

WORK-LIFE BALANCE
PERILS OF 90-HOUR WORKWEEK

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FEBRUARY 2, 2025

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back from the brink

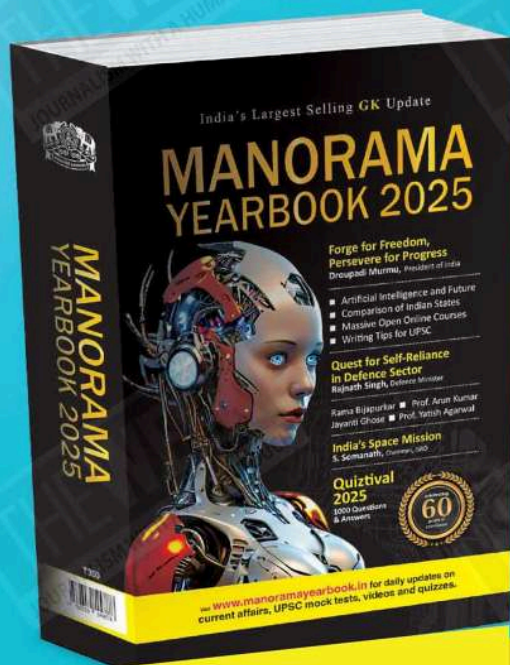
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ON A CALL, AND A PRAYER

Crisis helplines in India address a range of issues from sexual abuse, domestic violence and mental trauma to academic stress. Many such calls are made while cowering at home fearing the return of tormentors or from washrooms or discrete corners. Experts say the number of calls reflect an increased awareness of the need to seek help. However, those who attend these calls and help are often forgotten. THE WEEK spent hours listening in on distress calls to observe the responders and bring you the story of these unsung heroes

GUEST COLUMN

Helping rape survivors: Sangeeta Rege, former director, CEHAT

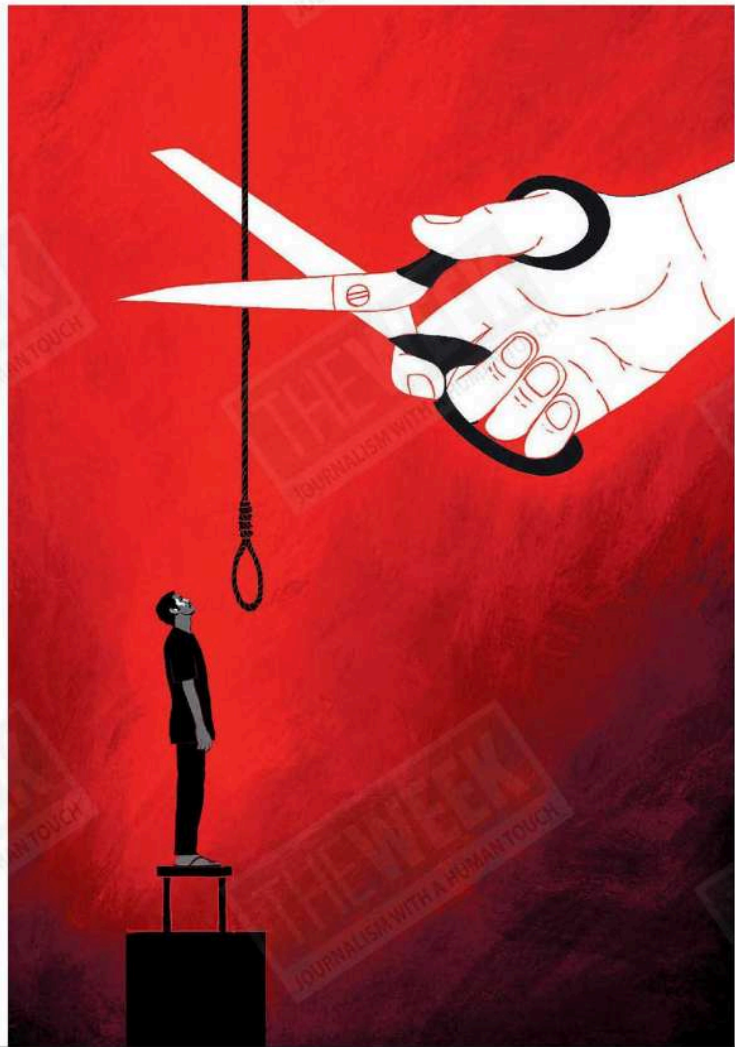


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MED IN INDIA

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FITNESS

VO₂ max value—maximum oxygen intake—is the best way to measure fitness and predict life expectancy

COVER DESIGN
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Immense joy

Allow me to praise the Health team for the wonderful story on Mohamed Raishan Ahmed ('Against all odds', January 5).

It is heartening to know that the Maldivian patient underwent a complex surgery that enabled him to sit upright.

Stories like these from a neighbouring country bring immense joy. India has truly become a beacon of hope for so many.

K.S.V. Prashant,

ON EMAIL.

I am aware that researchers in India and abroad are working towards developing an affordable treatment for muscular atrophy and similar disorders affecting so many in the country.

Having said that, much needs to be done. It is important that we intensify efforts to find a remedy, and in the years to come, work towards eradicating genetic disorders.

Radha Kurup,

ON EMAIL.

Every newborn in the country should be screened for rare genetic diseases like spinal muscular atrophy and muscular dystrophy. Gene therapy holds promise. With advancement in medical science, we can hope that many affected persons will eventually regain mobility.

Through proper training and treatment, it is possible to counter the problems caused by genetic disorders. Let us remain hopeful about breakthroughs.

Devyani Saxena,

ON EMAIL.

Actor and former Union minister Napoleon's elder son Dhanoosh, who was diagnosed with muscular dystrophy at a young age, recently got married. As a devoted father, Napoleon has done so much to support his beloved son. He cut down on acting commitments and moved to the US with his family, so that Dhanoosh, who has a bachelor's degree in animation, is taken care of. He is excelling in his profession today and is blessed to have such a wonderful family.

Rukmini Thiagarajan,

ON EMAIL.

Drink water

Drinking plenty of water is beneficial for overall health ('Quicksan', January 5).

In fact, even if consumed in excess, water, generally, poses no harm. Staying well-hydrated helps prevent kidney stones, regulates blood sugar levels, and controls blood pressure.

Some say drinking water before meals can aid in weight loss. But, I find this hard to follow.

Tapesh Nagpal,

ON EMAIL.

Try jackfruit

I agree with you that from the time we are born, we establish a relationship with food ('Good food', good life', January 5). However, like all relationships, this too needs to be healthy.

Certain food can boost health and prevent diseases, and this has been scientifically proven.

For example, jackfruit contains several types of phytochemicals, which can prevent chronic degenerative

Yoga and meditation help

I have always believed that mindfulness meditation can, to a large extent, reduce any kind of pain ('Quicksan', January 5). Likewise, yoga has the power to alleviate both physical and mental discomfort. This makes it a far better alternative than relying on painkillers.

Vandana Gopi,
ON EMAIL.

diseases and certain cancers.
Anupama Gowda,
ON EMAIL.

Sleep well

Yes, consistently poor sleep can accelerate ageing ('Quicksan', January 5). Good sleep is important for maintaining physical and mental health. I have seen many people using their mobile phones on bed before sleep. Such tendencies need to be avoided. All electronic devices should be avoided 30 minutes before bedtime. I suggest read a book.

Mayank Khatri,
ON EMAIL.

It is best to consume food in moderation. Leaving a little room in your stomach causes no harm and is actually healthier. We should never eat to our full capacity.

Vijay Venu,
ON EMAIL.



BHANU PRAKASH CHANDRA

Salute Juan

A shoutout to Maria Victoria Juan for everything she has done for wounded soldiers and other needy people ('More than a helping hand', January 5). Often, we overlook the efforts of nurses who are on the frontline, even more than doctors. Despite facing humiliation at times, especially in countries like India, they remain undeterred and continue to do their work.

Tanushri Nagori,
ON EMAIL.

Honest conversation

Many factors contribute to conflicts in relationships, and lack of communication is the most significant ('Quicksan', November 3). Open conversation is the key to managing conflicts. It prevents small issues from turning into larger conflicts.

Harsha Menon,
ON EMAIL.

YOUR MORNING COFFEE MAY KEEP YOUR HEART HEALTHY

Does it matter when you drink your coffee?

According to a US study published in the *European Heart Journal*, people who drink coffee in the morning have a lower risk of dying from cardiovascular disease and a lower overall mortality risk compared with those who drink coffee throughout the day.

To find out if the timing of coffee intake affects heart health, the researchers used data from over 40,725 adults who provided information about their food and drink consumption. About 36 per cent of the participants were morning coffee drinkers, 16 per cent drank coffee throughout the day and 48 per cent did not drink coffee.

During an average follow up of ten years, 4,295 people died, including 1,268 from cardiovascular diseases and 934 from cancer. Morning coffee drinkers were 16 per cent less likely to die of any cause and 31 per cent less likely to die from cardiovascular disease compared with non-coffee drinkers. These benefits held true regardless of how much coffee was consumed, whether it was one cup or more than three.

However, all-day coffee drinkers did not experience any such risk reduction.

Why does timing matter? One possible explanation is that consuming coffee in the afternoon or evening may disrupt circadian rhythms and interfere with hormone levels, such as melatonin. This could, in turn, lead to changes in cardiovascular risk factors, including increased inflammation and higher blood pressure.



PHOTOS: SHUTTERSTOCK

BREAST, OVARY REMOVAL IMPROVES SURVIVAL FOR PATIENTS WITH BREAST CANCER GENES

YOUNG BREAST CANCER

PATIENTS with high risk BRCA mutations can significantly reduce their risk of cancer recurrence and improve survival if they have their breasts and/or ovaries removed. An international study analysed data from 5,290 breast cancer patients aged 40 or younger with BRCA mutations, treated at 109 hospitals across five continents, with a median follow up of 8.2 years.

Patients who underwent mastectomy had a 35 per cent lower risk of death and 42 per cent lower risk of cancer recurrence compared with women who did not have the surgery.

Similarly, patients who had their ovaries removed had a 42 per cent lower risk of death and 32 per cent lower risk of recurrence compared with women who did have the surgery. Overall survival results were comparable for patients who underwent either or both surgeries.

"We hope these findings may help to improve the counselling on cancer-risk management strategies for BRCA carriers with a young onset of breast cancer at age 40 or younger at diagnosis," the study said.

The findings were presented at the San Antonio Breast Cancer Symposium.

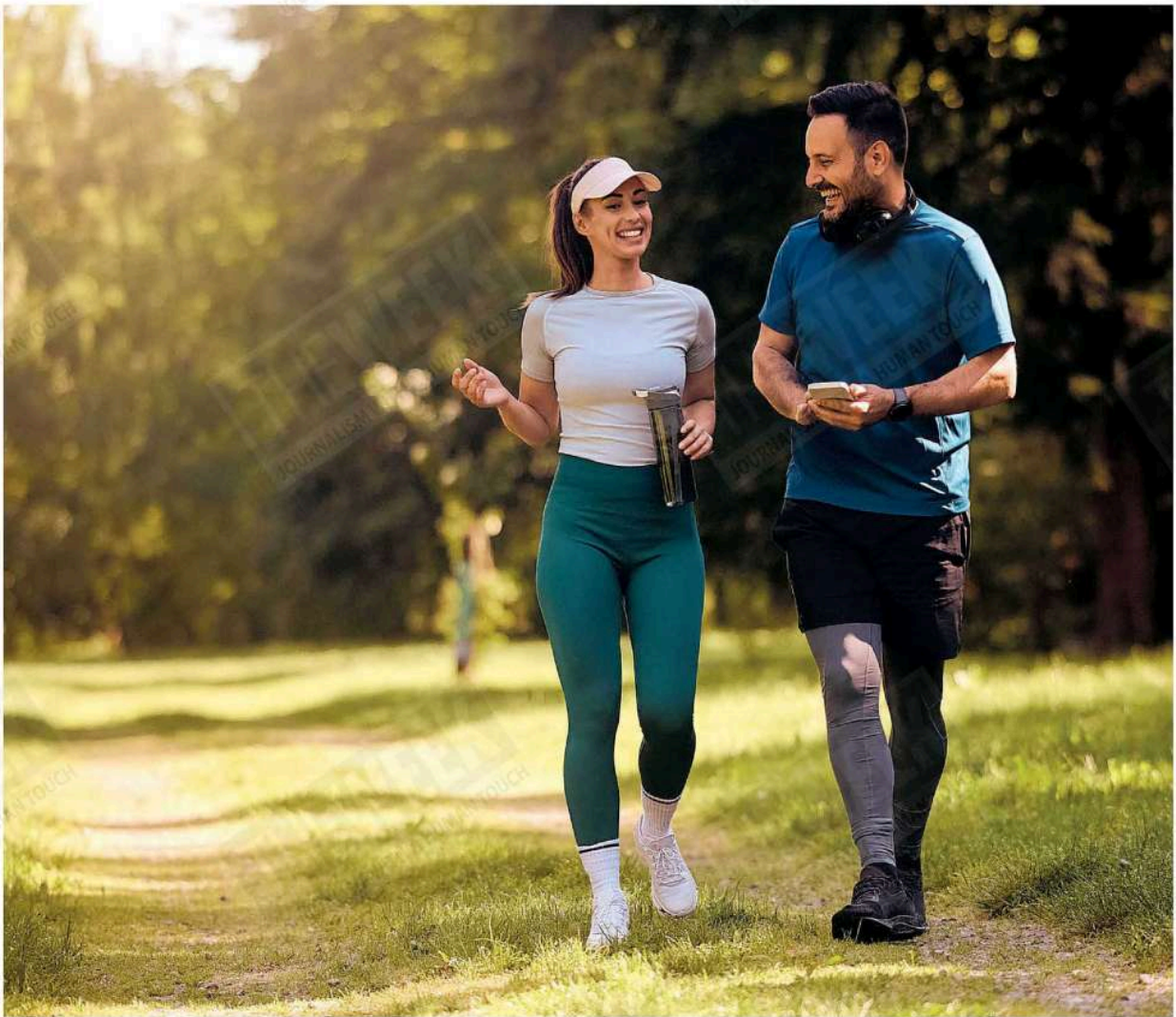


Did you know?

Repeated doses of paracetamol in people aged 65 and older can increase the risk of gastrointestinal, cardiovascular and kidney complications

Arthritis Care and Research





INCREASE YOUR DAILY STEPS TO FIGHT DEPRESSION

IT IS WIDELY RECOGNISED that exercise can benefit both the body and the mind, but what about something as simple as walking?

According to a Spanish study published in *JAMA Network Open*, increasing your daily steps can reduce depressive symptoms. The study analysed data from 33 studies involving 96,173 adults aged 18 to 91. The participants

used fitness trackers to calculate their daily steps which ranged from 2,931 to 10,378 steps per day.

The study found that as daily step counts increased, the risk of depression decreased. Compared to sedentary individuals who walked fewer than 5,000 steps per day, those who took even 1,000 more steps daily saw a 9

per cent lower risk of developing depression. The benefits continued to grow with increased steps: those who walked 7,000 steps per day had 31 per cent lower odds for depression, while walking more than 7,500 steps per day was associated with a 42 per cent lower prevalence of depression. These benefits were consistent across both males and females and people of all age groups.

However, the mental health benefits seemed to plateau after 10,000 steps per day.



VITAMIN D SUPPLEMENTS UNLIKELY TO PREVENT FALLS/FRACTURES

VITAMIN D SUPPLEMENTS, with or without calcium, do not prevent falls or fractures in older adults.

According to a new draft recommendation from the US Preventative Services Task Force, vitamin D supplementation is unnecessary and has no impact on the severity of injuries from falls in healthy postmenopausal women and men aged 60 and older. However, this recommendation does not apply to people with osteoporosis, vitamin D deficiency or those taking the supplements for other medical reasons. The recommendation is based on an analysis of 20 randomised, controlled trials across 54 publications.

While vitamin D and calcium are essential for bone health, immune function and overall wellness, the task force found no evidence to support their effectiveness in preventing fractures or falls. "The task force recommends other effective preventive services related to falls and fractures, including screening for osteoporosis in women and structured exercise programmes to prevent falls in older adults who are at increased risk of falling," said a task force member.

Adequate physical activity and exercise, including strength training, can improve bone density, prevent muscle loss, strengthen the body and reduce the risk of falls.

SKIN PATCH TO TRACK BLOOD PRESSURE

US RESEARCHERS have developed a wearable patch capable of continuously monitoring blood pressure. "Traditional blood pressure measurements with a cuff, which are limited to providing one-time blood pressure values, can miss critical patterns. Our wearable patch offers continuous stream of blood pressure waveform data, allowing it to reveal detailed trends in blood pressure fluctuations," the study explained.

The patch, about the size of a postage stamp, is soft, stretchy, and adheres to the skin. Worn on the forearm, it is made of silicone elastomer. An array of tiny piezoelectric transducers, embedded between stretchable copper electrodes, transmit and receive ultrasound waves that track changes in the diameter of blood vessels. These measurements are then converted into blood pressure values.

The patch's safety and accuracy were validated in 117 subjects who participated in a variety of activities and settings, including cycling, raising an arm or leg, meditating, eating and transitioning from sitting to standing. In all instances, the patch's readings closely aligned with those obtained from traditional blood pressure cuffs.

The results from the patch were comparable not only to those of a standard blood pressure cuff but also to those from a highly accurate arterial line, which is a sensor inserted into an artery for continuous blood pressure monitoring, typically used in intensive care units and operating rooms.

The findings, published in *Nature Biomedical Engineering*, have the potential to help people better manage their hypertension and reduce the risk of related cardiovascular diseases.



REGULAR EXERCISE BEFORE CANCER DIAGNOSIS MAY SLOW DISEASE PROGRESSION

EXERCISING REGULARLY

BEFORE a cancer diagnosis is associated with slower disease progression and a lower risk of death, finds a study published in the *British Journal of Sports Medicine*. Even relatively low levels of physical activity appear to offer significant benefits.

The study analysed data from 28,248 patients with stage 1 cancer. Researchers compared participants' activity levels in the 12 months before cancer diagnosis with the rate of cancer progression and death following diagnosis.

Breast and prostate cancers were the most prevalent, making up 44 per cent of the cases in the study. The disease progressed in 34.5 per cent of the cases, while 19 per cent of the patients died before the end of the study. The odds of disease progression were 16 per cent lower among those who engaged in low levels of physical activity (60 or fewer minutes per week) in the year preceding their diagnosis compared with those who were not physically active. The risk was 27 per cent lower in those who engaged in moderate to

high levels of activity (60 minutes or more per week). Additionally, individuals who participated in moderate-to-high levels of physical activity were 47 per cent less likely to die from any cause, while those with low levels of activity had a 33 per cent lower risk of death.

"In a world where cancer continues to be a significant public health burden, the promotion of physical activity can yield important benefits regarding the progression of cancer as well as its prevention and management," the researchers concluded.

FITNESS OR FATNESS: WHICH MATTERS MORE?

ACCORDING TO A US STUDY published in the *British Journal of Sports Medicine*, a person's fitness level plays a much more significant role than body weight in determining cardiovascular health and mortality. The study found that cardiorespiratory fitness is a stronger predictor of both cardiovascular disease and overall mortality than BMI.

The researchers analysed 20 studies involving 3,98,716 adults, aged 42 to 64, from various countries. About 30 per cent were women.

Fit individuals, regardless of weight, had similar risks of death from all causes and cardiovascular disease. On the other hand, unfit individuals across all weight categories had two- to three-fold higher risks of both all-cause and cardiovascular disease mortality compared with fit individuals with normal weight. Obese but fit individuals had a significantly lower risk of death than normal weight individuals who were unfit.

"Fitness, it turns out, is far more important than fatness when it comes to mortality risk. Exercise is more than just a way to expend calories. It is excellent 'medicine' to optimise overall health and can largely reduce the risk of cardiovascular disease and all-cause death for people of all sizes," the study author said.



Did you know?

Globally, about 2.2 million new cases of type 2 diabetes and 1.2 million new cases of cardiovascular disease can be attributed to the consumption of sugar-sweetened beverages

Nature Medicine



ONE CIGARETTE COULD SLASH 17 MINUTES OFF YOUR LIFE

IT IS WELL KNOWN that smoking is harmful to health, serving as a leading preventable cause of disease, disability and premature death. But what impact does smoking have on lifespan?

According to an editorial published in the journal *Addiction*, among long-term smokers, a single cigarette reduces life expectancy by 17 minutes for men, and 22 minutes for women. Overall, men can lose about 10 years of life expectancy and women about 11 years.

The damage caused by

smoking is cumulative, but the sooner a person quits, the longer they will live. For example, if a person who smokes 10 cigarettes a day quits on January 1, he could prevent losing an entire day by January 8th, a week by February 20, and a month by August 5. They could have avoided losing 50 days of life by the end of the year.

Rather than shortening the final years of life, smoking primarily robs individuals of their healthy middle years. A 60-year-old smoker, for instance, typically has the health profile of a 70-year-old

non-smoker.

However, the harm caused by smoking is not the same for every smoker. Some individuals may live long and relatively healthy lives, while others may succumb to smoking-related diseases or even die in their 40s. This variation depends on several factors, including smoking patterns (such as the number of puffs and depth of inhalation), the type of cigarette smoked and individual susceptibility to the toxic substances in cigarette smoke.



CONTRIBUTOR: SHYLA JOVITHA ABRAHAM



Brain storm

Back in 1898, William Ramsay, then chair of inorganic chemistry at University College, London, alongside his colleague, Morris Travers, embarked on a quest to uncover the secrets of the air we breathe. They devised an elaborate process to extract gases from liquid air, and extracted neon, argon and krypton. They found support from wealthy industrialist Ludwig Mond, who sponsored a new liquid-air machine. They used it to extract more of krypton. By repeatedly distilling this, they eventually isolated a heavier gas. When they examined it in a vacuum tube, it emitted a beautiful blue glow. They named the new gas xenon.

Fast forward to 2025: xenon, an odourless noble gas in Group 18 of the periodic table, is now offering hope for Alzheimer's patients and their families.

Researchers from Mass General Brigham and Washington University School of Medicine in St. Louis have shown that inhaling xenon gas can reduce neuroinflammation, minimise brain atrophy, and promote protective neuronal states in mouse models of Alzheimer's disease. Their groundbreaking findings were recently published in *Science Translational Medicine*.

Alzheimer's disease is a complex neurodegenerative disorder marked by the progressive decline of cognitive functions, particularly memory. While its exact causes remain unclear, the hallmark of the disease is the abnormal accumulation of proteins in the brain—amyloid plaques outside neurons and tau tangles within them. These disruptions impair communication between nerve cells, leading to neuronal loss over time.

In Alzheimer's disease, the brain's primary immune cells, microglia, can become overactive or dysfunctional, leading to chronic inflamma-

tion. Researchers have developed a method to study microglial responses to neurodegeneration, observing that certain microglial characteristics can be modulated to provide protective effects against Alzheimer's.

A significant challenge in Alzheimer's research and treatment is designing medications that can cross the blood-brain barrier—a vital protective structure that regulates the movement of substances between the bloodstream and the central nervous system (CNS). However, the researchers found that xenon can penetrate this barrier, travelling directly from the bloodstream into the fluid surrounding the brain.

Upon entering the brain fluid, xenon induced and enhanced a protective microglial response linked to clearing amyloid plaques and improving cognition. In Alzheimer's disease mouse models, nest-building behaviours—a key marker for assessing cognitive function—are significant for understanding disease progression. Impairments in these behaviours signal early cognitive dysfunction.

Notably, inhalation of xenon reduced brain atrophy and neuroinflammation while improving nest-building behaviour in mice. The researchers also observed xenon's protective effects in mouse models exhibiting both amyloid and tau pathologies.

Building on these successful results, a clinical trial will now commence at Brigham and Women's Hospital, initially enrolling only healthy volunteers to establish safety and dosage. Meanwhile, the researchers plan to investigate the mechanisms underlying xenon's protective effects and explore its potential in treating other diseases, such as multiple sclerosis, amyotrophic lateral sclerosis, and neurodegenerative eye diseases.



SHUTTERSTOCK



WORK THIS OUT!

What is the true cost of a 90-hour workweek? Reduced productivity, mental health issues and severe health risks, say doctors

By Nirmal Jovial

The corporate world is currently divided over work hours, following recent comments from prominent business leaders advocating for longer working weeks. While the debate began with Infosys co-founder Narayana Murthy's call for a 70-hour workweek, the divide has been intensified by S.N. Subrahmanyan, chairman of Larsen & Toubro (L&T), who suggested employees should work 90-hour weeks, including Sundays, to boost productivity. His remarks have sparked widespread controversy, with critics labelling them a "burnout recipe" detrimental to employee well-being.

Meanwhile, several other industry leaders, especially those who are not into any sort of outsourcing or IT contracting business, countered the 90-hour

work philosophy, and critics have pointed out that if India strictly enforces overtime pay for employees working over 40 hours a week, corporate leaders advocating for longer hours might shift their stance towards promoting "work-life balance".

The corporate world may be divided, but the medical community is united in its concern about the adverse effects of long working hours, especially for those in desk jobs. "The health concerns of prolonged sitting are becoming more widespread due to the current work model, which promotes sedentary labour," says Dr Pradeep Kumar D., senior consultant, cardiology, Manipal Hospital Yeshwanthpur. "Extended periods of sitting with minimal movement or exercise are linked to several serious illnesses, including diabetes,

obesity, high blood pressure and cardiovascular diseases such as heart attacks and strokes.”

Dr Jaiben George, an orthopaedic surgeon at AIIMS New Delhi, says maintaining the same posture for prolonged periods can cause lower back issues and neck pain. According to him, a sedentary lifestyle can lead to metabolic syndrome—characterised by high body fat, elevated blood lipid levels, and increased blood sugar—which raises the risk of heart disease. Jaiben notes that repetitive activities may result in wear-and-tear injuries in frequently used body parts, commonly referred to as “occupational hazards”.

Sunlight exposure plays a crucial role in circulation, as it increases blood flow and lowers blood pressure. Pradeep says prolonged sitting without breaks or sunlight exposure can impair circulation, cause mild to moderate fatigue and lower energy levels. “Over time,” he says, “these issues can escalate, affecting both the body and the mind.”

Dr Kumar K.A., senior consultant, department of psychiatry & behavioural medicine at KIMSHEALTH, Thiruvananthapuram, says concentration issues, slowing or clouding of thinking and psychomotor retardation are major cognitive dysfunctions associated with long desk hours. “Apathy, depression and fatigue syndrome are other disturbances caused by prolonged sitting and insufficient sleep,” he adds.

According to Kumar, another significant issue with office jobs is the lack of meaningful human interactions. “Data processing and decision-making tasks are often monotonous and can



Prolonged poor posture can strain the muscles that maintain posture, leading to fatigue and aching pain. When this happens repeatedly, it can result in chronic back and neck problems.

*Dr Jaiben George,
orthopaedic surgeon,
AIIMS, New Delhi*

have a dehumanising effect,” he explains. “Performing these tasks for extended hours can numb a person. It is crucial to engage in human interactions at home and outside after work hours, and to take two days off every week, to restore vitality and humanise one’s living environment.”

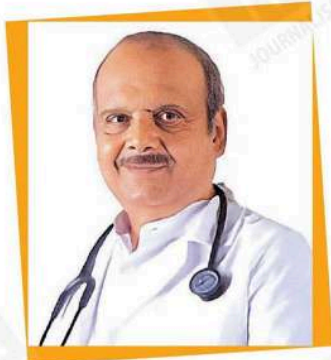
Poor posture can be a major issue for individuals in desk jobs, particularly in fields like IT. “Prolonged poor posture can

strain the muscles that maintain posture, leading to fatigue and aching pain. When this happens repeatedly, it can result in chronic back and neck problems, although these issues are often multifactorial,” says Jaiben.

Long working hours are also linked to episodes of workplace burnout. According to Jaiben, burnout can affect anyone, especially those engaged in continuous, monotonous tasks. “It’s particularly common in jobs that are repetitive and time-consuming, but offer little reward,” he says. “For most people, office jobs are simply a way to earn money. If they don’t have time to spend that money on activities they enjoy, frustration is likely to set in.”

To avoid burnout and reduced productivity, it is essential to take regular breaks and make sure you have enough time to recuperate. “Long stretches of unbroken labour are significantly less productive than short breaks and the occasional long weekend. By encouraging physical rest and aiding in mental recuperation, these breaks improve concentration when going back to work,” says Pradeep.

Spending excessive hours on office work significantly reduces quality time at home and limits meaningful social interactions. Kumar warns that this can lead to behavioural deviations and disorders. “Depressive disorders, mood disorders, anxiety, sleep disturbances and sexual dysfunctions are common in such individuals,” he says. “Addictions to tobacco, alcohol and other substances are also prevalent. Lifestyle diseases such as obesity, diabetes, hypertension, fatty liver and high cholesterol levels are frequently observed.”



It is crucial to engage in human interactions at home and outside after work hours, and to take two days off every week, to restore vitality and humanise one's living environment.

Dr Kumar K.A., senior consultant, department of psychiatry & behavioural medicine, KIMSHEALTH, Thiruvananthapuram

Marital discord and interpersonal issues within and outside the family are often seen in the families of workaholics. "These issues, in turn, exacerbate depression, anxiety, sleep disturbances and addiction disorders, creating a spiralling vicious cycle," says Kumar.

Doctors stress the importance of taking short breaks during work hours to maintain produc-

tivity and mental health. "Most individuals can sustain maximum attention for 55 minutes to an hour and a half. Beyond that, productivity declines as mental fatigue sets in," says Pradeep.

Taking quick 10- to 15-minute breaks every two hours can significantly improve focus and reduce mental exhaustion. "These breaks provide a mental reset, allowing workers to return to their tasks feeling refreshed and more efficient," says Pradeep. "Additionally, this approach minimises the risk of health issues related to prolonged sitting, such as deep vein thrombosis, back pain and neck pain."

While it is undeniable that long working hours pose significant challenges, determining the ideal working hours for both health and productivity remains subjective. "Although there isn't a definitive solution, several studies suggest that 35 to 40 hours per week is generally optimal for most office workers," says Pradeep.

He also highlights the paradox of long working hours within the medical community. "Physicians, who are often at the forefront of advising patients on health and well-being, frequently endure the harmful effects of extended workdays themselves," he says.

Many doctors struggle to maintain a healthy lifestyle, working long shifts under high stress due to the demanding nature of their profession. "Compared to the general population, doctors are more prone to conditions such as obesity, hypertension, diabetes and even stroke. Ironically,



Taking quick 10- to 15-minute breaks every two hours... provides a mental reset, allowing workers to return to their tasks feeling refreshed and more efficient. This minimises the risk of health issues related to prolonged sitting.

Dr Pradeep Kumar D., senior consultant, cardiology, Manipal Hospital Yeshwanthpur.

despite their knowledge of the importance of good health habits, they often neglect their own well-being," he says.

This neglect has serious consequences. "Doctors typically have a lower life expectancy, living 5–10 years less than the general population," says Pradeep. "This stark statistic underscores the risks of prioritising professional responsibilities at the expense of personal health."

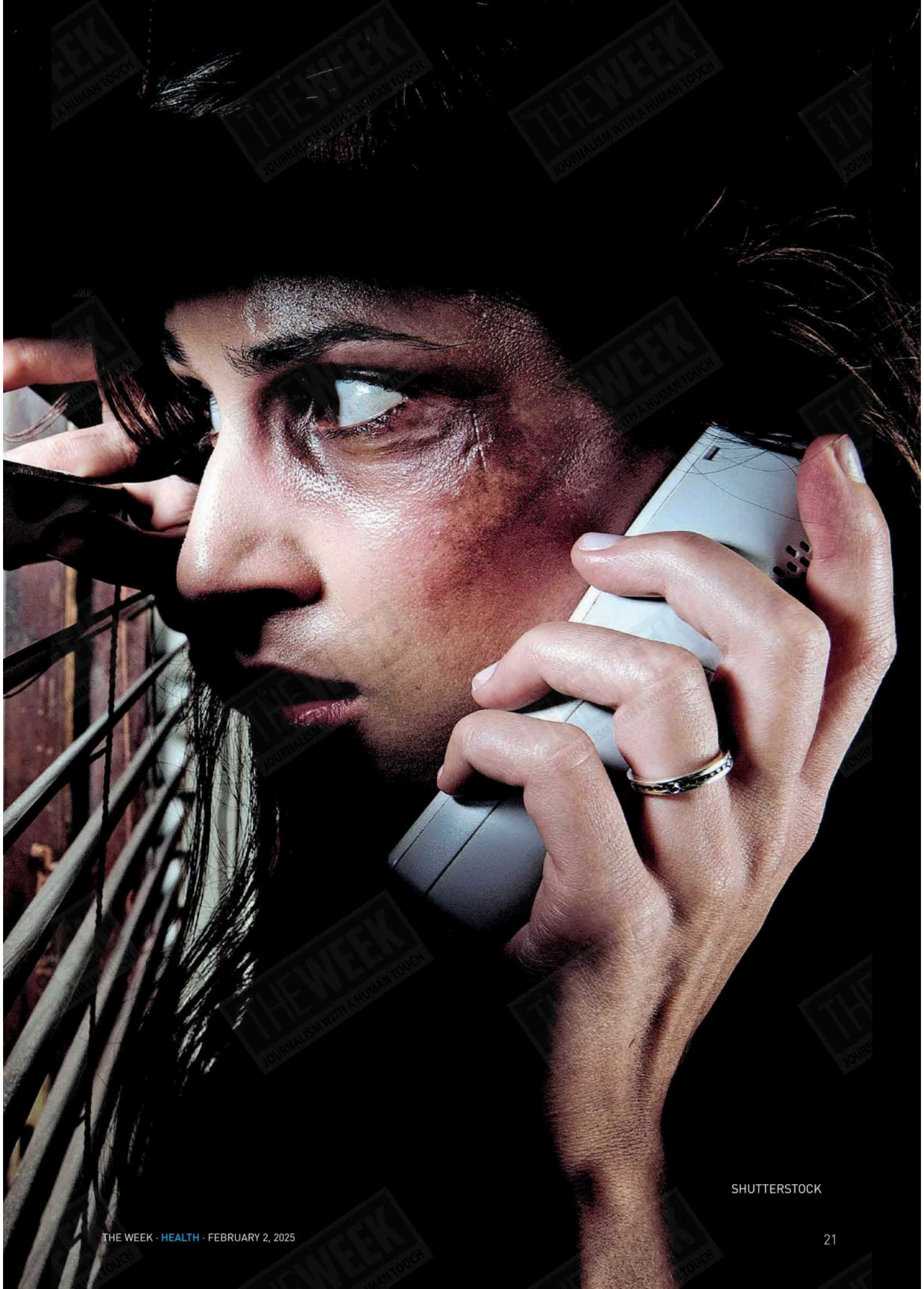


COVER STORY

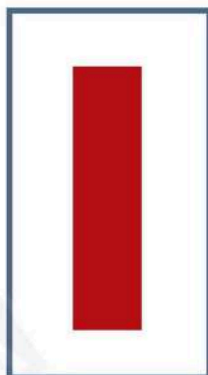
HELP... JUST A CALL AWAY

How people working at helplines
across India are providing comfort
and clarity to those on the brink

By Pooja Biraia



SHUTTERSTOCK



It was 2am when the phone rang at the One Stop Centre (Sakhi) in Bhopal. Shabana, who had just turned 21, was manning the call desk of the toll-free government helpline number 181—a 24x7 service for women affected by violence—that night. It was mid December and the temperature had dropped to 9°C. Shabana thought of making herself a cup of tea, but there was no milk. There was no time either; she was trying hard to focus on preparing for her psychology exam due later that morning—this meant she would have to go straight from the centre after pulling off a grueling eight-hour night shift. Even as staying awake became a challenge, these late-night calls did their job to keep her on her toes.

As she answered the call, Shabana clenched her fists. A woman on the line was begging her to save her from her husband. “Madam, please help me,” said the distraught woman. “I have somehow been able to snatch his phone and make this call. I have been dialling 100 for the past one hour in vain. If you don't help me, he will kill me. He has already thrashed me with his belt and I am in so much pain. I am standing on the road right now; I am cold and alone. But I know for sure if I go back, I might lose my life. Please help me.” Shabana calmly replied, “Yes, ma’am. I will help you, but where are you right now?” The lady had just mentioned the area when suddenly the line went blank.

Shabana identified this as a “bad case of domestic violence and abuse” and knew she had to act fast. There was no way Shabana could have called back on the number lest the husband answered



the call. She frantically tried calling the police station, but the calls went unanswered. She then rang up the inspector on duty, which was against protocol, but by then Shabana “didn't care”. The couple was immediately brought to the police station. The woman, however, called the helpline again, this time from the police station. “They are sending me home, but what if I get beaten up again?” she asked. Shabana explained, “The police is responsible for anything that will happen to you from now on. Don't worry. He won't harm you because he knows he is being watched. Please go home.”

A year into her job, Shabana is still learning to answer these frantic calls for help all on her own, without fear. Especially because she has seen fear up close—as a 19-year-old, she nar-



AMEY MANSABDAR

rowly escaped a forced marriage and a death threat from her own family, and found refuge at the centre.

In Pune, Aneet Matwankar, 51, logs in to the 24x7 Crisis Line to receive calls while she is home with her family, including her dog. Her time slot for the day is from 12pm to 4pm and she keeps to a quiet room to take calls without interruptions. The Crisis Line is run by AKS Foundation, an NGO that addresses issues of gender violence. It operates remotely on six slots of four hours each. For each slot, there are at least two call responders. THE WEEK observed some of the calls the Crisis Line received in one slot, with the consent of the callers. The helpline received close to 20 calls in four hours. One of the calls was from a youth, aged 18 or

LENDING AN EAR

Shabana takes calls at the One Stop Centre in Bhopal



There are times when there is so little we can do, except hear them out and provide emotional support. There is so much frustration at the helplessness.

*Dr Aneet Matwankar,
who works with Crisis Line*

19. He wanted Matwankar to counsel his sister, who was living with him and his mother after her divorce. “She lives life on her own terms and bullies us, disrespects my mother, refuses to help with household chores and, being an advocate, threatens to file a case of abuse against us every now and then,” he said. “She also threatens us saying she will kill herself if we ask her whereabouts. Please counsel her because she is not listening to us.” Matwankar told him that the helpline will not initiate a call in this case and asked him to get his sister to call back. This call went on for close to 40 minutes, as the young man kept trying to find another way out because he knew his sister would never agree to call. The call ended with the man grudgingly saying that he would try to persuade his sister. In such cases, how does one process the feelings of the victim? How does one discern right from wrong in that crucial moment?

“It is challenging,” agrees Matwankar. “I was also thinking on my feet as the conversation went along, but there are times when there is so little we can do, except hear them out and provide emotional support. There is so much frustration at the helplessness.” After two hours of listening to such conversations, this correspondent was drained. “Sometimes these calls become

Psychologist Madhuri Tembe of iCALL helpline says it receives almost 5,000 calls, 2,000 emails and 1,000 chat messages each month.

a trigger for me because in the process we tend to absorb a little bit of pain from the other side,” says Matwankar. “It can get very draining, both physically and mentally.”

But Prajakta Shingale (name changed), who works for a suicide helpline in Mumbai, says she has trained her “mind to switch on and switch off as and when required. But the problem arises when the caller is a minor because in that case you cannot leave the decision-making in their hands”. Shingale, 25, recently counselled a young girl from taking her life for failing to clear her police recruitment exams. “I thought the best way to make her understand was to give my example—how I came back from the brink after slashing my wrist for failing my Class 10 exams,” says Shingale, who eventually cleared her exams. “I told her that in hindsight it was a stupid thing to do. She needs to move on and look for options and explain to her family that there are more choices.”

Crisis helplines in India address issues such as sexual abuse, domestic violence, verbal abuse, physical torture, emotional and mental trauma, frustration resulting from long working hours and academic stress. People call from their homes before someone’s return, from washrooms at work or from discrete corners, so as not to be heard by

HERE TO HELP

Anshit Baxi of CEHAT with a colleague at Bhabha Hospital's DILASA centre in Mumbai



their tormentors. The callers typically represent some of the most vulnerable—women, children, adolescents, all largely expressing the desire to seek help in breaking free or bringing the perpetrator to justice or simply wanting to know if at all there is a way out. THE WEEK spent hours listening in on calls, both in person and remotely, at more than two such centres and observed how those who lend more than just an ear help provide a lasting solution or at least some succour to the caller on the other end.

Raksha Rathod, a young mother of three, still remembers her first call. It was from a 23-year-old woman who was standing on the rail tracks waiting for a train to run her over. The woman had called on the 181 helpline, expressing anguish over the abuse she had received from her husband. Rathod knew from experience—she, too, had been in an abusive



AMEY MANSABDAR

relationship—what to do next. She immediately rang up the police station and gave them the woman's location. The police reached the location in 10 minutes and saved her. Rathod then asked the woman to come down to the centre for counselling, just like she had.



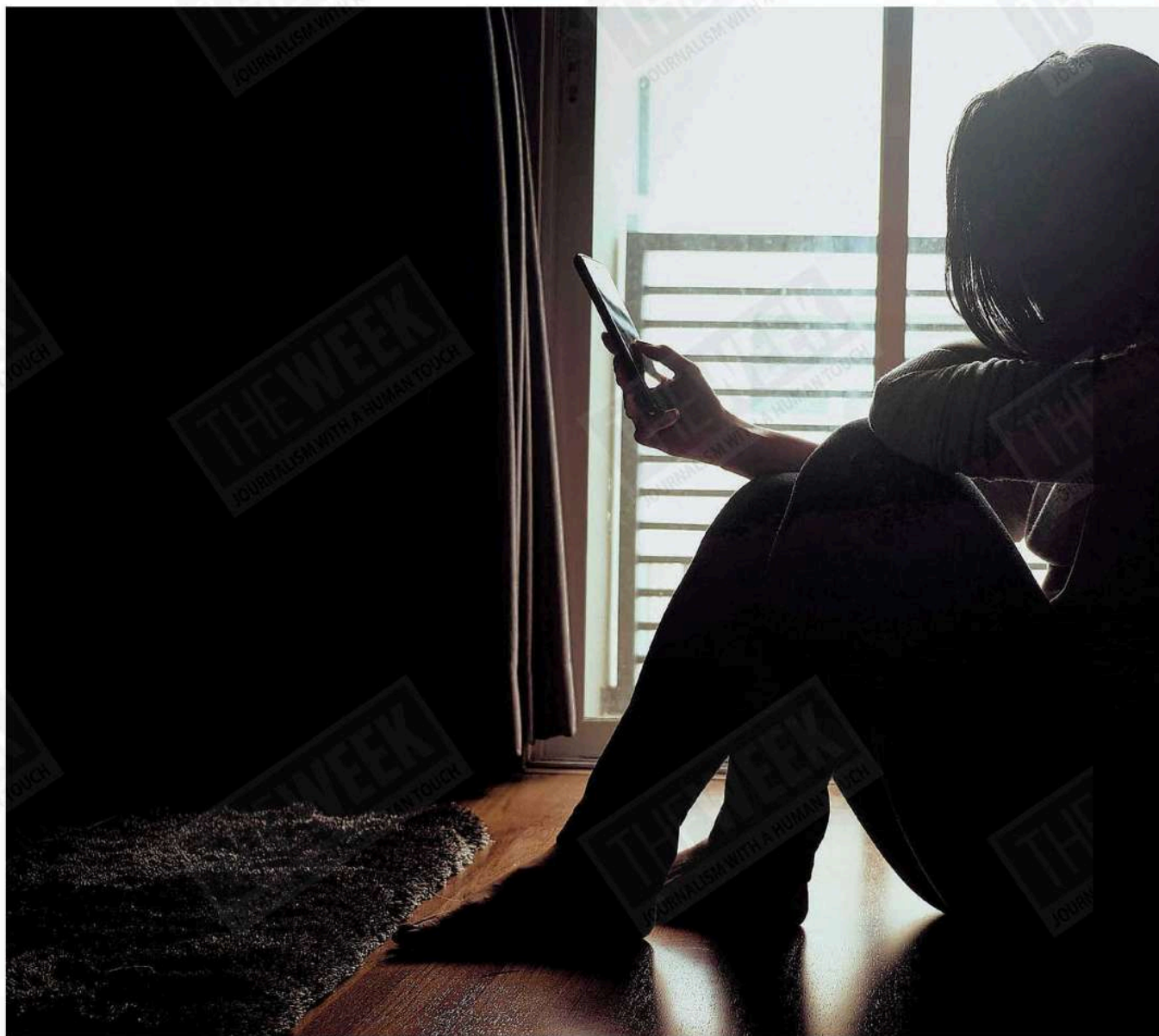
Researchers from NIMHANS in Bengaluru carried out a study to understand how 24-hour helplines may be useful for mothers with perinatal mental illness. A dedicated helpline was started in April 2015. As many as 113 mothers who were admitted to the mother-baby unit from June 2015 to December 2016 were part of the study. The helpline received 248 calls, of which 104 were made by mothers, 120 by spouses and the rest by relatives; 51 of the 113 mothers had made the call. The calls per-

tained to medication, sleep problems, planning pregnancies, symptom exacerbation, domestic violence and suicidal ideation. A majority of the callers found the helpline useful: 91 per cent said they got help, and 95 per cent said they would recommend it to others. However, among those who did not call, one woman died of suicide, as she did not have access to a phone and the family did not choose to call.

Another study was conducted from May 2019 to May 2020 to understand the impact and efficacy of a 24x7 helpline run by the department of psychiatry of a tertiary care teaching hospital for mental health issues. It was found that 52 per cent calls pertained to stress, followed by depression and interpersonal relationship conflicts. Students with stress issues (41 per cent) approached the helpline most, followed by adults with work-related stress issues (26 per cent).

Psychologist Madhuri Tembe, who started out as a counsellor with the iCALL helpline—set up inside the campus of the Tata Institute of Social Sciences in Mumbai—before becoming programme associate, says it receives almost 5,000 calls, 2,000 emails and 1,000 chat messages each month. “All our counsellors have at least a master's degree in applied psychology from a recognised university with counselling or clinical specialisation,” says Aparna Joshi, who heads iCALL. “We are not a volunteer-driven helpline. Many other helplines in India that are professionally run are not necessarily run by psychologists.” One Stop Centres are run by volunteers, she adds, who need not be qualified counsellors.

Supervisors check call quality on a daily basis, says Tembe. “iCALL offers counselling services for more than 22 concerns like emotional distress, career-related challenges, academic issues, relationship concerns, work-life challenges, mental health issues, suicidal thoughts, non-suicidal self in-



jury, violence and so on,” she explains. “When people call a helpline, they directly get connected to the counsellors. There is no control on what kind of issues the counsellor will address in their counselling session. Thus they need to be prepared to address all issues.” When callers use a helpline, counsellors are trained to spend enough time to build rapport with the clients so that they can share their distress openly. After this, the counsellor spends time assessing the nature and intensity of the client’s distress, and based on that, provides

psychosocial interventions, getting them connected with on-ground services and followup sessions.

Many a time though, responders, especially in government and public setups, learn on the job. Take, for instance, the 10-odd young women working as call responders at the police control room in Bhopal. THE WEEK met them in the presence of Deputy Superintendent of Police Shivkumar Gupta. A sentiment shared by this group of women, aged between 18 and 22 years, was that they all wanted to make something of themselves. One of them said that she had become “self-aware” after working at



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the police control room, “learnt the good from the bad and knows how to assert her rights”.

The day-to-day running of the helpline has been outsourced to BVG Group, a private company. “On an average, there are close to 100 calls in one shift and close to 240 responders,” says Gupta. This DIAL 100 helpline in Bhopal was the first such centre to be established in the country, in 2015. Once the calls are received and the problem acknowledged and addressed, they are forwarded to first response vehicles—a fleet of 100 cars, with police personnel in civilian clothes, located at pre-decided nodal points across the state. These then

go immediately to the location of the caller. Each call must last no more than three minutes; if it goes beyond, it is a red flag. How do these young women manage to be quick and thorough? “We are trained to respond to calls as SOS alarms,” says a woman, who is a commerce graduate. “There are no long conversations because most of these are people who want immediate help. So this is not about leisurely chats. Earlier, I used to wonder about each case, but now I am more impersonal. I have been trained to simply move from call to call, without taking anything to heart.”



When Ankita Agarwal, 47, called up the 181 helpline, she was at the end of her tether. “I have tried to tolerate it all these years but that day I was desperate,” she says. “There was just no help and the only way I could see was to call the helpline in the hope that they’d be able to provide a permanent solution to my problem.” For the first time, she vented out her pain from years of verbal abuse by her husband of close to 25 years. “I told them how he verbally abuses me in private, in public, at ceremonies, unmindful of where we are,” she says. “I feel trapped; he has barred me from taking my belongings with me. My 17-year-old son has gone into depression.” Unfortunately, there is no quick fix to issues like hers. She was told it could take years to find the permanent fix she was looking for. “I wanted some very real-time solution because I could no longer live under the same roof with him. But they could offer no help,” she laments. “They simply called me to the One Stop Centre and guided me with a legal route I can take. But these decisions take so long. What can I do in the meantime? I am back to square one.”

While Harpreet Kalra, supervisor and coordinator at AKS Foundation, says that the idea is to not offer advice or solutions to the caller but to just listen



and validate their feelings, Matwankar says that the usual protocol at Crisis Line is to talk to the caller, provide the location of the nearest One Stop Centre or schedule a counselling service or legal help, if they want, for later. “Mostly they just want to be heard and we cannot sort everything out in their life or give solutions,” she says. “We can only hold their hand for some time and make them feel empowered by offering them options for legal advice or counselling. The counsellor helps them process their feelings and makes them stand up for themselves.”

Agarwal agrees that the helpline did feel like a sponge that absorbed all her pent-up feelings. “You know there is someone who will listen to you all you

want; they won't hang up until you are done and that alone is good enough,” she says. Apart from comfort, helplines can also bring in clarity, especially when the caller has exhausted all options, like in the case of Himani (name changed). The 21-year-old called on the AKS helpline, almost pleading to “do something about the man who was blackmailing her on social media”. She was being threatened that her sensitive pictures would be uploaded online and made to go viral. She broke down on call, anxious that her family would come to know, and urged for “some such mechanism that can stop my ex from stalking and intimidating me”. Matwankar tried to probe further, but Himani was in a rush to know a way out of the mess. So Matwankar suggested she visit the nearby police station and file a complaint against her ex on charges of blackmailing and report the mat-

**“
These women (responders)
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*Soumya Saxena (left),
ActionAid*

ter to the cyber crime cell. Matwankar also told her that there was no need for her to involve her parents and she could do this without letting anyone know. Himani, apparently relieved, promised to call immediately. That call never came, and responders are not allowed to call back without permission.



That clarity though comes with experience. Anshit Baxi from CEHAT (Centre for Enquiry into Health and Allied Themes) discusses his vulnerability as an adviser for the past six months. “I remember how so many times I had to pass on calls to my supervisor, because women would just not talk on hearing my voice,” he recalls. “When I was new, it was all the more of a problem because I wasn’t well-versed myself.” He recounts the instance of a 35-year-old married woman abandoned by her family on the road late at night. “I was completely lost on what advice to give her because there was no police station close by and she was so emotionally charged that I didn’t know how to handle that call. I will never forget that. I wonder how she is doing now,” he says, his voice low. Another such instance was when a woman was unable to convince the police to file a missing complaint for her husband. “Maybe I could have pressured the police into taking action, even if just to settle her nerves,” says Baxi in hindsight. It is in such times that supervisors come into the picture.

“When my counsellors, who come from diverse backgrounds and ages, ask me what is the point of just listening to the callers and not being able to provide any real solution, I say, ‘you can’t do much from so far away. The only solace is that you are able to hear them out when they have no one else to talk to.’ Initially it troubles you, but then you start taking care of yourself,” says Kalra. “I tell my volunteers to reach out when a call is difficult and process their hurt to supervisors. This is why we do these four-hour shifts because nobody can be on these calls for longer. It will drain you out.”

Soumya Saxena from ActionAid India says two people who work in round-the-clock shifts on their call desk are called multipurpose workers. But she rues the fact that salaries are not up to the mark and the call responders do not get adequate leaves. “So we work around the system so that everyone gets a leave and a breather in between work,” she says. “These women might not have great qualifications, but that is not even necessary. We train them for empathy, knowledge and computer skills.”

What they are not, and cannot be, trained for is their commitment to their work. It, perhaps, comes naturally. “Whether I am attending a wedding or a funeral, the handset is always with me,” says Chitra Joshi from DILASA, who works with victims of domestic violence. “Everyone around me knows that I work for a crisis helpline, and whenever there is a distress call, I must answer it. It could go on for hours or get over in seconds, but I cannot control that.” Joshi, who is in her 40s, recalls getting a call during a family function. “I left everything and attended it,” she says. “But I am not complaining. There is a thrill in this. When we listen to other people’s troubles and anguish, our own seem to be trivial in comparison.”



GUEST COLUMN

Navigating around the limitations of a helpline

By Sangeeta Rege

In the early days, because nobody had ever directly responded to rape survivors, the understanding was that if a hospital receives a rape survivor, a CEHAT (Mumbai) team member will go to that hospital. It could be any day of the week, any time of the day. That is what we did for the first 20-odd rape survivors, so as to really get a pulse and a sense of how the health system responds to it and in what circumstances is a survivor brought to the hospital. So I would say that these elements were crucial for us to design the helpline intervention at that point in time.

Once some of us had worked in this area, we were quite seasoned with dealing with several issues, including legal and medical. For example, a police personnel has brought in a 13-year-old, who was found on the road, to the hospital, and the doctor on night duty calls us and asks, "Do I do a rape examination?" He has no clue what to do. So the adviser gets the doctor to communicate with the child and ask further ques-



tions: Is the child a pavement dweller? Why is he or she alone? Is the child lost? Based on the conversation, the doctor has to gauge whether there is a possibility of rape and therefore a need for an examination. Now, it may seem like common sense, but that is not how the health systems work. There is a very mechanical manner in which they operate. Because we are trained and have the knowledge and experience, we are able to tell them what to do. And most important, the ones answering the calls must be very well-read. One must know the circumstances in which people are brought in, know the laws and the procedures thoroughly, and also know what is the role of a health care provider vis-a-vis the criminal law.

But one thing was sure that vis-a-vis doctors, we would never give solutions or recommendations because doctors are ultimately



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accountable to the court. So the doctor has to be convinced of whatever he or she is going to do as his or her next step. So the content of the communication from the helpline would be to enable them to take some kind of a decision.

It was during Covid-19 that we realised that women facing violence were not able to visit DILASA centres inside hospitals because it was also a site of infection. And that is when we had to immediately change our methodology. So I would say it was really 2020 that kind of pushed us to conduct a training of DILASA counsellors as well as the CEHAT team. Because earlier they were used to doing in-person counselling for one hour, and following up on the phone to see what was happening. But as a first contact to provide telephonic counselling is quite different. I would say that is when we said that we cannot shy away from having

a helpline for survivors, though initially it was mostly for health care providers.

And that meant that we had to be completely equipped. The team had to take turns. The kind of questions asked to us initially were very challenging. Young girls said that they were suicidal, that they were unable to get out of their homes. And when you are actually in the midst of intervention, they will just cut the phone call. But then there is no way to get them back on the call. And that does leave counsellors a bit high and dry. So that is a very uneasy feeling. And then we had to look up a lot of other evidence to understand the scope of a helpline. A helpline is a temporary relief. It is not a permanent solution.

And one expects that people will call you in crisis and kind of follow up with an in-person meeting at some point. But then you come to know that these young callers are calling specifically because it is a helpline, so there is no disclosure of age. Issues like POCSO loom large—what are you going to do as far as mandatory reporting is concerned? If a 17-year-old says, 'I have had consensual sex and I am pregnant, what do I do?' She cannot disclose it to her parents. So our entire intervention is around the fact that unfortunately a medical termination of pregnancy cannot be accessed by you on your own in this country. So you will have to confide in at least one adult that you trust, otherwise there is no way you will even get pills. Those are very, very difficult cases. And on a helpline typically you do not start following up. That is not the procedure. So you end your call by saying, 'would you like me to call you back?' And some of them will say they don't want to be identified. It comes with its own set of limitations.

As told to Pooja Biraia

Rege is former director of CEHAT, which runs a 24x7 helpline for women and girls facing violence.

UN-DOCTORED



Where
specialists
speak your
language



Puja Awasthi

Doctor's doctors

Internists deal with prevention, diagnosis and treatment of all kinds of diseases, while also coordinating with doctors across specialties

BY PUJA AWASTHI

An internal medicine specialist, or an internist, is an expert in adult medicine equipped to handle complicated, multisystem diseases, often involving multiple organ systems at once. They can act as primary care physicians, coordinating care across specialties like cardiology, endocrinology or infectious diseases, and addressing the intricate interactions between conditions. For that reason, they are often referred to as 'doctor's doctors'.

Dr Rakesh Gupta holds an MD in internal medicine from the Medical University of Rohtak. He is the chairman of Sarvodaya Healthcare, Faridabad. He is a life member and fellow of the Indian Academy of Clinical Medicine, and a life member of the Research Society for the Study of Diabetes in India. He enjoys walking, hiking and listening to old Hindi songs.

Understanding internal medicine

A specialty that deals with prevention, diagnosis and treatment of all kinds of diseases. Internists coordinate with other specialists when specialised skills are necessary with a directive diagnosis in mind. What makes internal medicine unique is its scope and depth in adult medicine.

Different from primary care physicians?

Primary care physicians diagnose and manage acute and common symptoms, and seasonal spikes. In addition, they take care of needs of family members of different ages, and are thus also called family physicians. While internists can handle primary care issues, they are also trained to handle more complicated issues that require intense management of body functions and rigorous follow-up. They are more equipped and skilled in handling

severe morbidity and high-risk cases. Their knowledge in all specialties is constantly updated as they keep treating all kinds of problems.

Core competencies of an internist

Being very observant, keeping eyes on any signs of an abnormal nature from the moment one meets the patient. Once a thorough inspection is made with the eyes, an internist's ears should do more than his tongue. He should ask precise questions pertaining to diagnosis and listen to everything the patient has to say. Based on a detailed and thorough history, an internist approaches a patient for careful examina-





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tion. Our teachers highlighted the importance of knowledge: the eyes see what the mind knows; hence, only a well-read physician can identify clinical signs on the body. Lastly, a practised, analytical mind can comprehend all points from history, examination and evidence from diagnostics to make the right diagnosis.

Self confidence

An internist needs to be self-confident as many times, reports, attendants and even his own staff may not stand by his side. Then, gut feeling steps in.

How do I know if I need a specialist or an internist?

The recent emergence of super-

specialty in India has brought about a change in the mindset of the privileged urban population. They decide to see a specialist in case they feel symptoms in specific areas of the body. This they do to expect a shorter course of investigation and treatment, thus saving both time and money. However, it is always advisable to initially go to a broader specialist.

A specialist should only be consulted when you have a specific diagnosis and are referred by a physician.

In rural areas, with fewer doctors, people still consider physicians as their primary doctors and are still not well versed with the role of a specialist.

Treating a patient with a complex medical history

A detailed history helps the doctor understand the subliminal existence of chronic disease—silent triggers like infection, trauma or stress and the development of complications because of imbalance in body functions due to chronic malfunctioning. In such a situation, an internist usually adopts a holistic approach. He begins by understanding the individual's and the family's medical history, patient's routine/lifestyle, understanding the current condition the person is suffering from and then looking at the best possible treatment option. The goal is to develop and adopt a plan that helps address the condi-

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specialists
speak your
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tion in a systematic manner and understanding whether there is any interaction/relation between other diseases the patient might be suffering from.

Mental health issues that come with long-drawn illnesses

Recently, a lot of mental diseases have become more prominent due to poor lifestyle choices like improper diet, sleep, exercise and consistent stress at work, worsened by a lack of social circle, poor relations in family and self-doubt due to social media.

Thus, a lot of internists accept their role as a therapist for these populations.

The role of preventive care

Preventive care is an important part of the practice of internal medicine. This includes disease prevention, especially for sensitive populations like senior citizens, people suffering from chronic lung, heart and kidney diseases, blood disorders and those on immune-suppressors. Early detection of communicable, lifestyle and genetic disorders is also a part of the internist's job to help in controlling the disease, curbing development of complications and reducing disabilities. Preventive care enhances quality of life, reduces health care costs and ensures sustainable health care.

Preventive strategies for Indian population

These range from daily to annual activities. As described by Euro-



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Dr Rakesh Gupta,
chairman, Sarvodaya
Healthcare



pean research, Indians belong to the thin-fat kind of body type. This means we have extremities and visceral deposition of fat in our body, leading to clogging of major organ vessels before the fat is visible on the surface.

A diet consisting of a balance of proteins, carbs and fat and proportionate distribution of minerals, vitamins and roughage is important.

Healthy output of the stored energy in form of regular play, exercise or even mild walk suffices. Stress is constant, so you need to learn how to manage it with practice and determination.

Balancing recommendations with a patient's preferences

The internist adopts a patient-centric approach wherein the focus is on understanding the patients' concern, their physical and mental requirements along with their cultural, social and economic contexts. For instance, many individuals are apprehensive about eating food items that clash with their cultural preferences. Consequently, the internists work towards creating a plan that would respect the patient's preferences while also address and fulfil the bodily requirements.

Diagnostic tests or imaging techniques used most regularly

- ★ Blood tests
- ★ Urine tests
- ★ Electrocardiogram
- ★ Pulmonary function tests
- ★ X-rays
- ★ Ultrasound
- ★ CT scan
- ★ Magnetic resonance imaging

How technology has changed the field

Patient care, diagnostics and treatment processes are witnessing significant enhancement. For instance, tele-health has enabled better and accessible consultations even in remote areas. Electronic health records have enabled and improved documentation and streamlining of patient data, and the integration of AI assists in diagnostics and better analytical outcomes. Further, various devices today provide real-time medical updates and personalised data.





A helping hand

Over the past year, Imaginarium has placed 3D-printed parts in space, in human bodies, in oil fields in the Middle East, and as drones on the Indian border

By Nirmal Jovial

On October 30, 2022, Anamta Ahmed, a 13-year-old Mumbai girl, travelled with her family to her relatives' home in Aligarh for Diwali. Ahmed was always fascinated by terraces, not being able to enjoy them much in Mumbai. "That day, I was enjoying the view from the terrace with my cousins, feeling happy and care-free. While I was standing near the terrace railing, something unexpected happened," she says.

Ahmed accidentally touched an 11KV wire passing by the terrace, resulting in severe electric shock. "Suddenly, I lost my vision, my body started shaking, and I heard a strange sound resonating through me. It was terrifying—I fainted and was rushed to a local hospital in Aligarh," she recalls. Ahmed's right hand developed gangrene; her left arm was also severely injured with poor function.

At the hospital, Ahmed heard the shocking news—her right hand would need to be ampu-

tated. Seeking a second opinion, her family took her to a top private hospital in Delhi. But the doctors there confirmed the diagnosis. Left with no option, she was airlifted to Mumbai and admitted at the National Burn Centre. And there she underwent amputation.

Post-amputation, Ahmed found the strength to rebuild her life. She remained optimistic, resuming school without delay and tackling daily challenges by herself. Determined, she learned to write with her left hand and scored 92 percent in her Class 10 exams. Meanwhile, her family explored options, eventually zeroing in on hand transplant. And, in October 2024, she became the youngest recipient in Asia to successfully undergo a shoulder-level limb transplant at Gleneagles Hospital in Parel, Mumbai.

Orthotic devices play a crucial role in the rehabilitation and functional restoration process after a hand transplant. They provide stability and protection during



A NEW BEGINNING

Anamta Ahmed underwent amputation after accidentally touching an 11KV wire and getting a severe shock

healing, and prevent contractures. They also ensure proper alignment and support controlled rehabilitation movements. And, for Ahmed's fast and comfortable recovery process, a startup, Imaginarium, offered to design a custom-made, biocompatible 3D-printed orthotic device.

"After the surgery, I initially wore a pouch," says Ahmed. "But it made my hand sweaty, as it was enclosed. However, Imaginarium offered a brace that is open, with holes for ventilation, with the



material being very comfortable for my skin.”

While speaking to THE WEEK, Aashay Mehta, managing director of Imaginarium, described his firm as an advanced manufacturing company that, in the past year, has placed 3D-printed parts in space, in human bodies, in oil fields in the Middle East, and as drones on the Indian border.

Talking about the role of 3D printing in health care, Mehta says that mass customisation is the core strength of 3D printing. “And what requires more customisation than the human body? My right and left hands aren’t mirror images of each other,” he says. According to the entrepreneur, health care today is being revolutionised by customised devices, whether it’s a surgical guide, implant, orthotic, or prosthetic. “Anything tailored to my anatomy is far superior to anything off the shelf,” he says. “From a surgical guide that speeds up procedures to an implant that fits perfectly or a prosthetic that feels seamless—customisation makes all the difference.”

Mehta explains that Ahmed’s case was unique due to the hand transplant and the lack of sensation in her hand. “Traditional methods posed the risk of injury, especially during casting,” he says. “The use of fibreglass could damage her sensitive skin.”

The biggest hurdle, however, was time. “Post-transplant, she urgently required a device, and waiting days or weeks was not an option,” he says. “By leveraging 3D printing, we were able to scan her hand and create a custom



solution designed for her specific anatomy. Our ability to work efficiently and at scale enabled us to deliver the device swiftly.”

Mehta says that his firm uses Class VI biocompatible materials which is supported by state-of-the-art facilities, software, and processes. Extensive testing was done on these materials before they were considered for use on the human body, he claims.

Imaginarium’s custom-made products are not substantially more expensive than conventionally available alternatives, says Mehta. “And, comparing like with like—a custom device made through traditional methods versus one produced via 3D printing—the latter is already cost-effective. Traditional manufacturing of custom devices can take days or weeks, while 3D printing achieves this within hours or a day, offering a strong value proposition in terms of time saved,” he says. “Additionally, traditional methods rely heavily on human skill and craftsmanship, making outcomes variable and prone to error. With 3D printing, this art is transformed into science, ensur-

Traditional methods rely heavily on human skill and craftsmanship, making outcomes variable and prone to error. With 3D printing, this art is transformed into science, ensuring consistency and precision.

*Aashay Mehta,
managing director of
Imaginarium*



ing consistency and precision.”

What Ahmed admires the most about the brace is how stylish it looks. “The brace is designed to keep my hand in an ideal position while offering customisation options to make it funky and Gen Z-friendly,” she says. “It is stylish, pairs well with outfits, and, most important, is incredibly comfortable.”

Mehta says that Imaginarium took less than a day to design Ahmed’s brace. His firm is also integrating AI and machine learning tools to automate the designing and manufacturing process to reduce the time required for creating custom-made health care products. “As for health care advancements, 3D printing offers endless possibilities, and we’re actively exploring diverse applications to maximise its potential,” he says.





Value every breath

VO_2 max is the best way to measure fitness and predict life expectancy

By Tammo Blomberg

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There was scepticism surrounding the Tour de France 2023: could Danish cyclist Jonas Vingegaard really be that fast? So much better than the others? If so, how? And because there was no other explanation, some cycling fans focused on one number for a few days to explain his performance: Vingegaard's VO_2 max value.

The VO_2 max value is one of the most important performance markers in endurance sports. It indicates the maximum amount of oxygen a human body can absorb and utilise under stress. And this has a decisive influence on how much energy an athlete still has available when biking up a steep hill. Or when running the last lap of a race.

In the case of Vingegaard, then 26, this value was supposed to be 97. In other words, Vingegaard's body was supposedly able to process 97 millilitres of oxygen per kilogram of body weight per minute. For men around 30 who are not involved in competitive sports, values above 45 are considered good. Vingegaard's 97 was slightly higher than the highest value ever measured. The speculation surrounding it showed how interesting the figure has become for many.

Born with your values

For a long time, oxygen metabolism was only an issue in competitive sports, but, for some time now, it has also been making a career outside of this. Many fitness watches, so-called wearables, display it to their wearers,

and the VO_2 max value has also been of interest in medicine for some time. This is because it is not only an indicator of top performance in the Tour de France or the Olympics, but also of life expectancy.

But what exactly does this value mean? And can it be improved?

“Unfortunately, you are born with your values,” says Billy Sperlich. He is a professor of training science at the Würzburg University, a former triathlete and a recognised endurance expert. Sperlich says that three things are relevant for the VO_2 max level: how well the body can absorb oxygen, that is how well the lungs work; how much oxygen the body can then send to the muscles, that is how powerful the heart is and how well the blood transports the oxygen; and, finally, how much of it can be utilised there by the mitochondria, the cell's power plants, and converted into energy. Although the term “maximum oxygen uptake” is also used instead of VO_2 max, the value integrates more: uptake, transport and utilisation.

Lung intake is rarely a limiting factor, says Sperlich. So most of us can get more than enough oxygen from the air. “It may sometimes feel like our lungs are on fire, but they still provide us with an excellent supply,” he says.

Transport and processing are more likely to cause difficulties. This is why VO_2 max is also dependent on certain genetic conditions: the number of blood cells, for example, or the number of capillaries that deliver oxygen to the cells. If you are genetically

well positioned, you are potentially also a talented endurance athlete. And vice versa: if you do not have good prerequisites, you cannot train your way to the top. “Someone with an oxygen intake of 40 millilitres is highly unlikely to reach the 80s,” says Sperlich.

But, just as everyone can improve their fitness, everyone can also increase their own oxygen metabolism—regardless of their basic values. And this is not only interesting for ambitious amateur athletes, but for anyone who wants to live healthier for longer.

“The VO_2 max value is the

SHUTTERSTOCK





most important independent predictor of remaining life expectancy,” says Barbara Prüller-Strasser, a sports and health scientist at the Sigmund Freud Private University in Vienna who specialises in the influence of sport on rehabilitation and prevention.

Prüller-Strasser says that no other single value or risk factor can be used to make statements about mortality risk with such high probability. And this applies to both healthy and chronically ill people. “You cannot extend the genetically determined lifespan by having a particularly good maximum oxygen up-

take,” she says. But you can push this range to the limit if you increase your level of fitness.

Live five years longer

Essentially, the higher the VO_2 max value, the lower the risk of death. This is shown particularly impressively by long-term studies such as one from Copenhagen, which measured the maximum oxygen uptake of more than 5,000 men with an average age of just under 49 and examined how the value correlated with the later age at death. The result, 46 years after the original VO_2 max measurement: the test subjects with exception-

ally high VO_2 max values lived on average almost five years longer than those with below-average values. And even those with a VO_2 max in the lower normal range lived around two years longer than those who were clearly below average.

The results of other studies that investigated a correlation between VO_2 max values and mortality in men and women also revealed that there is a connection between maximum oxygen metabolism and life expectancy.

The physiological reasons for this vary, but can be easily broken down: particularly good

A MEASURE THAT MATTERS

VO₂ max value indicates the maximum amount of oxygen the body can absorb and utilise under stress.

Three things are relevant for the VO₂ max level: how well the lungs work; how well the heart works and how much of the oxygen mitochondria, the cell's power plants, can convert into energy

Typical VO₂ max for people born male (ml/kg/min)

AGE	20-29	30-39	40-49	50-59	60-69	70-79
SUPERIOR	55.4	54	52.5	48.9	45.7	42.1
EXCELLENT	51.1	48.3	46.4	43.4	39.5	36.7
GOOD	45.4	44	42.4	39.2	35.5	32.3
FAIR	41.7	40.5	38.5	35.6	32.3	29.4
POOR	<41.7	<40.5	<38.5	<35.6	<32.3	<29.4

Typical VO₂ max for people born female (ml/kg/min)

AGE	20-29	30-39	40-49	50-59	60-69	70-79
SUPERIOR	49.6	47.4	45.3	41.1	37.8	36.7
EXCELLENT	43.9	42.4	39.7	36.7	33	30.9
GOOD	39.5	37.8	36.3	33	30	28.1
FAIR	36.1	34.4	33	30.1	27.5	25.9
POOR	<36.1	<34.4	<33	<30.1	<27.5	<25.9

NOTE: ALL FIGURES ARE AVERAGES FOR REFERENCE

DID YOU KNOW?

Thoroughbred horses approach VO₂ max values of 200ml/kg/min after high-intensity training. When humming birds flap their wings 80 times a minute, VO₂ max is greater than 650ml/kg/min.

fitness goes hand-in-hand with a particularly well-functioning cardiovascular system and a good metabolism. And if your cardiovascular system and metabolism function particularly well, you have a lower risk of many diseases. Precisely because the VO_2 max value is influenced by different areas of the system—absorption, transport, processing—it is a good indicator of the risk of certain diseases.

“The lower the value, the greater the likelihood that I will develop metabolic diseases, cardiovascular diseases or even some types of cancer,” says Sperlich. And conversely, the rule of thumb is: the higher the fitness level, the better for your health.

Boosting techniques

“Intensive interval training is a particularly effective method,” Sperlich says. In other words: run or cycle for a few minutes close to your maximum performance, then take a short break. If you do this often, you can increase your oxygen intake in a short time, by around half a per cent per week.

Yet Sperlich would necessarily recommend that to everyone. After all, those who are not yet trained to a high level can also increase their fitness—including their maximum oxygen uptake—through plenty of exercise and low-intensity endurance training, that is endurance running. Although your VO_2 max does not increase as quickly—or as much as a result—the body becomes more efficient: it needs less oxygen to run at the same pace.

Over time, you can increase

your pace to increase your VO_2 max even more. From a certain level, an increase becomes more difficult. “To increase the value by more than 10 or 20 per cent, you have to put in a lot of effort,” Sperlich says.

The effects of ageing

The VO_2 max value decreases with age, but from a health perspective, a certain level of basic fitness is the most important anyway. Prüller-Strasser says: “The difference between VO_2 max values of 35 and 50 is much more relevant than the difference between 50 and 65.” And even higher values have hardly any effect on health, says

Prüller-Strasser. Even 65 is already extremely high, a value that is usually only achieved by very well-trained endurance athletes. In professional football, for example, many are likely to be below that.

At an older age, 35 to 45 millilitres can also be an exceptionally good value. That figure can be slightly lower for women. For healthy middle-aged people, such a value is average. This is because from around the age of 30, the VO_2 max value decreases by around 10 per cent every 10 years.

Yet this shrinking effect can also be slowed through training, Prüller-Strasser says. If you are particularly active, you can still be in the same shape as a 50-year-old at the age of 70. And, she adds, “It is never too late.” Even if people who are already fit before they get old naturally have an advantage, fitness can still be trained up to a certain level in old age. In general, an increase of just 3 to 4 millilitres can be expected to

reduce the risk of mortality by 10 to 25 per cent.

Testing VO_2 max values

One question remains: determining the exact value still involves money and effort. Smartwatches such as those from Apple or Garmin do display it, but this information is only an estimate based on the heart rate. There can be inaccuracies, Sperlich says, especially in the case of fairly unfit and particularly fit people.

“However, in a range between 40 and 55, where the manufacturers have a lot of data, the estimates are relatively good,” Sperlich says.

If you want to find out your exact value, you should have it tested on a treadmill or ergometer in the laboratory. This can be useful for really ambitious endurance athletes. But if you do not need to be completely precise, you can also try out performance tests that can be used to determine your approximate VO_2 max value, says Sperlich: the shuttle run test, for example, which provides comparatively good information, or the Harvard step test.

As far as we know, the record for the highest VO_2 max value ever measured is still held by the Norwegian Oskar Svendsen, a former racing cyclist and junior world time trial champion. He achieved a measurement of 96.7.

Vingegaard's score, on the other hand, was not actually 97, but probably in the 80s; this was reported a few days after the initial excitement in 2023. Still, it was enough to win the Tour de France.





By Dr S.N. Omkar

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METHOD:

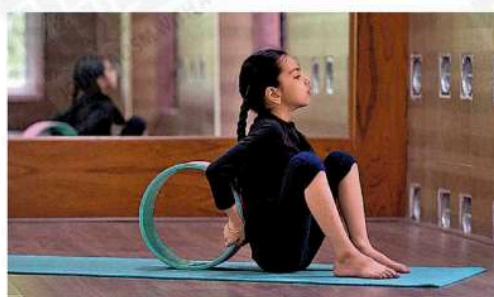
- ◉ Position a yoga wheel with a diameter of around 40cm and a width of about 15cm.
- ◉ Sit upright on a mat with your legs folded—heels closer to the hips.
- ◉ Place the yoga wheel directly behind your lower back.
- ◉ Grasp the wheel with both hands and bring it closer to your lower back.
- ◉ Bend the knees and press your feet firmly on the mat.
- ◉ Holding the wheel, gently arch backwards so that your back rests on the rim.
- ◉ Press through your feet, raise your hips, and roll backwards until your entire lower back is supported by the wheel.
- ◉ With your hands still on the wheel, roll your shoulders back to open the chest against the rim.
- ◉ Allow the neck, chest, and lower back to stretch along the wheel's curvature.
- ◉ Further, gently roll down till you rest the top of the head on the mat, enabling the neck to extend.
- ◉ Stretch both arms upwards on the mat.
- ◉ Hold this position for around two minutes, breathing slowly and steadily.
- ◉ Gradually roll forward and return to a seated position.
- ◉ Repeat the posture and relax.

RESTORE CALM AND BALANCE

Stretching the thoracic, abdominal, and pelvic cavities is crucial for maintaining overall health and flexibility. These cavities house vital organs, and their mobility directly impacts breathing, digestion and circulation.

Using a yoga wheel to gently bend the trunk backwards promotes better posture, improves spinal flexibility, and fosters a greater sense of openness in the body.

This practice not only revitalises the physical structure but also boosts calm and balance, making it a transformative addition to your yoga routine.



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