B2, B6 & B12), folic acid, Vitamin C & E and minerals, including selenium, zinc, iron, copper, and magnesium, essential fats including omega-3 fats, phytonutrients and probiotics.

Foods rich in Vitamin A and beta carotene, including dark greens such as coriander leaves, methi, parsley, cabbage, lettuce, spinach and vegetables such as carrots, spinach, broccoli, apricots, avocados and mango, butter, egg yolk, cheese, fish liver oils, should be made part of the diet. They are known to fight inflammation, strengthen cell membranes and act as antioxidants.

Vitamin C acts as antioxidant and protects against reactive chemicals produced by the body which can be harmful. Good sources of Vitamin C include amla, citrus fruits, guavas, tomatoes, green peppers, green leafy vegetables, kiwi, broccoli and strawberries.

Zinc is known to improve immune response when taken in combination with trace minerals, including copper, iron, and manganese. Good sources of zinc include nuts, seeds and whole grains. Fresh foods such as vegetable juices, salads, sprouts and fruits are loaded with phytonutrients and enzymes which help scavenge free radicals and detoxify the body.

Traditional medicine suggests the role of foods such as jaggery, ginger, tulsi, turmeric and ghee to combat air pollution. Turmeric is is said to help protect lungs from the toxic effects of pollutants.

Author is a clinical nutritionist and founder of www.theweightmonitor.com and Whole Foods India

Born to walk barefoot

Shoes protect our feet, but they also alter our strides and could increase the wear on our leg joints

GRETCHEN REYNOLDS

WEARING SHOES when we walk changes how our feet interact with the ground below us, according to a novel new study in the journal *Nature* of shod and unshod walkers, the state of their feet and the extent of the forces they generate with every step.

The study, which echoes some of the research that first popularised barefoot running, finds that walkers move differently when they are barefoot or shod and have differing sensitivity to the ground, potentially affecting balance and joint loading. The results intimate that there could be advantages to perambulating with naked feet, not the least of which, surprisingly, involves developing calluses.

We humans are born to walk. Distance running during hunts may have been important for the survival of early homo sapiens, most evolutionary biologists agree. But our forebears almost certainly spent far more time walking than jogging, just as modern hunter-gatherers do.

Shoes, though, are new to us. Archaeological finds indicate that humans first started wearing rudimentary sandals about 40,000 years ago, an eyeblink in our history as a species. Before then, nature seems to have deemed that our best protection for bare feet would be tough skin. So, people who walk without shoes develop hard, leathery calluses on the heels and balls of their feet that can reduce sensations of pain when they stride over small obstacles like gravel.

Today, many of us might consider such calluses unsightly and disagreeable. But Daniel Lieberman, an evolutionary biologist at Harvard University who, with various colleagues, conducted much of the early research into barefoot running, began to wonder recently whether those calluses might have a hidden utility and beauty. Might they, he wondered, protect and guide feet during walking in ways that shoes cannot? And, if so, what does that tell us about walking and footwear?

The study finds that walkers move differently when they are barefoot

To learn more, he and a team of collaborators travelled to Kenya for the new study with a portable ultrasound machine and a device that sends slight prickles of electrical current through the skin to test nerve reactions.

In Kenya, they recruited 81 local men and women, about half of whom had grown up in cities wearing shoes, while the rest had spent most of their lives walking barefoot. They asked everyone to remove their shoes, if they wore them, and examined the revealed skin.

As they had expected, they found that people who had grown up walking barefoot had large, tough calluses on their feet. Ultrasound readings showed that these skin patches were about 25 per cent to 30 per cent thicker than any calluses on the feet of the group who usually wore shoes.

More unexpected, the calluses were sensitive, in specialised ways. Lieberman and his colleagues had thought that the hardened skin might block nerves deep within the skin from sensing the ground, which could affect balance and movement. But when they measured those nerves' reactions in people with and without calluses, they found few differences, suggesting that while calluses lessen people's sensation of walking over pebbles, they do not prevent us from feeling the earth.

Finally, to test whether being barefoot and having calluses do affect how people move, Lieberman and his collaborators asked some of the Kenyans to walk unshod over a plate that measures forces generated while striding. The plate registered almost no variations in their strides, whether they had thick calluses or none.

But back in Boston for the final element of the study, the researchers found that shoes can shake up a walk. When male and female volunteers strolled on treadmills at Lieberman's lab while barefoot, they struck the ground in about the same way as the unshod walkers in Kenya had. But when those same volunteers donned average, cushioned sneakers, their walking subtly altered. They began striking the ground a little more lightly at first, presumably because the footwear's cushioning absorbed some of the force, but the impacts from each stride lingered longer than when they were barefoot.

Such persistent impacts tend to move up and dissipate through our leg bones, ankles and knee joints, whereas the shorter, sharper jolts created when we walk barefoot are more likely to rise through our soft muscles and tendons, Lieberman says.

What these findings suggest, in aggregate, is that what we wear on our feet shapes the way that we walk, and that nature would make a fine footwear engineer, Lieberman says. Shoes protect our feet and sop up some of the slight pounding during a walk, he says, but they also alter our strides and could, over time, increase the pressure and wear on our leg joints. Meanwhile, calluses shield us from some of the discomforts and pointy objects we encounter while barefoot, but do not reduce our contact with and feel for the ground.

So, the message of the study would seem to be that people who have concerns about their balance or their knees but not their pedicures might consider sometimes walking barefoot, he says. "Walking barefoot can be fun," he says, although it is not for everyone or every situation. When winter ends and warmth returns to Harvard, he often sheds his shoes and encourages new calluses, he says. "But I wear shoes most of the time." **NYT**

WORDLY WISE

MOONLIGHT DROWNS OUT ALL BUT THE BRIGHTEST STARS.

—J R R Tolkien

The Indian EXPRESS

FOUNDED BY RAMNATH GOENKA

BECAUSE THE TRUTH INVOLVES US ALL

NOT AT ANY RATE

New revelations in the IL&FS fiasco call for a comprehensive review of the credit rating architecture

EVER SINCE THE collapse of IL&FS, credit rating agencies in India have been under the scanner for having failed to flag the financial stress at the firm and its subsidiaries. Reports paint an even more worrying picture. The rot runs deeper. Investigations into the IL&FS fiasco have revealed that its group companies were able to retain high credit ratings, even as they were facing a liquidity crunch, allegedly in return for favours to rating agencies. This practice was apparently going on for years. These reports come after the heads of two rating agencies were sent on leave by their respective company boards in response to questions raised over the assigned ratings. In response to concerns, last month, SEBI had mandated "enhanced disclosures" from credit rating agencies in order to boost transparency and accountability. Clearly, more needs to be done.

At the heart of the matter is the "issuer pay" business model. Under this model, the firm that is being rated pays for the ratings, which are then used by investors to evaluate the level of risk that a firm/instrument poses. This creates a conflict of interest. As rating agencies, which are profit-making enterprises, depend on fees paid by issuers, they are more susceptible to being influenced by them. But as ratings serve as a guide for investors, providing signals about the ability of the issuer to repay the debt, this raises legitimate questions over who is safeguarding the interests of investors. A case in point: Recently, a rating agency downgraded a firm's rating by nine notches, from AA+ to D, in a single stroke, leaving investors in disarray. There has been some discussion on how to deal with this issue in India. In fact, in February, the parliamentary standing committee on finance had suggested the government explore shifting to a investor or regulator pays model. While switching to a new architecture is likely to be resisted by rating agencies, as it would hurt their profitability, there is a genuine case for re-examining the incentive structure of rating agencies. Mere tinkering will not yield the desired outcomes.

Globally, credit rating agencies came under the scanner in the aftermath of the financial crisis of 2008, with accusations of flawed methodology and rating shopping being made. Subsequently, they were penalised to the tune of hundreds of millions of dollars to settle cases over their ratings of risky mortgage securities. But, imposing hefty fines is only a part of the solution. The regulator needs to undertake a comprehensive review of the ratings architecture in India. The first step could be to enforce mandatory rotation of rating agencies. This could address the issue of familiarity exerting influence. The option of compulsory rating of a firm/instrument by more than one rating agency could also be explored.

WAYS OF SEEING

Fifty years ago, Apollo 11 established us as a spacefaring species, and also gave us the perspective to go with it

ABOUT 2,250 YEARS ago, Archimedes demanded a lever long enough to move the world. Fifty years ago, via the crew of Apollo 11 and the thousands of scientists and technicians who powered the Saturn V into orbit and the Eagle lander down to Mare Tranquillitatis on the moon, Nasa provided the human race with that lever, visibly changing our world view forever with distant images of men on the moon and the footprints they left behind for eternity in lunar dust. The benefit of distance is what Archimedes had sought, and here was visible proof that it had been achieved. These are the images that we recall when we think of Apollo 11, and they changed our perception of humanity. In the popular imagination, an earthbound bipedal species became a spacefaring race on July 20, 1969, ready to launch itself into the void. After this, the universe was the limit.

But there were other images from the Apollo 11 moon landing that produced another and equally powerful change in the imagination. It was a set of amazingly clear pictures of earthrise, with the home planet peeping over the lunar horizon. Point of view determines ways of seeing. Here, at the length of a cosmic arm, was evidence of what we had known theoretically for centuries — that we are tiny beings on a tiny though colourful planet, circling an unremarkable sun at the end of a spiral arm of the Milky Way galaxy, far from the anvil of stars at the centre. Denizens of a provincial planet, who are nevertheless rapidly developing the science to reach for the stars.

Much is made of the contributions of the moon mission to how we live. It is said to have spun off Velcro and Teflon, for instance. It is Booker-quality fiction, for they were invented much earlier in Switzerland and by DuPont, respectively. Apollo 11 did spin off innovations like car vacuum cleaners, handheld machine tools and the oxygen masks which, in the litany of the airlines' safety drill, "drop down from the panel above you" in emergencies. But its technical innovations were unremarkable in comparison to the mind-altering quality of its message. Fifty years after, with two Asian powers shooting for the moon and private enterprise planning manned Mars missions and commercial flights at the edge of space, the human race is almost ready to fly the coop.

DOSA DON

Saravana Bhavan founder, who died a murder convict, will be remembered for the food he served

PRAJAGOPAL, WHO died on Thursday, was described as the "Dosa King". It's true that the dosas at Saravana Bhavan, the chain of restaurants started by him, have become the gold standard for South Indian restaurant fare, especially outside the region. Crisp, golden and stuffed with spicy potatoes, onion or cottage cheese and served with an assortment of tangy chutneys and hot sambar, these dosas have found devotees in places as diverse as Delhi, Muscat, Stockholm and Singapore. But the restaurant chain, whose first outlet opened in Madras in 1981, is as much of a draw for its deep-fried and soft vadas, spongy saucer-shaped idlis and stringy idiyappaams served with a delectable mix of vegetable kurma and sweetened coconut milk.

Born to a family of onion farmers in Tamil Nadu's Tuticorin district, Rajagopal dropped out of school when he was in the seventh grade and moved to Chennai. He had to wipe tables in restaurants for a living, before starting a modest grocery business in the city's K K Nagar area. A chance conversation with one of his customers about the dearth of quality eateries in K K Nagar moved Rajagopal to buy a loss-making restaurant in the area. Thus was born the first Saravana Bhavan outlet. Rajagopal used quality ingredients and paid his employees well, even when his outfit made losses. Eventually, word got around about Saravana Bhavan's pocket-friendly fare. South Indian snacks became part of the eating out experience in different parts of the country — and the world. Rajagopal leaves behind more than 80 restaurants, 47 outside the country.

Rajagopal was convicted in a 2001 murder case. But he will be remembered for the food served at his restaurants. It's a testimony to Rajagopal's entrepreneurial skills that the waiting time at Saravana Bhavan outlets across the world exceeds half-an-hour at most times of the day.

The moon and us

It may have lost a bit of its mystique for the poet, but it continues to entice and challenge the scientist

SHOBHIT MAHAJAN

THE VERSATILE POET and Bollywood lyricist, Shamsul Huda Bihari, once in a radio interview lamented the landing of humans on the moon. He rued the fact that technology and science have ruined the poetic imagination where the moon, especially the full moon, was frequently used to describe the beloved's beauty. He should know — he had penned the memorable "*yeh chaand sa raushan chehra*" for the Sixties' hit *Kashmir ki Kali*.

An otherwise unremarkable object in the vast cosmos, our natural satellite, the moon, has of course fascinated humans for millennia. The regularity of its phases was the reason why most calendar systems in human history have been lunar. Poets, philosophers and astrologers took keen interest in it. Aristotle, in the 4th century BCE, argued for a spherical Earth by observing its shadow during a lunar eclipse. After the 16th century, telescopes made more detailed observations of the moon possible. And yet, it was still a heavenly object out there — amenable to observations but not direct contact.

All that changed on September 13, 1959 when the Soviet lunar probe, Luna 2, crashed into the moon. Suddenly that familiar, near-yet-so-distant object seemed amenable to human ingenuity. Of course, the Luna 2 mission did more than that — it suddenly made the Americans realise that their Cold War opponent was competent not just to launch a satellite (Sputnik had been launched a year earlier), but also capable of the complex guidance technology required for an operation to send a spacecraft to the moon. The Space Race was on in earnest.

With the announcement in 1961 by President John F Kennedy of the commitment to land humans on the moon in a decade, the American space programme got a huge boost. That it happened soon after Yuri Gagarin's maiden space flight was not a coincidence. The Apollo programme, from 1961 to 1972, became the focus for NASA.

> Why the moon? The answer to this question is less frivolous than the classic retort (misattributed to Edmund Hillary but actually said by George Mallory) 'Because it's there'. The study of the geology and chemistry of lunar rocks has proved to be of immense use in expanding our understanding of the solar system. The moon is believed to have formed when a Mars-sized body impacted the Earth some 4.5 billion years ago. The impact hypothesis is one of the several theories about the origin of the moon.

Developing rockets which were powerful enough for the mission of taking humans to their closest heavenly neighbour, guidance and communication systems to ensure the exact trajectory and, most importantly, making sure that the risks to human life were minimal, were daunting tasks. The commitment was total — costing $25 billion and employing nearly half a million people and supporting thousands of industries. It seemed that the whole economic and technological might of America was put to use.

And then, on July 20, 1969, mankind (sic) took the giant leap — Neil Armstrong became the first human to step on lunar soil. The pictures of the Stars and Stripes on the desolate lunar landscape being reflected in Armstrong's visor were flashed all over the globe. And for people like SH Bihari, the poetic mystique of the moon was shattered for good.

After the landing on the moon, the Apollo programme continued for a few more years but once the chest-thumping patriotism had petered out, it was realised that the programme was too costly to justify its continuation and so was axed in 1972. The Soviets continued sending unmanned spacecraft to the moon and performing experiments and collecting samples till 1976 when the Luna programme was also terminated. The awe and wonder of the moon had waned and human ambition took up other challenges in the solar system — Mars, Venus, Jupiter and even beyond. The moon was passé.

But like retro fashion, the moon has made a reappearance in the scientific firmament in the 21st century. More than a dozen missions have been sent to the moon (including our very own Chandrayaan I), though these have been lunar orbiters and not landers till recently.

Why the moon? The answer to this question is less frivolous than the classic retort (misattributed to Edmund Hillary but actually said by George Mallory) "Because it's there". The study of the geology and chemistry of lunar rocks has proved to be of immense use in expanding our understanding of the solar system. The moon is believed to have formed when a Mars-sized body impacted the Earth some 4.5 billion years ago. The impact hypothesis is one of the several theories about the origin of the moon. Catastrophic impacts were quite common in the early history of the solar system and the study of the composition of rocks gathered from the lunar surface by the Apollo astronauts as well as the many unmanned missions has thrown light on the origins of the moon as well as the early solar system. With the latest Chinese mission, Chang'e 4, landing on the far side of the moon, a new era in the study of lunar geology has begun.

In 2008, an instrument called the Moon Mineralogy Mapper on board the lunar orbiter, Chandrayaan 1, confirmed the presence of surface ice on the moon. This is extremely significant because one of the motivations for the recent resurgence of interest in the moon has been the setting up of a lunar base for interplanetary travel. And with entrepreneurs like Elon Musk and Jeff Bezos getting into the game, space is no longer a not-for-profit venture. If all goes according to schedule, the first commercial landing on the moon could be as early as 2020 and within a couple of decades we might see semi-permanent habitation on the moon.

In the five decades since Armstrong stepped on the Sea of Tranquility, scientific interest in the moon has waxed and waned — from a dark period at the end of the 20th century to the surge in exploration now. In fact, we might even witness people staying on the moon in our lifetimes. The *chaand* might have lost its shine for the poets but this is surely the *Shukla Paksha* for the scientists.

The writer is professor of physics and astrophysics, University of Delhi

NOW, MISSION ECONOMY

To achieve $5 trillion target, tax system, laws, attitude to private sector need overhaul

ARVIND P DATAR

FIFTY YEARS AGO, Apollo11 landed on the moon and realised the audacious goal set by the US President Kennedy in 1961 of sending a man to the moon and bringing him back safely by the end of the decade. Equally audacious is the goal set by Prime Minister Narendra Modi of increasing India's GDP from $2.8 trillion to $5 trillion in just five years.

NASA engineers asked a critical question: What are the most essential things that must be dealt with to achieve this goal? They came up with three issues: Navigation, propulsion and life-support (for the astronauts). It is equally necessary for India to identity the most critical things that it has to grapple with to achieve the $5 trillion target. These are our tax system, regulatory laws and the attitude towards the private sector.

The biggest stumbling block to achieving the $5 trillion target is that each of these factors work in their own sphere unmindful of the fact that while their actions may achieve their individual goals, they may cause serious damage to the national policy objective. Our policy is to encourage foreign direct investment but our tax laws and the tax administration are so aggressively anti-industry that most foreign investors would rather set up manufacturing units in China, Thailand or Vietnam. The tax authorities have a single-minded focus of achieving their revenue targets, and any method justifies the end. This results in the most ridiculous tax demands that lead to extensive litigation. It is a matter of serious concern that India, with less than 2 per cent of global trade, has more transfer-pricing disputes than any other country.

> The biggest stumbling block to achieving the $5 trillion target is that each of these factors work in their own sphere unmindful of the fact that while their actions may achieve their individual goals, they may cause serious damage to the national policy objective.

Our regulatory and labour laws, particularly at the state level, still require multiple licences and permits that make it very difficult to set up an industry. A large number of these laws have to be dismantled if Make in India is to become a reality. The land acquisition laws now require at least 48 months to set up a large project. The sugar industry is a classic example of the government's populist policy crippling an entire industry. No industry can survive if the state-regulated raw material price is more than the market-driven selling price of the final product.

The third factor is critical to achieving our ambitious target. There has to be a change in the attitude towards the private sector, particularly big business. We must stop treating private enterprise as a necessary evil rather than as an affirmative good. China, whose GDP equaled India's a few decades ago, is now a $13 trillion economy with almost the same population. It has become the largest manufacturing centre only because of private enterprise. Just one example shows the gap: China's garment exports in 2017 were $110 billion, while India's exports were just $17 billion.

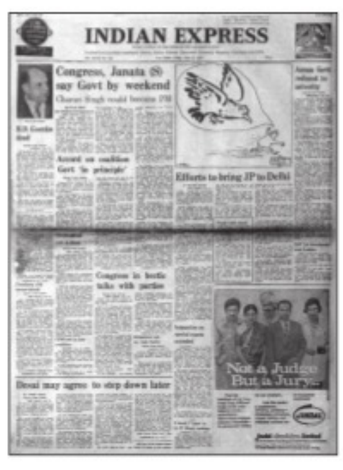
The same story is repeated in several sectors. None of this would have been possible without the Chinese government actively and aggressively encouraging the private sector. We will have to examine what are the tax, labour and regulatory laws that have made China so successful? And how many of these incentives and policies can be replicated?

We have just five years to achieve this target. Jim Collins, the famous management guru, laments that several companies choose to ignore the "brutal facts"; so do nations, at their peril. Several industries are in a precarious position and there is an overall slowdown of the economy. The Indian economy is in need of a serious overhaul if we are to generate large-scale employment. The failure of several "global investors" conferences is a grim indicator that India is not an attractive investment destination.

The task of achieving the $5 trillion goal has to be equally shared by states. With the same party in power in the Centre and several states, it will be easier to implement large-scale reforms that are now necessary. We have two options: To continue with the status quo of focusing on large government sponsored infrastructure and welfare schemes to drive growth, with the attendant requirement of massive borrowings or actively encourage private investment to make India the second-largest manufacturing nation. Only the second option will enable India to reach the target by 2024. The tax and regulatory laws must function in unison and must be designed to become growth oriented. If we change course, like NASA, we can achieve our ambitious goal. If we continue on the existing path, the $5 trillion dream will remain a mirage.

The writer is a senior advocate, Supreme Court

JULY 20, 1979, FORTY YEARS AGO


INDIAN EXPRESS

Congress, Janata (S) say Govt by weekend

Efforts to bring JP to Delhi

Congress in hectic talks with parties

Not a Judge But a Jury

Desai may agree to step down later

GOVT BY WEEKEND

WHILE THE JANATA Partyremained sharply divided over the question of who should be its leader — Morarji Desai or Jagjivan Ram — the newly-formed alliance of the Congress and the Janata (S) claimed it would be able to form a government by the weekend. Repeated efforts were made by various sections of the Janata Party to persuade Desai to step down from the leadership of the party but he refused to yield. A three-man committee consisting of H M Patel, S S Bhandari, and Madhu Dandavate was at work most of the day looking for ways to get Desai to vacate the seat for Jagjivan Ram but to no avail. Desai is reported to have the the committee that it should first assess who has the majority support in the Parliamentary Party, he or Jagjivan Ram.

LEADERSHIP QUESTION

CONGRESS AND JANATA (S) leaders, after a two-hour meeting this afternoon, agreed in principle to form a coalition government at the Centre. In a joint statement, the 12 leaders said: "We are confident that the country will soon have a stable government, of secular, democratic an d socialist unity backed by a solid parliamentary majority". C Subramaniam of the Congress, at whose house the meeting was held, did not divulge who the leader of the coalition would be. He said: "The question of the leader of the group has not been gone into. In fact, no details were discussed except the need for a stable front," he said.

CONGRESS RUSH

THERE WAS HECTIC activity in th e Congress camp as Y B Chavan, Swaran Singh and several other Congress leaders talked with various parties and groups — the CPI, CPM, AIADMK, Ja n a ta (S) and others. But it was still not clear at the end of the day whether the Congress would be able to conquer the formidable arithmetic of forming a government in the three days that the President has given it.

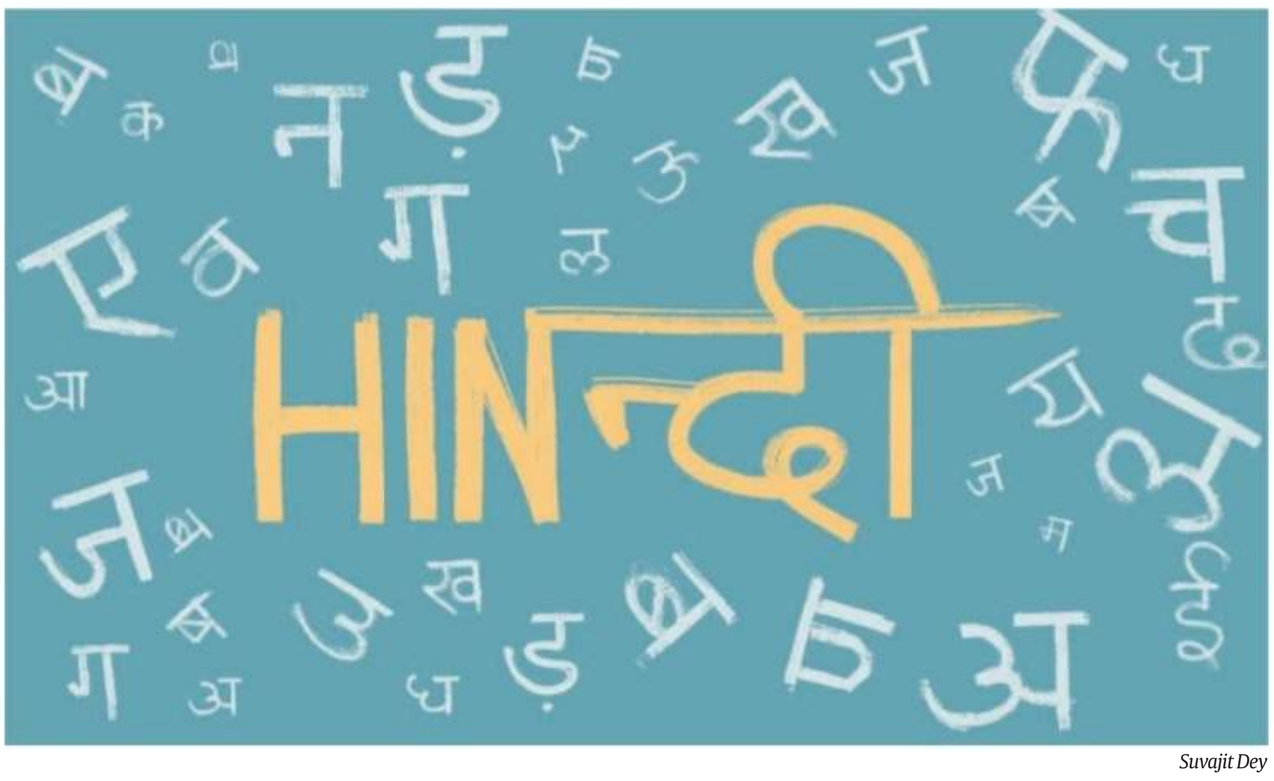
WHAT THE OTHERS SAY

"An estimated 1 million Uighurs and other minorities are held in China's camps. But Beijing's power has silenced many of those who one might expect to criticise it."
—THE GUARDIAN

That's right, blame it on Hindi

Every language, culture has its history of oppression. But it is also in the infinite plurality of language that tensions of identity, of politics, are resolved

MRINAL PANDE



Suvajit Dey

ONCE UPON A time (some four decades ago), it was the done thing to blame all the ills of the nation on feminism — from errant children to the break up of joint families, rise in crime, pornography and prostitution. Today, Hindi has become the favourite punching bag. It is being hit at for imposing its supremacist regime over all other Indian languages, for the rise of casteism, racism, for introducing a string of foul abuse words in polite discourse, through Bollywood films and serials on Netflix. Worse still, across the board, all Hindi wallahs are increasingly being stigmatised as supporters of a totalitarianism whose ideas are fast permeating social media, publishing and the government machinery.

As a second-generation Hindi writer from what was then Uttar Pradesh and now Uttarakhand, the act of writing to me includes three essential areas: The world, my own self and language. The first is undeniably dominated by English and will never exactly be mine like my mother tongue, the second I explore and gauge through my writings, and the third is not only a writer's tool but also the body of what I write. I cannot just put it away, like a painter would his brushes or a carpenter his tools.

If we go by the undeniable decadal census data, Hindi is the mother tongue to a majority in the dozen most-populous states and the medium for governments' subsidised education therein. It's true that Hindi is spoken in different accents and flecked with dozens of local dialects. But it is also true that the standardised Hindi used by school texts, in government correspondence and translations was not crafted by creative writers or the Hindi-speaking public. It was created (borrowing the Nagari script from Sanskrit), by four clerics (Bhakha Munshis) at the Fort William College in Calcutta around 1805, under orders from the British. It went on to create a vast Habermasian public sphere — the government-run school system, publishers, native politicians and social reformers. From Gandhi to Dayanand Saraswati to yes, even Raja Ram Mohun Roy rushed in and used it to communicate their revolutionary ideas verbally to mostly illiterate masses .

There is another side to the picture. Around the 1930s, my mother was at Shantiniketan and wrote a story, her first and last in Bangla, which she spoke like a native. When she took it to Gurudev Tagore for his opnion, he smiled and told her never to forget that she must write in her mother tongue. And it is this ever-changing and highly malleable language that all our greats from Premchand, Phanishwar Nath Renu, Manohar Shyam Joshi, Nirmal Verma, Krishna Sobti and young Alka Saraogi have been using. It comes liberally mixed with dialects, other vernaculars and yes, even English (read young Gaurav Solanki's *Gyarahveen A ke Ladke*). The editorial writing of the last five decades by journalists like Rajendra Mathur, Prabhash Joshi, S P Singh, Udayan Sharma and many others has vastly benefited from this linguistic pool and crafted a Hindi that has made Hindi newspapers and digital media garner the largest chunk of readers.

Let me hesitantly acknowledge here the perceived absurdity of someone's position who writes in both English and Hindi against the hegemonic push for Hindi by the present dispensation, but also stoutly defends Hindi and demands the just dues the publishing and media houses have largely denied it. Like a child asking if she may have some candy with one already put in her mouth, a sly question is posed to me in public gatherings: Is it fair of you to continue to describe English as part of colonial baggage in the Subcontinent and, therefore, incapable of expressing the whole truth as experienced by non-English speakers? Looking at how it has been heavily politicised and is being used by the Right why can't you admit now that Hindi today is less a language and more of a tool to push the saffron agenda?

In the 1950s, I was sent to various Hindi medium sarkari schools (Lucknow, Shajahanpur, Almora, Mukteshwar and Nainital) by my peripatetic father, who was often transferred mid-term, thereby leaving us to cope with badly mauled second-hand school texts. Even so, I never realised that my schooling was in any way provisional or experimental compared to those studying in the local English-medium private schools, where my much younger siblings were sent around the latter half of the 60s. I simply came alive in the Hindi speaking school environ everywhere I went. My friends were from varied backgrounds and included a local dhabewallah's son, the criminal lawyer's granddaughter and also one-eyed Mohan, whose family had fled Lahore and in the melee, a stray pellet had blinded him in one eye. In Nainital, where I spent the longest time in school, it was another medley of children from all over the hill districts of UP.

Recent readings on how Hindi has hidden the real history of India's caste, class and communal warfares from countless children in Hindi-medium schools by putting everything in a Brahminical idiom, dismay me no end. At school (Lucknow and Nainital) we had read and acted in poems and plays of the the 19th century great grandfather of Hindi, Bhartendu Harishchandra. Bhartendu, the scion of a wealthy Agrawal family in Kashi, came out as a jolly iconoclast who ripped apart the Brahminical elite of the Kashi of his times and wrote folk songs for singing women and prayers for Lord Krishna. He had listed 12 kinds of Hindi, including "Railway Hindi" (a variety laced with plenty of angrezi) and also written a welcome song for Queen Victoria and her son in Hindi. Then there were Premchand and Nirala who wrote acid verses about Jawaharlal Nehru and an infamous ditty for Gandhi: *Bapu Tum Yadi Murghi Khaatey!* (Oh Bapu, if only you'd eat a chicken!

At school (Lucknow and Nainital) we had read and acted in poems and plays of the the 19th century great grandfather of Hindi, Bhartendu Harishchandra. Bhartendu, the scion of a wealthy Agrawal family in Kashi, came out as a jolly iconoclast who ripped apart the Brahminical elite of the Kashi of his times and wrote folk songs for singing women and prayers for Lord Krishna. He had listed 12 kinds of Hindi, including 'Railway Hindi' (a variety laced with plenty of angrezi) and also written a welcome song for Queen Victoria and her son in Hindi.

So, by the time we finished school (1964), none of us in GGIC (Government Girls' Inter College) were naïve enough to believe that ours was a harmonious society with one language, one anthem and one irreplaceable Leader. Schools taught me that racial or linguistic homogeneity is not always a guarantor of peace, nor of discord. Only the stubbornly blind will fail to see that in a nation as vast and varied as ours, in society, languages and families, progress can only be incremental. That no community is entirely free of venality, brutality and envy. No people have a history without bloodstains and shame. But there is incremental progress notwithstanding. Till a few years ago, the non-availability of Hindi books was a constant complaint and also cited as proof that no one, no one well-educated that is, read Hindi. Today, on Amazon, one can order at least two dozen titles in Hindi by Dalits that include not just fiction and poetry but essays and autobiographies. Another two dozen by tribal writers. And these have not seen the light of the day as exotica, but because they sell. Ditto with the YouTube.

As a Hindi writer and anchor, I lost jobs again and again but never my faith in the power of words. My relations with many of my anglocentric owner-managers have been disastrous because of my stubbornness in not allowing substandard matter when I manned the guard posts; but I do not hate the market. I realise the world I knew has changed. But some changes are ahistorical. Like people, languages remain internally plural. They hide whole registers of infinite variety within them. Like a good musician, the writer just has to enter their insides and tease out notes long ignored or buried within. Nations like ours experiencing impossible identities in the 21st century can build up terrible tensions within themselves by clinging to binaries on languages. The beauty of good creative writing in any language, remains in how it highlights and resolves that tension through bold, perverse, politically unbeholden words.

The writer is a senior journalist and author

If Taliban returns

Children, women will have to bear the brunt of an Islamist revival in Kabul

KHALED AHMED

THE US-TALIBAN talks have bogged down because the latter is not willing to negotiate with the Ashraf Ghani government in Kabul. Washington is keen to leave Afghanistan and save the $45 billion it spends there annually but is troubled over what the Taliban will do to Afghanistan after it leaves. The Taliban has refused to talk to the US-supported Ghani government because they already control half of Afghanistan and fear internal splits if they play ball and negotiate.

Pakistan had tried to manipulate the Taliban over policy and suffered damage at the hands of the Pakistani Taliban. It fears the return of the Taliban government after the Americans leave and wants to keep its options open. Pakistani Taliban, operating from inside Afghanistan, will be strengthened after the Americans leave; and the Ghani government is unable to control the situation. There was a time when Pakistan was hosting around four million Afghan refugees, most of whom returned home in 2002 leaving 1.3 million "registered" ones still stuck in Pakistan while the "unregistered" ones remain outside this count. Khyber-Pakhtunkhwa province has 81 per cent of them, Punjab 10 per cent, Balochistan seven per cent and Sindh one per cent.

What is the plight of these "registered" Afghan refugees? According to a recently published report, "nearly half this number is believed to be children under the age of 14, with another 20 per cent reportedly between 15 and 24 years old". In 2015, the United Nations High Commissioner for Refugees had reported that "a staggering 80 per cent of Afghan children in Pakistan were out of school". Add to this number, the "44 per cent of all children in Pakistan that don't receive any education". Pakistan's future will be decided by these children who are destined to come of age without any education. Add to this number the Afghan children who will grow up not feeling a part of Pakistan.

An article by Mahwish Qayyum in *Newsweek Pakistan* has lifted the curtain slightly on what is in store. She reports that one Saeed Agha, a refugee himself, had established a low-cost school consisting of six rooms and one bathroom at an informal settlement in Islamabad's I-12 sector with a donation of Rs 1,70,000. (This Islamabad sector has 3,424 refugees, including 2,136 children.) The primary school had enrolled 400 local children, but it was forced to shut down after three months because Agha could not come up with more money.

What will over a million Afghan refugees do in Pakistan? First, there is the prospect of a couple of million more refugees coming to Pakistan if there is no solution to the crisis in Afghanistan where America is not winning and is keen to leave; and the Taliban controls half of the country. The Taliban doesn't like modern "un-Islamic" education and is opposed to girls getting any education at all. Even today it is able to target and kill "progressive" women who venture out of their homes to take up jobs to sustain their starving, often "fatherless", families. Pakistani Taliban, aligned with Uzbek warriors and sworn to the same "piety" as the Afghan Taliban, had destroyed all girls' schools in the valley of Swat in 2012 and shot Pakistan's Nobel Laureate Malala Yusufzai in the head because she wouldn't stop going to school.

The mood is no different in Afghanistan. The Taliban simply don't want modern education and prefer the madrassa that they see as the future inspiration of Afghanistan. They destroy schools wherever they see them: The number of attacks on schools tripled, according to UNICEF, rising from 68 in 2017 to 192 in 2018. The war has closed down 1,000 schools, depriving some 5,00,000 children of their right to learning. Pakistan has its own 32,000 madrassas doing far better than the state-run schools where conditions are hostile to learning because of ramshackle buildings and savagely illiterate teachers.

Afghanistan, like Somalia, is hardly a "centralised" state. Kabul didn't ever control most of the territory where Uzbek and Tajik warlords ruled with or without the government's consent. Pakistan, unfortunately, didn't learn from the chaos of Afghanistan and kept itself "uncentralised" without proper writ of the state in almost 60 per cent of its territory, somewhat in imitation of Afghanistan. The Tribal Areas in the north and northwest, almost the whole of Balochistan and interior Sindh — with some Sindhi feudal influence rubbing off on South Punjab — remained without proper policing. The next post-US withdrawal war in Afghanistan is bound to send more refugees into Pakistan that is now fencing the 1,640 mile-long Durand Line border, which the Taliban doesn't recognise. It has 235 "crossing points", where infiltration goes on.

Ideology and a collapsing economy don't let Pakistan look after its children the way it should. What a child needs growing up anywhere is good education. Pakistan has neither the money nor the thinking to provide it. In fact, due to its ideological orientation, even if it succeeds in providing education to its children, it is going to be close to what the madrassas are already doing free of cost.

The writer is consulting editor, Newsweek Pakistan

A blueprint for emergencies

AES outbreak in Bihar can serve as a catalyst for a medical rapid response system

S C NAGPAL

THE DEATHS OF over 150 children in Bihar from Acute Encephalitis Syndrome over weeks are in the process of becoming a bad memory. Most critical analyses have found serious faults with the state's healthcare system. This provides a context to explore if the inadequacies in healthcare could have been offset, even compensated for, by rapid administrative action.

Investigations found that certain positive factors also existed, though notionally, in Bihar. For example, research finds that AES is treatable. Second, the government had already put in place robust and comprehensive healthcare programmes. The situation in Bihar apparently came more like a flash flood. This, along with the weak medical infrastructure, ignoring preventive measures and other healthcare programmes, worsened the AES outbreak.

There are examples where states in India have taken the primary healthcare seriously, and followed up on preventive healthcare programmes comprehensively. States like Bihar can learn from their example, and the past. What follows is a draft framework to deal with medical health emergencies.

The first step should be to declare a public health emergency within the affected region with immediate effect. This would mean that the state healthcare and other concerned agencies, including the district administration and disaster management authorities, will pool their wisdom and resources. A group (henceforth Group) comprising representatives from such organisations should be constituted and be headed by a dedicated administrative officer with the requisite expertise and experience. This Group will come into operation no later than 24 hours of the declaration of the emergency, and will take full control and responsibility for ensuring prompt life-saving medical services, including essential nutritional supplements.

The Group will be a largely autonomous body with defined administrative and financial powers. It will take necessary decisions and coordinate efforts, including putting in place research work, and additional infrastructural support from within the state and outside it. The Group's mandate will be all-inclusive, and will start with ensuring dissemination of information (by means of the media and field health workers) on the disease, general awareness on government nutrition and hygiene programmes, precautionary measures, obtaining and sharing of diagnosis-treatment protocol, taking feedback on the treated patients and finally, the disbursal of compensation to the unfortunate victim's entitled kith and kin speedily.

A blueprint of the suggested administrative mechanism can be kept ready by each state, with various functionaries nominated and notified. This can be done in districts with a poor public health record. The Group will conduct periodic mock drills in a professional manner, particularly in more vulnerable areas. This blueprint will be actually realised as and when a need arises. The Group's resources can be unscaled suiting situational demands. The Group must also organise frequent field visits to see all arrangements work flawlessly.

Yet another significant policy measure would be to reorganise working of the existing government hospitals, particularly at the primary and middle level. As health centres across most states have adequate built up space and other infrastructure available, a part of the same can be leased to private hospital chains. In normal times, these privately-run units will provide regular, on payment, healthcare. Indeed, such private medical centres with their enhanced medical capacities in place can be recognised and co-opted under the Ayushman Bharat Yojana. In situations like the one under discussion here, these units can be commandeered to attend to the emergency.

Long-term plans to create and expand healthcare infrastructure demand more time and resources. The proposed reorganisation of health centres, besides substantially adding to the existing health services at literally no cost to the government, will also help to generate a healthier work culture.

Finally, it is of utmost importance that the functioning of such reorganised health centres be closely and professionally monitored. They should also be monitored by the local community and panchayati raj institutions.

It may also be useful to urgently fill the perennially existing vacancies at health centres. This can be accomplished in most healthcare institutions, particularly in remote rural areas, through the contractual appointment of doctors and para medical staff by from amongst retired personnel (both civil and military).

These ideas and models are practical and have been tried by this author in Ambala, Bareilly, Agra, and Delhi. India and its governance system cannot let people die, and must adopt fresh approaches. A crisis like the AES outbreak is not merely a medical battle, it must be seen as an administrative mission.

The writer is a retired civil servant

LETTERS TO THE EDITOR

IMMORAL MLAS

THIS REFERS TO the article, 'Dishonouring the mandate' (IE, July 19). A shameful display of "horse trading" is taking place in Karnataka. Contrary to expectations, the BJP has not set high moral standards. It's time to amend the anti-defection laws because when elected members change parties, they betray the people's mandate. If legislators do want to change their political affiliation, they must seek a fresh mandate. The nation can afford to foot the bill fpr fresh elections. It cannot afford to be governed by such turncoats.

Ashok Goswami, *Mumbai*

SPIRITUAL, CREATIVE

THIS REFERS TO the article, 'Zaira's choice' (IE, July 18). The issue is, of course, about Zaira Wasim's freedom to choose. She has said she decided to give up a budding career in Bollywood to pursue a life of spirituality, to which her career was an impediment. But the writer confuses religion with spirituality, and the materialistic life with creativity. An artist can be spiritual. Are Shabana Azmi, Naseeruddin Shah, Nandita Das, Raghu Rai and others not spiritual or good human beings? To be spiritual, one does not have to give up one's profession. Zaira Wasim is a gifted and creative artist. In case she is a victim of circumstances, that will become manifest soon. Let nothing stop young Zaira from realising her talents. But at the end of the day, we are answerable to ourselves alone and should live our lives as per our conscience.

R D Singh, *Ambala*

THE NEXT BIG STEP

THIS REFERS TO the article, 'The original sin', (IE, July 19). The level of penetration of banking services cannot be assessed solely on the basis of the increase in the number of bank branches. Effective financial inclusion has to be gauged on the basis of the uptake of different financial services. The point of banking service delivery has to be reimagined beyond the bank teller as the primary facilitator of retail banking services. The banks of tomorrow will be technology driven. The government should create an environment for the banking sector to develop the digital infrastructure that is needed to take this next big leap.

Sudip Kumar Dey, *Kolkata*

LETTER OF THE WEEK

TAGORE'S WORDS

THIS REFERS TO E P Unny's 'Freeze Frame' cartoon (IE, July 15). Rabindranath Tagore is shown as handcuffed. The way political atmosphere is currently changing in our country, this cartoon may become a reality soon. In *Bharat Teertha*, Tagore wrote: "O Aryans, non- Aryans, come here. O Hindus and Mussalmans, come here. You Englishmen, and Christians, come here. Come here, O Brahmins with a clean heart, and join hands with everyone. Come here all downtrodden, letting go of your past humiliations." In another instance, Tagore writes, "Leave this chanting and singing and telling of beads. Whom are you worshipping in this lonely dark corner of a temple, keeping all its doors shut? Open your eyes and see that your God is not present before you!" With the way we are going, it is likely that Tagore will soon be censored by the powers that be.

Ranjan Das, *Mumbai*