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**Integrating Spirituality
in State of Art Modern
Heart Care**

by Dr. Satish Kr. Gupta

**Personalised vaccination and
its relevance to COVID-19
vaccines**

by Dr. Shruthi K. Venugopala

**Here is why focus on
Body-Mind, and not Body
Mass, is the key!**

by Ram Krishna Sinha

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PERSONA

Yoga not only improves physical fitness, but it is something much more, it is means to achieve holistic health

Nivedita Joshi is a multi-dimensional person with significant accomplishment in the field of Yoga. She is imparting her knowledge about Iyengar yoga through her institute 'Yogakshema'. Her personal ordeal with slipped disc, cervical spondylosis, an early-stage scoliosis has made her bedridden and invalid for eight long years. She even lost her ability to move her hands and legs. An inspirational road to recovery started when she joined as a patient under the tutelage of the legendary B.K.S. Iyengar, pioneer in the field of Iyengar yoga. Her twenty-two years of training and hard work has motivated her to help others through her knowledge. She has penned down her knowledge in a book on Yoga for the visually impaired in Braille. This book was released internationally during the first International Day of Yoga celebrations at the UNESCO Headquarters in Paris.

Surgeon R. Admiral V K Singh, Editor in Chief of InnoHEALTH took her interview to get a glimpse of her inspirational journey from yoga to Yogakshema. This interview is important to honour her to let people know about her achievements on International Yoga Day.

Q. What are different types of Yoga and how are these different from each other?

A. All types of yoga are Patanjali yoga with 8 limbs: Yama, Niyama, Asana, Pranayama, Pratyahara, dharana, dhyana & samadhi. Different yogis had their own style and contribution in the field of yoga & that developed into different schools of thoughts in music or dance.

Q. Is meditation part of yoga?

A. Dhyana is part of yoga or Meditation, its 7th limb of Yoga. Practice of asana prepares your mind to focus & aims towards dhyana.



Q. You could cure yourself with help of your guru Iyengar from cervical spondylosis and slip disc which had put you in a wheelchair for 12 long years in pain and agony. How to emulate your dedication and motivation and how Iyengar Yoga is different.

A. When I met Dr. B.K.S Iyengar for the first time without me saying or explaining anything to him he diagnosed my issue just by looking at my skin at the base of the neck & I was amazed to see the depth of his knowledge and surrendered at his feet that very moment. When he started teaching me, as a student of science I realised, his work and knowledge is very scientific & par excellent. I was already fed up with modern Allopathic medicines & their respective side effects. The

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Improvement with this practice of traditional knowledge reaffirmed my belief in Indian medicine system.

Few qualities that make Iyengar Yoga different from other school of Yoga are:

1. Alignment
2. Precision
3. Sequencing of asanas
4. Timing of asanas
5. Interpretation of asana without diluting its classical effects
6. Innovations of props and use of them for people with different health conditions. For e.g. A person like me who was unable to move her body was not only doing classical asana & holding the pose also but was also gradually recovering

I was motivated to practice every day as after so many years, I was able to move my body & limbs & there was great hope to walk again normally. I started to have a life without pain. He was an excellent Guru with immediate improvisations his forte, whenever he saw my limitations, he would invent then & there new improvisation of asana & would give me the confidence to do it and make me feel better & better day by day. He worked very hard on me as I was an interesting and challenging case for him & I reciprocated by practicing equally hard & making notes of his scientific way of teaching the way he wanted & the hand of Guru & shishya became stronger & stronger.

Q. You are doer and show the way by your personal example and gift to your learner. What are diseases you have attended in which yoga has been helpful?

A. Patanjali Yoga sutra says "Iyengar duktam anagamam" means practicing of yoga will postpone the setting up of the disease or if it does set in, one would sail through easily in the recovery, so practice of yoga is beneficial for anyone & everyone. There were many diseases such as back pain, neck pain, knee pain, heart ailments, asthma, hip joint pain, stress, IRR etc. which were treated through yoga.

Q. How has yoga been beneficial for stress management of young professionals, children, pregnant women and senior citizens?

A. Yoga not only improves physical fitness, but it is something much more, it is beyond physical health. The human persona is not only a body but is also mind, intellect & soul. Yoga attempts to harmonise all of them. As a result, one possesses a healthy body, a sharp intellect & an unflickering or focused mind so practice of yoga is the best way in such a fast moving world to work on our stress.

Kids have immense energy yoga channelising their energy and bringing an excellent focused mind which allows them to excel in their endeavour.

It is said "As you sow, so you reap". In the time of pregnancy practice of yoga not only gives excellent health to the mother but also gives excellent health to the child.

Pregnancy practice of yoga keeps hormonal level normal, it doesn't allow B.P. to go up & sugar levels are maintained normal. It gives peace of mind and as a result the child is very healthy.

For senior citizens when they are at home practice of yoga not only brings good health of body and mind but makes them independent. In the Iyengar system practice of asana and pranayama is very easy as it allows the use of many props and improvisation of asana which not only give them confidence but also gives the satisfactions of being able to use the body and mind in the correct direction.

Q. Can you give details of book you have authored and what is its learning?

A. I also teach visually impaired people yoga & they enjoy studying it. I am the first person in the world who has written a yoga book "Yogikaparni in Braille so that visually impaired people can also get the benefit of this.

Q. Today's interaction is important because of International Yoga day on June 21. What message would you like to give to people to commemorate it?

A. Yoga is the best gift India has given to the world. Yoga teaches us the fundamental unity between human beings & humankind between us & the environment. The essence is to experience that "All in one". Keep practicing yoga!

Interviewed by Surgeon R. Admiral V K Singh, Editor in Chief of InnoHEALTH

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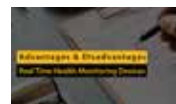
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Feedback and Testimonials

A very innovative way of making people aware of the advances and facts about medicine. Even a common Man can understand the concepts in magazine easily. Keep going. Well organized contents, attractive pictures and precise information about a lots of important topics.

Dr. Shubha H. V
Assistant Professor at Saphthagiri Medical College
India

Dear Team, I am very much thankful and grateful that I got my article published in your esteemed E-health magazine. Special thanks to the chief editor and the team who is behind "InnoHEALTH". Such a great platform where everyone can showcase and express their thoughts in the healthcare through your magazine.

Tamanna Sachdeva
Project officer at Dakshayani and Amaravati Health and Education
India

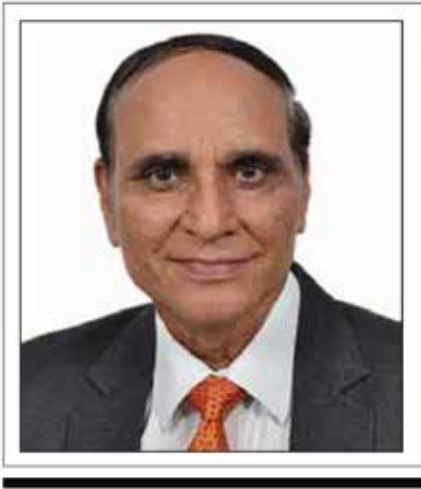
Very well laid out magazine and are article are so current and reader friendly.

Ramesh Kumar Nanjundaiya
Global Ambassador - INDIA at Silicon Valley Forum (SVF)
USA

I would like to express my gratitude to the chief editor and editorial team of "InnoHealth" for the excellent coverage in the magazine published. The positive exposure you gave me on the International Nursing day - praising, thanking and protecting nurses amid COVID-19 challenges segment provided the community with a nice introduction to our goals and services.

Neha Lal
Sr General Manager - OPs & HR at GCS Medical College
Hospital & Research Centre
India

EXECUTIVE OPINION



Dr. V K Singh

Editor-in-Chief & MD,
InnovatioCuris

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Pitfalls of healthcare and way forward

Pandemic has taught us many new ways of living and has changed our behaviour and perception. We are compelled to do online shopping, study, examinations, conferences, and conduct all kinds of business meetings. It has enforced our faith in online procurement. There is reduction of costs due to travel, meeting and hiring office spaces. We have accepted work from home as the norm, this adaptation has indeed reduced the production, employment, sales/purchases of goods.

These pitfalls have created great human sufferings. Two COVID-19 waves have taken a big toll on mankind, creating death of many people. As per one report, there are about 4 million deaths i.e., 10 times more than the official count. It has tested all our capabilities to deal with pandemic and premonished us a lesson for the future where there is a need to gear up our resources. We as a country, citizens, polity, and executives have to be more responsive to deal with such eventualities. We cannot leave everything as force majeure. Do we have to depend on the verdict of courts to teach us the virtue and the vice?

We need to overhaul the healthcare system in a time bound manner. There must be a special place for have nots and not politically identified backwards. The present government is trying to push many initiatives, but time bound monitoring is required. Executives must be made accountable. Complacency and corruption should have a zero tolerance. We should have value based and not appeasement-based politics. The opposition should think of citizens and not themselves before opposing any reformative ideas. In case we need to get quick results, systemic reforms are needed at fast pace. Healthcare has been neglected for many years by successive governments. There is a need to take quick and bold steps.

As developed economies enter a period of slower growth, emerging economies such as India have become prime examples as how more can be achieved with less. The new concepts, methods and tool for low-cost, high-volume solutions will improvise the access to care and to be adopted. There is a need to organise resources and flows so that given target including cost, clinical quality and patients experiences can be achieved with available resources, Non traditional ecosystem of innovation outside pure technology, such as social persuasion, rural healthcare delivery, exploitation of economies of scale, prevention-oriented primary care, medical education, and hospital design is needed. You need to develop the understanding to implement new ideas and new models of delivery of affordable care in health care systems developed around the world. This has been discussed in detail in my award-winning book published in USA.

Health, wellbeing, quality of life and awareness should be the prime agenda of the country and policy makers. Healthy population can make a robust nation. We need to put the resources and invest in the health sector to make India healthy.

“ It has tested all our capabilities to deal with pandemic and premonished us a lesson for the future where there is a need to gear up our resources. ”

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PERSONA

Integrating Spirituality in State of Art Modern Heart Care

Dr Satish Kr. Gupta is the Director, Cardiology & Medicine, RMM Global Hospital Trauma Centre and JW Global Hospital & Research Centre, Brahmakumaris, Mount Abu. He was conferred with “Lifetime Achievement Award” from the then President of India late Dr APJ Abdul Kalam ji in 2006 for outstanding contribution in Preventive Cardiology and subsequently was also honoured for Excellence in Cardiology. Apart from receiving several accolades he has organized 12 World Congress on Clinical and Preventive Cardiology from 2006 to 2017 as Secretary General in which more than 14000 Cardiologists and Physicians took part from all over the World and India to propagate the message of “Integrating Spirituality in State of Art Modern Heart Care”. Meditation for preventing / reversing disease process’ through this meditative approach he was able to stop or decrease insulin and anti-diabetic, anti-hypertensive medication requirements and almost all other ailments of mind and body.

Surgeon R Admiral V.K Singh (Retd), Editor-in-Chief & MD InnovatioCuris interviews him to share his experience and also elucidate the importance of yoga in our life. V K Singh has been to his center number of times and has also attended his workshop.

Q. How did you turn yourself from clinical cardiology to preventive cardiology and adopt meditation to prevent/reverse heart disease.

A. While working in one of premier Heart Institute in Delhi in 1994-95, I noticed the number of heart patients in the 30-40 yrs age group, coming to the hospital with acute coronary events have increased. After managing the patient the next day we used to perform coronary angiography and we used to put a stent in the culprit lesion. I remember one patient, who was about 36 years old, got admitted to the emergency room with a heart attack. Next day in coronary angiography we found 80% blockage in Left artery and 60% blockage in right coronary artery.

I informed the patient’s wife about the urgent coronary intervention by putting stent. Patient was discharged from the hospital three days after the procedure. About 3 months later, same patient was again admitted to our hospital with chest discomfort, he was managed



conservatively in CCU and repeat coronary angiography revealed 100% in stent restenosis in one artery and 80% in other artery his wife had sold their house and for the last 3 months, he is not able to join his work and now what should they sell to get angioplasty. I had no answer to his query and after the round I went to the library and found few research articles, which related psychosocial stressors e.g Type A behaviour, anxiety,

depression, anger, hostility, lack of social and emotional support etc. with rapid progression of CAD (Coronary Artery disease) and acute coronary events e.g. unstable angina or heart attack.

I met Brahmakumaris Rajyoga Meditation in 1986, when I was at AIIMS, New Delhi. I have been doing Rajyoga Meditation since then and experienced a lot of changes in my thought patterns. Just a few days of practice of Rajyoga Meditation made me experience internal peace, true love, and happiness.

Then, one day after early morning meditation I had clairvoyance, in which I realised how psychosocial stressors are responsible for rapid progression of coronary blockages and acute coronary events. Practice of Rajyoga Meditation along with a healthy diet, healthy exercise, and proper sleep as per our biological clock/circadian rhythm can regress CAD and prevent fresh angina or heart attack.

After few days of this realization, when I was delivering a talk on “Stress & Heart Diseases” in Doctors meeting, I shared my thoughts on

how stress can lead to rapid progression of coronary blockages & acute coronary events and how meditation and healthy lifestyle changes can reverse coronary blockages and prevent further heart attacks.

After this we planned a research project in collaboration with Defence Institute of Physiology & Allied Sciences and Defence Institute of Psychological Research, DRDO, New Delhi. To conduct this research project I shifted to J Watumull Global Hospital & Research Centre, Brahmakumaris, Mount Abu in April 1995.

Q. Could you elaborate how you have reversed angiographic proven heart blocks for which you had received a Lifetime achievement award from President of India Sh Abdul Kalam who had conceived this project with you as Scientific Advisor of the Ministry of Defence provided all technical support You have also written about it in my book published in the USA.

A. In the CAD Research Project, for every angiographically proven CAD patient psychological analysis along with physiological (EEG, HR variability), endocrinological (adrenaline, nor-adrenaline, cortisol; beta-endorphins, serotonin) was carried out. With 24 long years of research we have been able to correlate every coronary artery blockage with various thought patterns (type A behaviour, anxiety, depression, anger, hostility, lack of social and emotional support etc).

We educate our CAD patients how to change various thought patterns with Rajyoga Meditation. This change in thought patterns along with better adherence to health promoting behaviour e.g. healthy diet, exercise, sleep and de-addiction from smoking and alcohol leads to normalization of endothelial function thereby reverse cholesterol transport of LDL from the plaque into the lumen, hence regression in coronary blockages.

Q. Can you give details of protocol you used in your one-week workshop for lifestyle changes

A. Angiographically documented CAD patients along with spouse are invited for “3D Healthcare Rajyoga Meditative

Lifestyle or Healthy Heart, Happy Mind & Healthy Body”, 7 days in-house program in RMM Global Hospital Trauma Centre & Brahmakumaris shantivan campus.

In the first day morning weight, height, BMI, skin for thickness, Heart Rate, blood pressure, ECG, and various tests e.g. Haemoglobin, Serum creatinine, serum lipid profile, blood sugar: fasting, two hours after the breakfast, Glycosylated Haemoglobin (only on day 1), Serum uric-acid are assessed on day one and day 6 (after 6 days of workshop). Along with these baseline assessments detailed Clinical and Psychological Analysis is also carried out. After these baseline assessment patients are given intense information, education and counselling about body, heart, mind, mind-body connection, about Heart Disease, conventional and psychological risk factors of heart disease. Brahmakumaris Rajyoga meditation uses Rajyoga meditation to open the blockages, role of healthy diet, exercise, sleep and de-addiction from smoking and alcohol. On day 6 repetition of clinical, psychological, pathological assessment is carried out. On day 7 every patient along with the spouse is given individual clinical, psychological healthy lifestyle counselling, overall risk factors modification and optimization of medication is advised.

Q. Could you explain how Meditation can help reversing diseases. Some details of Rajyoga you used extensively may please be brought out. There are around 35,000 thoughts a day out of which many are useless negative thoughts, how these can be reduced.

A. It has been observed in many studies that stress e.g. type A behaviour, anxiety, depression, anger, hostility etc leads to prolonged endothelial dysfunction. Rajyoga Meditation normalizes endothelial function thereby reversing the heart disease. When we are in stress our thought speed increases from 10-15 thoughts per minute to 30-45 thoughts per minute. Rajyoga Meditation is conscious training of the mind for enjoying inner self consciousness for enduring the immortal spirit/soul and it leads to stability and full proof security. This further leads to the understanding of truth, purity, peace, love, happiness, bliss and powers

from outer self-consciousness of the mortal body, or ever-changing role & material things which leads to instability and insecurity therefore they in-turn leads to type A behaviour, anger, anxiety, depression, isolation and chronic life stresses. Conversely, a healthy lifestyle is an ‘inner self-conscious lifestyle’ in which all negative and waste/useless thoughts disappear and only positive thoughts of peace, love and happiness, which leads to relaxation response and release of happy hormones.g.endorphins andencephalins.

Q. You have published several scientific papers. Could you please elaborate in which all diseases meditation helps.

A. We have observed that more than 10,000 heart patients also had other lifestyle related diseases e.g. anxiety, depression, hypertension (about 35%), diabetes (about 30%), high cholesterol (65-70%), obesity (35-40%), GERD/Acidity (45-50%), migraine (10-15%), cervical & lumbar spondylosis (20%), osteo-arthritis of knee joints (25%). We observed that most of these heart patients had better control of all lifestyle related diseases of mind and body with significant reduction in requirement of medication.

Q. Can you explain your concept of three-dimensional healthcare (3D) ? How many patients have you handled with a positive response?

A. “3D Healthcare Rajyoga Meditative lifestyle” has the following principles to be sustained as far as possible in daily living:

Self-responsibility through self-empowerment: The word ‘healthy’ is derived from two words; ‘heal’ + ‘thy’ i.e., to heal yourself. To heal oneself, one needs to be empowered by appropriate information about the mind-body connection, psychological and conventional risk factors, stress-management, diet, exercise, sleep, substance abuse and usual medical care.

Self-awareness: The very word HUMAN-BEING has two components: HUMAN+BEING:HUMAN word has its origin from HUMUS- a Latin word, which means SOIL (**I-ness to illness**) & BEING meaning Lifeforce/



SOUL(We-ness to Wellness).

The Hindi word for healthy is 'swasth', which consists of swa-, meaning 'inner self', and -asth, meaning 'conscious'. The word 'healthy' could also mean 'inner self-conscious'. Outer self-consciousness of the mortal body, or ever-changing role & material things, leads to instability and insecurity, which in turn leads to anger, anxiety, depression, type A behaviour, isolation and chronic life stresses. Conversely, inner self-consciousness of an enduring and immortal spirit leads to stability and security, which in turn leads to peace, love and happiness. A healthy lifestyle is an 'inner self-conscious lifestyle'.

Multi-dimensionality: The current medical approach addresses only one dimension, the physical body. A new model of health, "3D HEALTHCARE" (Soul-Mind-Body Medicine) is called for. As per this new model, health is a dynamic process of harmony in flow of spiritual energy: knowledge of truth, purity, peace, love, happiness, bliss;

- power: of discrimination, to judge, to withdraw, to pack up, to tolerate, to face, to accommodate, to cooperate;
- mental energy: is positive thoughts, emotions, attitudes and memories (TEAM), and
- physical energy: healthy diet,

exercise, sleep, cessation of smoking and alcohol, proper adherence to prescribed treatment regimen and medication.

Biological clock and circadian rhythm: When activities are in rhythm with one's biological clock, energy expense and stress are reduced, beneficial for the health of mind, intellect and body.

More than 93% of patients adhere to this program sincerely. It has been observed that "Better the program adherence, more the reversal of heart blockages and other lifestyle related diseases-in a dose-response manner."

Q. No money is being charged from patients for treatment, boarding and lodging. How are you supporting your initiative?

A. We have not kept any formal fee for participation in these 7 days in-house retreat but most of the patients contribute as per their will and economic condition.

Q. What is your message to the community to remain healthy by lifestyle changes?

A. At present due to industrialization, urbanization, acculturation, social and digital media, change in food, exercise, sleeping habits and addictions, the whole world including India is suffering from pandemic of Noncommunicable

diseases(NCDs). These all NCDs including cardiovascular disorders (such as hypertension, heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma), depression, diabetes etc. are psychosomatic/lifestyle related diseases and only permanent solution for all these NCDs is integrating Meditation with modern state of art medication to enjoy healthy and happy life. For the last 24 years we have been using this scientific, evidence-based "3D Healthcare Rajyoga Meditative Lifestyle for Healthy Heart, Happy Mind & Healthy Body" for almost all the NCDs/lifestyle related mind and body diseases.

I understand It is not very easy to follow such regime by everyone as it requires utmost commitment. I would like to narrate a story that a Vice Chancellor of a University friend of mine was advised angioplasty and I requested him to come with me to Dr Gupta and told him what all is required to be done by him to reverse heart block and avoid angioplasty. He told me it is better to have angioplasty and have my whisky and fried fish every day and enjoy life rather than restricted life style and stay many years miserably. I request you to follow 3D healthcare

Interviewed by
Surgeon R Admiral V K Singh (Retd.),
Editor-in-Chief of InnoHEALTH
magazine.

THEME

Unwavering determination of frontline workers: forging a pandemic resilient society

■ Dr. Debleena Bhattacharya

"The best way to find yourself is to lose yourself in the service of others" ~Mahatma Gandhi



July 1 is celebrated as National Doctor's Day and this day is marked as the birth & death anniversary of Dr Bidhan Chandra Roy. He was an honourable Indian doctor and second Chief Minister of West Bengal and played a crucial role in the Independence Movement. He was awarded the Bharat Ratna award in the year 1961. The doctors played a vital role during this pandemic. Their unrelentless dedication has saved so many lives during these crucial times. Catering to COVID-19 patients for hours in the suffocating PPE kit and fighting against a room full of infectious patients is like waging a war against uncertainties. Staying away from families for months

where the mental sanctity is jeopardised by the constant trauma and deaths of many as medicines were not working neither was any medical intervention. We often look upon these doctors as angels bestowed with supernatural power to revive an ailing soul. The demigods are human too and they also have constraints. We are so overwhelmed about them being the one who can save mankind that we often forget that Messiah can also be in mess with undulating service to others. We need to strengthen our healthcare resources in the coming future as a robust countryman paves the way for a healthy nation. The government has initiated various schemes for upgradation of

healthcare resources during the pandemic, but the real challenge is to implement them before the next catastrophe. The promulgation of healthcare innovations that came up through hackathons showed the concerned people have pertaining to the present healthcare scenario. Innovatiocuris has conducted one such hackathon where doctors had also participated enthusiastically to resolve the burgeoning problems of the healthcare industry. Apart from catering to the patients these doctors also left no stone unturned to keep themselves agile for their patients by being a part of a hackathon. The profession that makes an ordinary person into an extraordinary person is just the visible iceberg which has its depth covered with immense dedication, hard work and persistence. With the start of the vaccination process they were continuously apprising the people about the vaccine. Let us por-tray the doctors' as human also in the canvas of our eyes and show our empathy to them.

Dr. Debleena Bhattacharya is the Associate Editor of InnoHEALTH magazine and working as an Assistant Professor in Marwadi University, Gujarat. Her area of interest lies in Environmental Biotechnology focusing on waste water treatment.



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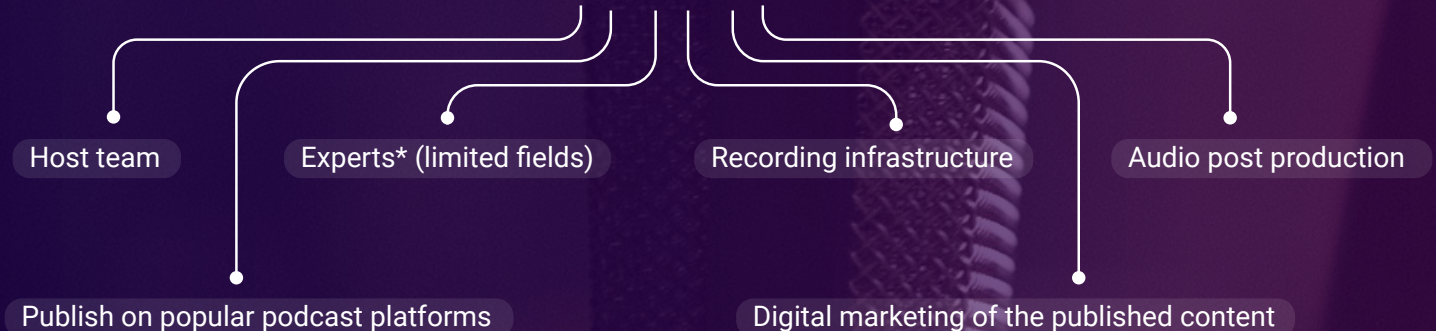
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▶ INNOVATIONS

‘OXYGEN ON WHEELS’ AND AN ‘OXYGEN RECYCLING SYSTEM’ – INDIAN NAVY’S INNOVATION



The COVID-19 attack is hard hitting a nation like India with a huge population thereby posing a challenge of oxygen shortage in many areas. To address this very concern, the Indian Navy has started an ‘oxygen on wheels’ plant which has been designed by the Naval Dockyard, Vishakhapatnam and was recently launched in the month of May, 2021. A team of specialists from the Vishakhapatnam, Naval Dockyard have come together to connect the oxygen pipeline in the Covid health centre at Palasa. This is a unique model wherein a PSA Oxygen plant was integrated on a mobile platform with the aim to help serve the remote hospitals. This step will ensure oxygen supply round the clock and 12 patients can use it at one time. The staff posted at the oxygen plant has also been trained by the Naval team.

Oxygen Recycling System (ORS) has specially been conceptualised and designed by the Diving School of Southern Naval Command to remove and efficiently handle the existing oxygen shortages. The credit of designing the ORS goes to Lt Commander Mayank Sharma of Diving School. The idea of its design came from the basic concept which is currently used in some of the diving sets used by the school. When a patient inhales oxygen, only a small percentage of it is actually absorbed by the lungs and the rest is exhaled along with the carbon-dioxide produced by the body. As per the Indian Navy, this exhaled oxygen can be reused once the exhaled carbon-dioxide is removed from it. This is possible by using the ORS which adds second pipe to the oxygen mask which is already being used by the patient. By using a low pressure

motor and non-return valves, this second pipe then sucks out the air exhaled by the patient which is then fed into a Bacterial Viral Filter for the Heat and Moisture Exchange Filter (BVF-HME Filter) to absorb any viral contaminants. After this the gases pass through a high grade CO₂ scrubber with a High Efficiency Particulate Air (HEPA) filter to absorb CO₂ and other particulates allowing and facilitating the enriched oxygen to pass through unaffected, which then is pumped back into the inhalation pipe of the face mask of the patient.

Thus this system will help in reducing the use of oxygen from the cylinder and aid in extending the life of the existing medical oxygen cylinders two to four times. The ORS prototype cost is capped at INR 10,000 and is expected



to help save around Rs 3000 daily due to recycling of oxygen. The specialists at Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Thiruvananthapuram have given a go ahead to both the design and feasibility of the concept by giving an Initial Evaluation Certificate to the prototype. So this ORS is going in for clinical trials and soon will be available for mass production.

SOURCE: timesofindia.indiatimes.com

MADE-IN-INDIA DEVICE TO DETECT BLOOD PRESSURE, OXYGEN SATURATION, COVID-19 IN SECONDS



Today fast testing and detection of COVID-19 is of prime importance in tackling the epidemic world over.

Contributing to this vision, researchers at KJ Hospital Research and Postgraduate Centre, Chennai, India have developed a human palm-sized device that they claim can detect COVID-19 infection in a few seconds as against the presently used RT-PCR test which takes six hours to give results. The technology behind the device is based on measurement of a very small quantity of electricity which human body generates. In a normal person the range is from 23-25 milliVolt

whereas the research findings show that in a person infected with COVID-19 it ranges between 5-15 milliVolt. Parameters taken into consideration by the device are blood pressure, oxygen saturation, Zeta potential, body temperature and blood count of the user. Other than blood pressure and fever, the sensors can also detect low count of WBCs, RBCs and platelets and low blood oxygen saturation. The USP of this device is that it is non-invasive and does not need any prick. All a user has to do is place his/her hand in a plastic glove on the device to prevent infection and results flash on the connected computer within seconds. The team verified the results of their device

with the RT-PCR results of hundreds of patients who were coming into the Stanley and Omandurar Hospitals in Chennai which happened to be a 100% match with the results of RT-PCR and almost 98% match when it was compared to the standard blood count test.

The cost incurred by the research team on producing this device is INR 10,000 but they are hopeful that it can be produced for a lesser amount by their manufacturing partners. The team has already filed for patent of their device.

SOURCE: www.dnaindia.com

METHOD TO HARVEST WATER FROM AIR IS DEVELOPED BY IIT

Scientists world over have been making efforts to build technologies by mimicking insects and plants that can 'pull water from thin air' both figuratively and literally. Such water harvesting techniques use the concept of water-repelling nature or hydrophobic nature of some materials such as the lotus leaf. But this simple method is unsuitable for water harvesting from highly humid environments as the high moisture content can displace the trapped air and cause permanent damage.

The research team from the Chemistry Department and the Centre of Nanotechnology at IIT Guwahati has for the first time used the concept of chemically patterned slippery liquid-infused porous surface (SLIPS) to effectively harvest water from foggy or moist air. The team has taken inspiration from the nature of pitcher-plant which has a surface that makes insects landing on it to fall into its tube-shaped structure in order to digest it. They have produced a patterned hydrophilic SLIPS by spraying a sponge-like porous polymeric material on

top of a simple A4 printer sheet. The team believes that the model inspired from pitcher plant is an inexpensive method of water harvesting from humid air. The team claims that their water harvester is highly efficient as their fog collecting rate is high and can be used in underwater hulls of ships and submarines to prevent bio-fouling and also to prevent icing on aircraft windows. The study has been published in the Journal of The Royal Society of Chemistry.

SOURCE: www.thehindu.com

ARTIFICIAL INTELLIGENCE BASED TOOL TO DETECT COVID-19 FROM CHEST X-RAY BY IIT GANDHINAGAR



In today's time where there are limited testing facilities it has become imperative to innovate and create fast and reliable testing techniques so that large number of population can be catered effectively. Keeping this issue in mind, researchers at the Indian Institute of Technology, Gandhinagar have developed an Artificial Intelligence (AI) based deep learning tool for detection of COVID-19 cases from chest x-ray images. This online tool indicates the probability if a person is infected with COVID-19 and thus can be used for quick preliminary diagnosis before the confirmatory medical test is done. The result comes out within seconds of feeding the input x-ray image for analysis.

To carry out the research, the team pooled the data of x-ray images of patients infected with COVID-19 and healthy persons from different sources available on the internet and then trained a machine learning architecture by using

deep learning algorithms with these images. The format of any test image of a new person will automatically be transformed and diagnosed using the AI tool. This deep learning model used by the team has 12 layers of neural network that is similar to neurons present in the human brain. The newly developed tool also use images from other lung infections like pneumonia and tuberculosis to ensure the specificity of detection of COVID-19 from other diseases of the lung.

The positives of this new AI tool lies in the facts that it learns the disease diagnosing features from the x-ray images in an automatic way and also it uses simple machine learning architecture that makes it stand out over other such high-tech tools available globally. The team believes that in order to develop a reliable tool, one must use the right combination of algorithms and data. Presently this tool is only indicative and it is necessary to have a clinical consultation to confirm

the diagnosis. The aim here is to reduce the burden on medical infrastructure by aiding testing and diagnosis with preliminary results. The IIT team is collaborating with Indian Institute of Public Health (IIPH), Gandhinagar to further test the AI-based tool so that it can soon be made available for wider use.



SOURCE: www.indiatoday.in

‘LAKSHMANREKHA’ AN ARTIFICIAL INTELLIGENCE DRIVEN APP FOR COVID PATIENTS

To contain positive covid cases efficiently it is important to have effective home management of such cases. In light of this viewpoint, IIT Mandi researchers have developed first- of- its- kind, an AI-driven home quarantine management application named “lakshmanarekha” for covid patients.



The app uses a combination of geofencing, biometric verification and artificial intelligence in order to continuously monitor and accurately detect the identity of a home quarantined person. The uniqueness of this app lies in the fact that it can also serve as an unbreachable

mobile phone platform for non-covid mobile users and situations like national emergency or curfew for identifying lawbreakers and violators. Presently the pilot version of the app has been developed and tested over small datasets. The results obtained so far are very good and now the team is working to add more scalability, functionality and usability of the app to make it ready for deployment.

The quarantine management mobile applications which are presently being used enforce the self-isolated individuals to share their instantaneous position routinely via geofencing technology or are required to upload their face selfie on hourly basis or ten times a day. The drawback here is that these apps fail to ensure the identity of the user throughout the time because individuals can leave their mobile devices in isolation zones and move in or out causing disobedience of the self-isolation rules. Similarly an hourly reporting of selfie is also not full proof of self-isolation as the user can try to fool the system by simply using a photo containing its registered face. Lakshmanarekha has been developed to overcome the shortcomings of the existing mobile applications in this area of quarantine by matching the quarantine location of the individual with the

location from where they have uploaded their biometric data and also by using AI, the application continuously computes an authentication score which can measure how certain it is that the quarantines user is also the one using the mobile device. If any action indicates that the user identity has been changed then the application detects it and reports it to the authorities for necessary action.

It is very important to track movements of every individual who is infected with COVID-19 in order to control the rapid spread of the pandemic.

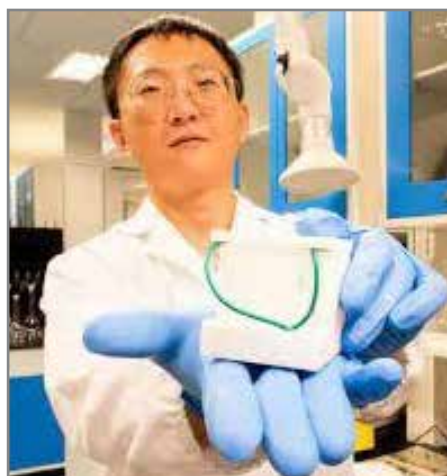
The research work has been published in the IEEE Consumer Electronics Magazine.



SOURCE: www.indiatoday.in

THE ‘GOLDEN SOLUTION’ TO 3D SKIN MAPPING

A team from Nanyang Technological University (NTU), Singapore has successfully developed a portable device which produces high resolution 3D images of human skin within 10 minutes. The device presses a specially devised film onto the person’s skin to get an imprint of upto 5 by 5 centimetres, which later is subjected to electric current in order to produce the 3D image. A biodegradable bioplastic known as polylactic acid (PLA) has been used by the team to design and 3D print a prototype of their device which is battery operated and measures 7 by 10cm weighing only 100 grams. PEDOT PSS, a polymer is the main component used in the device for its electrical conductivity which reproduced skin patterns on gold-coated film.



To use it, a person pushes a button to press the gold-coated film onto the subject’s skin to get an imprint. This causes sebum which gets transferred onto the film,

creating an imprint of the skin surface. Then the skin’s imprint is transferred to the portable device where a set of electrodes is immersed in a solution. Then another push of the button is made to trigger a flow of electric charge causing PEDOT PSS to be deposited on the surfaces of the gold-coated film in areas that are not covered with sebum. This finally produces a high-resolution 3Dmap of the skin which also reflects the ridges and grooves of the skin upto 2mm.

This portable skin mapping device can also be used to assess the severity of skin conditions such as eczema and psoriasis and would prove very useful to clinicians as presently most of the equipments being used give only 2D images of the skin surface.

Low production cost, non-invasive approach, simplicity of operation and low weight of about 100 grams is the USP of this device as against similar products in the market which cost thousands of dollars and weigh up to 30 kilograms. The device could be used to enhance the current methods of diagnosing and treating skin diseases and also be a useful method to map skin texture and wound healing in a 3D manner as presently there is no tool that maps the depth and length of skin ridges. Owing to its small size, weight and use of a 1.5V dry battery, the portable device can become a tool of choice in giving point of care assessment in clinical settings.

The researchers used pig skin as a model to demonstrate that the technology was able to map different kinds of wounds such as abrasions, lacerations, incisions and punctures and also showed that even complex wrinkles on the back of a human hand could be captured on the film. The device may also help in fingerprint identification, commonly performed in forensic analysis. To further validate the efficacy of the device, the team is likely to carry out clinical trials in second half of the year.

The study is published in the scientific journal *Analytica Chimica Acta*.



SOURCE: www.inshorts.in

‘ANEMOCHECK’- A SMARTPHONE APPLICATION FOR THE NON-INVASIVE DETECTION OF ANEMIA

Sanguina, an Atlanta-based health technology developer has recently launched a smartphone application named ‘ANEMOCHECK’ for the non-invasive detection of anaemia by using pictures of fingernails of a person to detect an iron deficiency in him or her. Instead of a blood test, simply the picture of one’s fingernails can determine whether the level of haemoglobin in their blood is low or not.



Presently all other anaemia detection

tools require external equipment and are invasive in approach. Researchers studied fingernail photos and correlated the color of the fingernail beds with haemoglobin levels measured by conducting complete blood count in 337 people which included some healthy people and some diagnosed with different types of anaemia. The algorithm to convert fingernail colour to blood haemoglobin level was developed by using the data from 237 of these subjects and then tested on 100. The researchers could display that a single smartphone image can measure haemoglobin levels with an accuracy of 2.4 grams/decilitre with sensitivity of upto 97% it also showed that personalised calibration which was done on four patients over a period of several weeks could improve the accuracy to 0.92 grams/decilitre.

The device could prove to be very beneficial for various sections of people like pregnant women, women with abnormal menstrual bleeding or athletes and people with bleeding disorders as this can be used by anyone at any time. Patients suffering from chronic anaemia can facilitate their self-management by monitoring their disease and identifying the times when they need to adjust their therapies or receive transfusions. This may reduce the complications associated with

patients having late or early transfusions.



SOURCE: www.webmd.com

Compiled by:
Dr. Avnatika Batish, working as the Director Strategy and Healthcare at International Health Emergency Learning and Preparedness. She is also a guest faculty for MBA (HR) and MBA Healthcare Management at various B-Schools and is a soft skills trainer.

IIT DELHI LAUNCHES GRASSROOTS INNOVATION PROGRAMME FOR STUDENTS



New Delhi, June 30th (India Science Wire): The Principal Scientific Advisor (PSA) to the Government of India, Prof. K. Vijay Raghavan launched 'Grassroots Innovation Programme (GRIP)' for students, an initiative by IIT Delhi under which the Institute students will work on finding novel solutions to grassroots societal problems identified by them from rural and semi-urban areas, including the communities they come from.

Lauding the initiative launched by IIT Delhi, Prof. K. Vijay Raghavan expressed hope that GRIP will result in the development of several innovative solutions for society.

Activities proposed as a part of this new initiative includes Social Immersion, a programme in which group of students will visit communities located in smaller towns and villages to immerse in social environments for a substantial time (one week to months) to study, understand and identify local needs and challenges, which can be addressed by the students when they return to the Institute campus.

"The immersion programme provides an opportunity for students to put themselves in the shoes of end-users and to co-create solutions which are likely to succeed. This programme also acts as a pipeline of ideas, which students and student teams can address as a part of semester-long design and innovation courses already available to them," said Prof. PVM Rao, Head,

Department of Design, IIT Delhi who is coordinating the initiative.

Another component of the GRIP initiative includes Grassroots Innovation Programme in which students and student teams will be allowed to work on semester-long or year-long projects on finding novel solutions to grassroots problems identified by them.

The needs/problems on which students are expected to work can be from one of the two routes: Students or student teams have identified the problem/need and validated it as a part of prior social immersion programme. Secondly, IIT Delhi student(s) who come from diverse regions of the country, identify problems/challenges being faced in their local communities (in their villages, towns and semi-urban settings).

The GRIP initiative will provide physical, intellectual, and financial resources to the students to carry out these projects. To implement the above programmes, existing courses and schemes of the Institute will be leveraged. In this way students will have an opportunity to earn academic credits for their efforts. The programme can synergize with other programmes of the Institute, which include UBA, RUTAG, NSS, ENACTUS, etc.

"There are many students who have shown interest in addressing the unmet needs in their own neighbourhoods. Further,

students are enthusiastic to participate in proposing and validating novel solutions that respond to the local situation and the interests and values of the communities involved. The GRIP initiative is aimed at providing resources to the students who want to help the society by solving its problems," said Prof. V. Ramgopal Rao, Director, IIT Delhi.

IIT Delhi and Honey Bee Network (HBN), a volunteer based network that seeks innovative ideas and traditional knowledge produced at the grassroots level by individuals and communities and disseminates them to the wider ecosystem, have joined hands to groom students as torchbearers of social and grassroots innovation through GRIP programme.

Prof. Anil K. Gupta, Coordinator of Honey Bee Network said, "For the GRIP initiative, the Honey Bee Network will act as one of the facilitators to connect IIT Delhi students and faculty with local communities and environments."

He further said that the social immersion and shodh-yatras will give an opportunity for students to learn from grassroots innovators and also to add value to their efforts. Students who do immersion in earlier years will have additional opportunity to address some of the needs identified by them as their course projects. (India Science Wire)

CREDIT: India Science Wire

▶ WELL BEING

Add these 7 Vitamin C Rich Superfoods to your Diet to Reduce Stress and Anxiety

■ Yadoji Vishnu Vardhan



Nutrients are a fundamental segment as you continue looking for wonderful gleaming skin, just as various other medical advantages. It supports the insusceptible framework and builds the body's capacity to withstand unpleasant circumstances. Dietician Vidhi Chawla records down a couple of nutrient rich food things to remember for our eating routine.

Oranges: Oranges, which are high in nutrient C, can assist in bringing down the pressure chemicals and fortify the invulnerable framework. As per research on hypertension patients, expanding your Vitamin C admission can bring down your pulse and levels of cortisol or stress chemicals.

Spinach: Spinach is a nutritious verdant

green vegetable high in calcium, B-nutrients, iron, and cell reinforcements. One of the food varieties that can assist with uneasiness is spinach. Magnesium is found in 157 mg for each cup of spinach, which is 40% of your day by day necessity. Indeed, an absence of magnesium can cause cerebral pains, weakness, and stress-related side effects. They are low in carbs, can be utilized as a feature of a



weight reduction diet, and are helpful to individuals with hypertension.

Eggs: Because of their high supplement content, eggs are frequently alluded to as nature's multivitamin. One of only a handful of normally happening wellsprings of nutrient D is entire eggs. Entire eggs are high in nutrients, minerals, amino acids, and cancer prevention agents, which are all needed for a sound pressure reaction. Entire eggs are particularly high in choline, a supplement

found in high focuses in a couple of food sources. Choline has been demonstrated to be valuable to cerebrum wellbeing and may secure against pressure.

Nuts: Nuts are high in supplements, including B nutrients and omega-3 unsaturated fats. B nutrients are a fundamental piece of a solid eating routine and can assist with pressure decrease. Almonds, pistachios, and pecans may even guide in the decrease of circulatory strain. Nuts and seeds are likewise high

in magnesium, which is gainful on the grounds that magnesium has been connected to improved nervousness on the board.

Avocados: B nutrients are important for the strength of our nerves and synapses, and a B nutrient lack may cause nervousness. Avocados are high in B nutrients, which are known to assist with pressure alleviation. They're likewise high in monounsaturated fat and potassium, the two of which help to keep circulatory strain down.

Blueberries: Blueberries may show up little, yet they are high in cancer prevention agents and nutrient C, making them powerful pressure relievers. Our bodies require nutrient C and cancer prevention agents to fix and ensure cells when we are pushed. While blueberries are tasty all alone (have a go at freezing them for a virus berry nibble), there could be no more excellent approach to support the nourishment in a serving of yogurt or high-fiber cereal than to add them to it.

Ashwagandha: Ashwagandha is an ayurvedic spice that can help you adapt to physical and mental pressure. Here is one of the methods to include ashwagandha into your eating regimen. Take 1 teaspoon of ashwagandha powder in ghee and blend in some date sugar, nectar, jaggery, or coconut sugar (any of these improving fixings). Devour the blend around 20 minutes before breakfast or later in the day with some milk. On the off chance that pressure is making it hard to rest, it is ideal to take ashwagandha around evening time as it can help prompt rest. Ashwagandha has likewise been connected to bring down cortisol levels in the first part of the day.

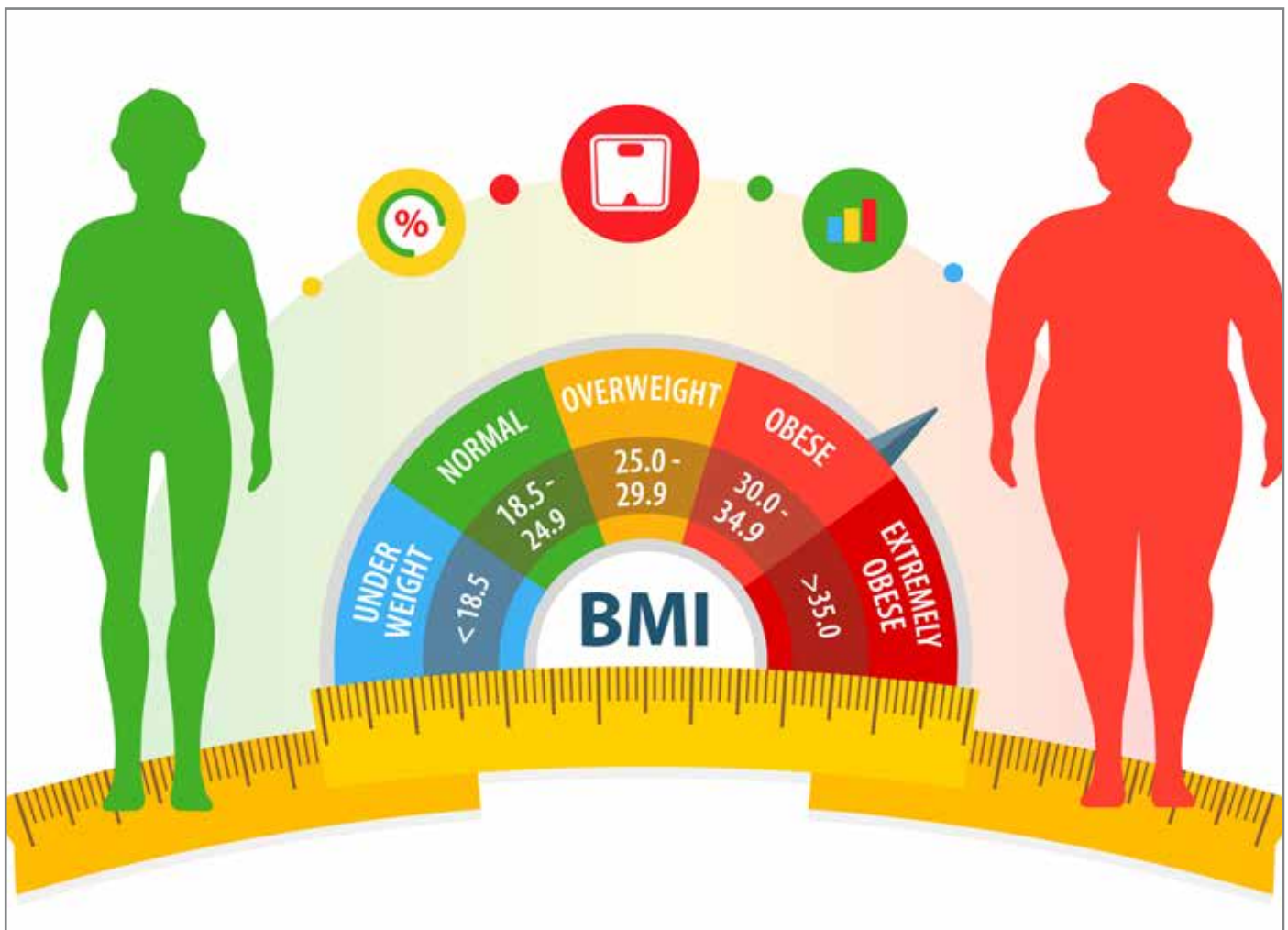
Yadoji Vishnu Vardhan is an undergrad at Vasavi College of Engineering, Hyderabad. He is a substance author, artist, and a basketball player.

Our bodies require nutrient C and cancer prevention agents to fix and ensure cells when we are pushed.

Here is why focus on Body-Mind, and not Body Mass, is the key!

■ Ram Krishna Sinha

By being mindful of our thinking patterns relating to body weight, fitness, and health, and by tweaking or transforming them wherever needed, we may overcome our over-fixation with BMI.



Absence of favorable outcomes on the weighing scale repeatedly affects our self-esteem, relationships at home, and even interpersonal conduct and performance at the workplace.

But why does our weight loss program usually fail? Why doesn't a fitness program sustain? Why do desired outcomes on health elude us?

A major spoiler is our mindset. We remain over-obsessed with our body mass rather than being mindful of our thought processes and attitudes surrounding diet,

fitness, health, and life as a whole. With their strong linkages with body weight, some of our thought patterns have the potential to make or break our efforts, motivate us towards fitness and good health. So, before constantly checking on the scale of our weight or calculating BMI, we should honestly check how we think on the subject.

Here are six key thinking patterns, involving choices we make, that need a close look and check:

#1. Do we want to look good or feel good?

In the journey towards fitness, self-motivation is the key. But, if our motivation behind losing weight is to look good, it can fluctuate with the perception of others. With this dependence on external validation, the path to feel good may be elusive. Moreover, fixation with an image of perfect shape and weight can be stressful and can deprive us of our peace of mind. Instead, by becoming our own cheer leader for our efforts and gains, however small, we can constantly keep our motivation up. In fact, to feel good, healthy food and physical activity must be complemented with good breathing, good sleep, a positive mind, and a



compassionate heart.

#2. Do we appreciate the taste of food or value in food?

Our obsession with the taste and aroma of food masks real value in food. We know why all who cook, be at home or outside, crave appreciation for this factor. In fact, food joints and restaurants use “taste enhancers” to satiate our taste buds. In this cultural backdrop, value in food fails to get its due. But if we can extricate ourselves from this “taste trap” by changing our thought process and start loving healthy food, irrespective of taste, we can avoid the high calorie and fat load of tasty foods.

#3. Do we mind quantity or look for quality?

A full stomach provides psychological satisfaction. We live to eat, it appears, and not eat to live. Also, on our dining table, cereals (rice, bread etc.) disproportionately fill our plate. This space, instead, has to be rightfully occupied by worthy stuff- pulses, eggs, green vegetables etc. Less is more, when we consume less in terms of quantum and carbs, but more of protein, fibers, and vitamins.

#4. Do we get swayed by un-validated information or common sense/ wisdom?

The torrent of information on health,

freely forwarded, shared, and received, on social media often clouds our judgement. In this din, we fail to discern between right and wrong. Not surprisingly, irrational, and false information often derail our fitness regime, affect our motivation, or even harm our health. The plain fact is, we need some simple, actionable, customized templates for daily routine, to be followed consistently, to keep us fit and healthy.

#5. Are we emotionally driven or rationally guided?

During eating sessions, we often consume more by succumbing, willingly or otherwise, to the love and affection of family members or close friends. The

MIND BODY



situation is more common in a joint family setting. This in fact is a case of misplaced affection and care, as it leads to overeating, harming our health. Through a strong resolve and rationale, we need to navigate such situations deftly. Clearly, unless we take full charge of our dietary regime, making our autonomous choices, the desired health outcomes can elude us.

#6. Are we into short term efforts and gains or long-term investment?

Health is hard work and requires a long-term investment of time, effort, and commitment. No shortcuts, no half-hearted approach work. During the ongoing COVID-19 crisis, we have seen how suddenly we became conscious of immunity and health. But, as all health

experts opine, immunity cannot be built overnight with short-term efforts by consuming immunity boosters or adopting quick-fix, temporary measures. It is through sustained, long term efforts only that we get the gift of robust immunity, fitness, and health.

Need to identify, challenge, and correct the faulty thinking patterns

The distortions in our thinking relating to food and fitness manifest themselves in biases, rigidities, impatience, inconsistencies, irrationalities, misplaced priorities etc. We need to identify, question, or challenge them, and take corrective measures, by positive self-talk, openness for constructive feedback, flexibility, and adaptability, and, most

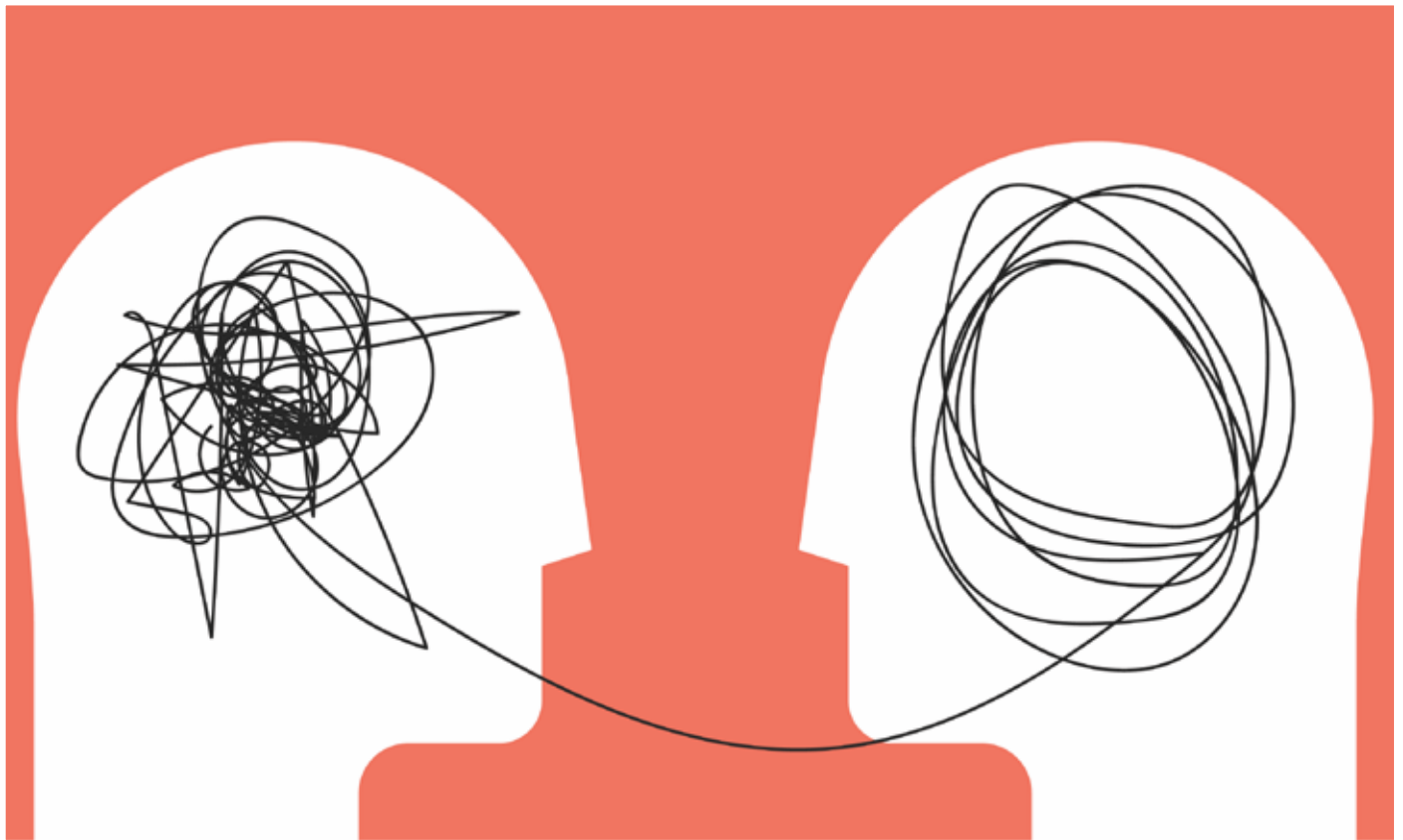
importantly, by seeing a holistic picture of health and happiness.

A weighing scale doesn't weigh our habits. Nor a mirror reflects our mind. But if we are self-aware and mindful of the thought patterns, and willing to tweak or transform them wherever needed, we may find our sole fixation with BMI superfluous. A healthy Body-Mind parameters will automatically take care of Body Mass Index.

Ram Krishna Sinha is a former Bank Executive, Author and Columnist. Based in Mumbai, he writes on Education, Healthy lifestyle, and Self-Care .

Grief – A Healthy Emotional Response to Loss

■ Anika Bhasin



Witnessing a sudden loss causes a lot of pain and intense longing for the lost loved one. To accept life without having that important person in our life can trigger a variety of emotions.

Our customs and rituals provide support to deal with the loss by sharing our grief with extended family and friends. Unfortunately, COVID-19 has even taken away that support due to lockdown restrictions and fear. We not only find ourselves dealing with the sudden loss but also dealing with that alone.

After the sudden loss of our loved one, we go through a traumatic phase and grieve. During this grieving period, we take time, make space to express our emotions, experience pain, make meaning of the loss and gradually adapt to the new way of functioning. It is important to know that grieving can interfere with our normal

functioning mainly with the way we process new information. It can influence our feelings, cognitive and behaviour. It is thus important to understand the following:

- how grief influences our feelings, cognition and behaviour;
- various factors influencing how we grieve;
- grieving process;
- useful techniques you could use to assist your loved ones; and
- The support a counsellor can extend to help you

Grief is a negative emotional reaction to the loss of something important. The unpredicted death of loved ones can evoke a range of feelings like numbness, shock to anxiety, sadness, anger and guilt. These feelings are a natural and normal reaction to the loss before we adapt to the loss. Each individual's response to grieving is unique to their specific loss. It is not uncommon

to see people experience sensations in their body like hollowness in the stomach, tightness in the chest, oversensitivity to noise, breathlessness, lack of energy, dry mouth. Some people even report a sense of depersonalisation for e.g "I walk down the street and nothing seems real, including me".

Our cognitive functioning is altered and we might experience confusion, preoccupation about the thoughts of the deceased and rumination. Thoughts such as "I can't live without her" or "I'll never find love again" can then trigger very intense feelings of sadness and/or anxiety which is normal.

Behavioural disturbances can range from sleep and appetite disturbances to absent mindedness and social withdrawal. These behaviours are commonly reported after a loss and usually correct themselves over time. Some people tend to avoid places



or things that trigger painful feelings of grief. They might avoid the place or objects that remind them of their lost loved one. Quickly getting rid of all the things associated with the deceased—giving them away or disposing of them in any way possible even to the point of having a quick disposal of the body—can lead to a complicated grief reaction. This is usually not healthy behaviour and is often indicative of a highly ambivalent relationship with the deceased.

Some factors that influence how we grieve:

1. According to the John Bowlby theory of attachment, attachments develop early in life and offer security and survival for the individual. How an individual processes grief is the result of early attachment of an individual with his/her caregiver. In a normal grieving process, a person with secure attachment goes through different phases of grieving and is able to adapt to the loss and become functional.

2. Coping self-efficacy, which means the

beliefs in one's capabilities to mobilize the motivation, cognitive resources and take action needed to recover from major setbacks. The higher an individual's coping self-efficacy, the more effective the grief regulation. Research studies have proved that a person with a robust sense of coping self-efficacy has a benign appraisal of threat, weaker stress reactions to them, less ruminative preoccupation with them, better behavioural management of threats, and faster recovery of wellbeing from any experienced distress.

3. Sudden losses like the ones we have seen during Covid pandemic specially during the 2nd wave is trauma based. Traumatic losses challenge a person's sense of himself or herself by challenging the notion that he or she is worthy. An individual's self-esteem and self efficacy take a dip. The best intervention is to help the person re-establish the lost sense of control by heightening the awareness of areas to exercise control. For instance, a dependent woman can be assisted to develop skills required to function as an

independent person gradually.

Grieving process involves accepting loss, learning from the loss and reinvesting emotional ties in new interests or commitments. The learning is not to suppress grief or eliminate the negative emotions but to regulate them.

Helping someone who has experienced the grief:

- Be a companion, be there for the grieving individual. Let them sit with their grief and express their emotions, do not offer any advice. When they feel ready, encourage them to think that though they have lost their loved one but they haven't lost the memories or their relationship with the deceased. This helps in continuing bonds with their loved ones and enriched functioning that is fundamental to the grieving process;
- Look at pictures, help them reminisce about the good memories that



they would like to share about the deceased;

- Extend support like arranging for taking care of children, managing bills etc;
- Crying is a signal that evokes a sympathetic and protective reaction from others. Not allowing sadness to be experienced can frequently lead to complicated mourning. It is important not to use statements like; Why are you torturing yourself by crying or talking about it OR If you cry your children will feel bad OR I know it's hard but you will get over it soon instead say I am here for you OR You can call me when you feel like talking OR you can cry it's ok to be vulnerable OR I have your back, let me know what I can do to make you feel better;
- Help in arranging for rituals. Grieving is a social phenomenon, and the need to grieve with others is important. Arrange for a virtual meet.

The degree of emotional and social support from others, both inside and outside the family, is significant in the mourning process. Several studies have shown that perceived social support alleviates the adverse effects of stress and bereavement; and

- Add humour to heal a grieving friend/relative. Remind them how their loved one would have wanted them to be happy. However, be careful and not rush into doing it.

The grieving process is an adaptive response by itself and not a form of pathology. A person experiencing grief does not have to overcome or recover from something. Although some individuals might need an external support of a counsellor to deal with the pain, adjust to the new roles and give meaning to their life after the loss.

What role can a Counsellor play?

1. Actualize the Loss: one of the best

ways is to help survivors talk about the loss. When did the death occur? How did it happen? Where were you when you heard? All these questions are geared to help the person talk specifically about the circumstances surrounding the death. Many people need to go over and over it in their minds, reviewing the events of the loss, before they can actually come to the full awareness that it has happened.

2. Identify and Experience Feelings: helping them accept and work through their pain is a major part of intervention. "What do you miss about them?" "What don't you miss about them?" These questions will help the bereaved person find a balance between negative and positive feelings for the deceased. Patiently assist in creating awareness of the loss and its impact by encouraging the client to verbalize current and past memories of the deceased. For instance, you could ask them to bring photos of the deceased and talk about the memories associated with them.

3. Facilitate the process of 'meaning making', to help restore adaptation to the new external world. Sudden death of a loved one is a traumatic experience that can challenge one's personal identity, assumptions about the world. A counsellor's/therapist's role is to assist in

Grief is a negative emotional reaction to the loss of something important. The unpredicted death of loved ones can evoke a range of feelings like numbness, shock to anxiety, sadness, anger and guilt.

Traumatic losses challenge a person’s sense of himself or herself by challenging the notion that he or she is worthy.

finding answers to questions like “What will my life look like now?” “What did the deceased’s life mean?” “How can I feel safe in a world such as this?” and “Who am I, now that this death has occurred?”

4. Help individuals recognize, through cognitive restructuring, the way they managed on their own before the loss, and this helps to throw these feelings of anxiety and helplessness into some sort of perspective.

5. Create awareness that it is ok to feel sad and cry. Individuals often refuse to cry in front of friends for fear of being judged or losing the friendship. Some suppress their tears in social situations in order to avoid criticism from others.

6. Assist living without the deceased by helping people adapt to a loss and to make decisions independently. To do this the counsellor may use a problem solving approach. Ask questions like; What are the problems you are currently facing and how can they be solved?

7. Identify complicated grief from normal grief. A person with a history of depression or anxiety or ambivalent relationship with

the deceased has difficulty in the grieving process. Relationships characterized by overt or latent anger are often at the core of a complicated grief reaction. A counsellor identifies a person experiencing complicated grief and makes a referral.

8. Take into consideration the personality of the mourner while tailoring therapeutic interventions. According to psychologist Bowlby, counsellors should take into account an individual’s age, gender, and coping styles into account when trying to understand an individual’s response to loss. Some individuals have an active emotional coping which means venting out positive and negative emotions, humour by distancing oneself from it and low emotional distress. This allows for handling and problem solving and finding something positive in a bad situation. Counsellors can work with individuals with low emotional coping styles and provide assistance.

9. Educate people that mourning is a long-term process and that it’s culmination will not be a pre-grief state. The counsellor can also let mourners know that even though mourning progresses, grieving does not proceed in a linear fashion; it may

reappear to be reworked.

Some people experience grief more intensely than others. Therapy, therefore, needs to be designed to meet an individual’s needs. The following quote provides a good perspective “Grieving allows us to heal, to remember with love rather than pain. It is a sorting process. One by one you let go of things that are gone and you mourn for them. One by one you take hold of the things that have become a part of who you are and build again.” —Rachael Naomi Remen

The present article seeks to highlight the emotional responses evoked by loss and healthy and constructive ways to cope with the same. The pandemic has led to widespread loss of life, with numerous people struggling for medical resources. Such traumas have both immediate and long term effects, which with proper care and mindfulness, can be overcome. The article seeks to provide insight into the behaviour patterns of those directly affected by such loss, as well as those that wish to help and support people around them. The present article has been written for education and awareness purposes only.

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The Fool's Diet: A Trend That Needs to End

■ Sarthak Kapoor



The term 'diet' is ambiguous. Meaning, it can't be attributed to a specific form of caloric intake and represents a host of different, yet similar, nutritional interventions. The similarity coexists with the beliefs that form the basis of all the diets in the market. This similarity is rather hidden, unlike the more evident presence of assumptions about the usefulness of a diet, leading to an opinionated understanding of the working of dietary interventions. A good example will be the fixation with specific foods that individually cause weight loss or weight gain. It's a common practice that

accounts for the majority of nonsensical advice there is to be found in most Indian households.

A recently published lifestyle article in the newspaper sums up my observation of nutritional advice in India, as it describes a real-life scenario where a 15-year-old loses 37 kilos in 9 months after following a 'special immunity strengthening diet' structured by his mom. Spoiler alert; be prepared to receive dietary advice from an excited fifteen-year-old with no background in nutrition whatsoever. Although the

story presents a plot worth a TV show, it successfully manages to provide its readers with hokum dietary practice and some cliched tips. With the everlasting presence of unreasonable restrictions and the obsession with removing the so-called 'fat-causing components' of a meal, this article leaves no stones unturned. These assumptions become the source of our perceived opinion of 'healthiness', intensifying concepts that hardly have a share in sustainable weight management strategies.

Personal experiences are what people



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attribute to statistically significant results, which leads to opinionated and not evidence-based advice. We Indians call it 'Nuskhas' and share a rather unhealthy relationship with them. Almost halfway through the article when I was about to quit reading, a "Nuskha" took me by surprise; It is an advice to all to start detesting bad things and register that into your subconscious. I felt a tickle in my subconscious and realised that after three years of training as a sports scientist I still haven't registered anything close to this advice in any of the three types of consciousness that are present as described by 'Sigmund Freud'.

A repeated lie becomes the truth?

The only thing you should be registering is the overlooked concept of moderation. Most people believe and in most cases are reminded quite concerningly that the complete removal of some parts of their diet is essential to discover a healthier means of living. Essentially mistaking consumption of a single meal or ingredient as the culprit and not the net calories consumed. This 'eliminate culture' advocates from the sporting world to the obnoxiously fake "genetically gifted" celebrities that transform bodies at will. Oblivious to calorie manipulation, these naive faces of brands and products

mistake their enthusiasm for fitness as a ticket to a gullible journey of life with an everlasting health, forgetting that it takes more than few weeks of sweaty gym trips to understand nutrition. It's an amalgamation of pieces of information from various sources with a pinch of their imagination of a healthy lifestyle, but rarely it comes close to reality and yet appears more realistic than the far more plausible rationale from a peer-reviewed article.

For example, my favourite is the good food-bad food conundrum. Society's obsession with these made-up classifications is fascinating, standing right behind the even more amusing subject of the spread of such beliefs travelling through the minds of billions. Much like the game of Chinese whispers, the idea of bad foods has journeyed numerous intellects and has found a different meaning well suited to the perception of the person processing

These assumptions become the source of our perceived opinion of 'healthiness', intensifying concepts that hardly have a share in sustainable weight management strategies.



the information. In other words, what we have today is a distorted and tainted version of what could have been a practical piece of advice from someone worthy of providing it. A repeated lie has indeed become the truth.

Diet we need to follow!

To start with, having an understanding of calorie manipulation is a must. To say that your regular calorie intake has led to fat loss means that your body's expenditure surpasses its regular consumption of calories. This here underpins all the "fat loss" diets. It also signifies the following, let's say, a ketogenic meal plan will not result in loss of fat unless the net calories consumed are in a deficit. It's the consumption of calories that matters and not the popular diet itself. Call it what you

may, a diet's eventual fate is determined by its calorie distribution and not by the fancy name attributed to it.

By tracking calories, an idea of a person's regular intake can be established, which can then be compared alongside their maintenance calories to figure out the long term effect of any dietary pattern. This approach is foolproof and works on numbers determined by a decent formula, giving a hint of achievable weight management goals and not far-sighted improbable ones that are nothing but a selling point (lose 20 kgs in three months).

Harris-Benedict calculator, which is one google search away, does the majority of work by providing a detailed description of your daily calorie needs. Your job is to

track calories using a calorie calculator and see where your daily consumption of food lies. The idea is to keep an open mind when dealing with any aspect of weight management, giving considerable attention to not only the visual but the psychological side of it.

A life filled with irrational constraints is depressing and radiates nothing but a pattern of life undesirable. If you are of the kind that detests living a life full of flavours and finds restrictions fun, good for you. But if you are nothing of that sort and still wish to maintain a healthy lifestyle, you might find the idea of moderation more desirable. So, stop being hard on yourself and live life like it is supposed to be lived.

Sarthak Kapoor is a third-year sport and exercise science student from Cardiff Metropolitan University who has started a brand with a fellow sports physiologist, that focuses on educating the locals about the importance of evidence-based practice in the sporting and health sector.

Society's obsession with these made-up classifications is fascinating, standing right behind the even more amusing subject of the spread of such beliefs travelling through the minds of billions.

Rising India: Towards Women Education and to raise the Marriageable age achieving towards Punitive Paternalism

■ Dr. Nikita Pawar



You educate a man; you educate a man. You educate a woman; you educate a generation"

A milestone for women empowerment is education. The 1978 amendment of the Sharda Act of 1929 has set the legal marriage age in India as 18 years old for woman and 21 years for man.

Rewinding the bygone era the positions of power for women have increased substantially. The geographical chart for education, knowledge, ambitions and passion has taken every industry by storm with the contribution of women leading towards higher impact on socioeconomic status of the country.

Education & Financial Attainment:

Financial independence is an asset to women's future. The maternal mortality rate, nutrition levels, more opportunities to pursue higher education and the financial security of women will lead to a better social and economic impact on the country with increase in the marriageable age of women.

Prime Minister Narendra Modi during Independence Day speech had announced that the government will soon take a decision on the age of marriage of women, the reports stated that India is on the verge of raising the legal age of marriage of women from 18 years. Since

the time and era has changed. Education plays a pivotal role; it not only educates a woman but enables her to take decisions and accept responsibilities at her home as well as outer world. Education helps a woman to understand her rights to equal treatment like a man in the society of this nation.

Particularly women in rural areas and lesser known communities are particularly affected. When schooling is no longer compulsory, families didn't enroll their daughters, not only for financial reasons but also because of social norms (keeping girls at home, early marriage and maternity, inadequate



school infrastructure, discrimination, etc.).Reforms like changing mentality and equality between men and women is the need of the hour.

Women education in India plays a pivotal role in the overall development of the country which will not only help in the development of half of the human resources but it will enhance the quality of life at home and outside. Educated women not only tend to promote the education of their girl children but they can provide better guidance to all their children. Moreover educated women can also help in the reduction of infant mortality rate and growth of the population. Empowerment is to elevate from weak position to power.

It will bring a reduction in inequalities and functions as a means of improving their status within the family. To encourage the education of women at all levels and for dilution of gender bias in providing knowledge and education, established schools, colleges, and universities even exclusively for women in the state will be a boon to better and reformed India.

Maternal Mortality Rate:

There is a belief that greater women's empowerment will lead to improvements in their health, particularly in areas where disparities are highest such as maternal mortality. Maternal mortality has declined significantly since 1990. While better access to emergency obstetrical care has also added as a contributing factor which has considerably reduced the maternal mortality rate. As an added benefit more empowered women (based on education, wealth, and autonomy) are more knowledgeable to use contraception, attend antenatal clinics, and gain knowledge about the care during and after pregnancy which has contributed towards lowered maternal deaths. Forging towards better social and economic impact in the country.

Participation & Decision Making:

Furthermore there may be requirement of added interventions that have enhanced women's empowerment and leadership at the community level which have lead towards improving the health status of women and children. In some rural areas the prevalence of worm infestation disease, which was spread by water had incapacitated in infected person for months required a comprehensive

eradication campaign and effective measures .Women volunteers were enrolled and provided education and knowledge to spread the facts regarding the disease and the measures to be taken by the people. In such cases women were more familiar with the improved water sources than men, door to door surveillance was conducted , distribution of filters, identification of potentially contaminated water supplies and provided community education.

This considerably reduced the disease and caused more awareness to the women.

Tradition :

Another major aspect to be highlighted upon is the early girl marriage which reduces barriers to employment posed due early pregnancy, birth spacing, higher number of children which can lead towards malnourishment of mother child and also abortions. Large family size and women's role as primary caregivers for their children emerge as having negative effects on labor force participation and affecting socioeconomic factor too.

Early marriage can also be influenced by norms and beliefs. In some societies,



marriage is nothing more than a phase of womanhood.

Once menstruation begins, a girl is seen as a grown woman so the logical next steps for her in life are marriage and motherhood. Younger girls may also be perceived as amenable which can be more easily shaped into an obedient wife. Some families forcibly marry their daughters early as a survival strategy. As they cannot afford to feed and educate all of their children, marrying the girls at puberty would be the next best thing to avoid starving, while also allowing them to give preference to boys schooling and education.

More impact towards women child education should be emphasized upon and also to raise the awareness between the people who are still biased and have a narrow thought view on early marriage of their daughters. Educated women will be knowledgeable and can have their own choices to make in life including their life partner too.

A girl suffers from poor health, be it physical or mental, there are both immediate direct costs for health care, and long term economic impacts and high resulting costs in terms of lost productivity and earning potential.

Health:

Early marriage can affect a girl's physical and mental wellbeing too.

Higher rates of malnutrition, isolation, and depression. It's even noted earlier, girls who are married early experience higher levels of depression, anxiety, isolation, vulnerable to sexually transmitted diseases, including HIV leading to high levels of self-harm and suicide. It's a traumatic experience for girls, especially in cases of marriage by abduction, resulting in lifelong psychological effects on mind and wellbeing.

A girl's nutritional status can decline if she marries early. When a girl suffers from poor health, be it physical or mental, there are both immediate direct costs for health care, and long term economic impacts and high resulting costs in terms of lost productivity and earning potential. Unexpected illness results in high medical expenses, lost earnings, and less savings at the household level due to large income shocks from illness in the family perpetuating a cycle of poverty.

Conclusion:

Girls who marry early have less decision making power within the marital home, a greater likelihood of school dropout and illiteracy, lower labor force participation and earnings, and less control over productive household assets. Girls who bear children early have more dangerous, difficult, and complicated birth have less healthy and uneducated children leading to same league in the future.

All these factors negatively provide a wide range of economic and social costs and impacts at the individual and household levels. It can profoundly affect at national and global levels in the forms of lost earnings and lower the economy of the country. As a country more educated women tends to egalitarian society, educated league and civic sense.

Hence the geographical statistics should paint a positive picture and impact on socioeconomic status of the country.

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Tobacco Practises, Aid and Policies in India & the Covid-19 Pandemic

■ Saptorshi Gupta and Pooja Verma

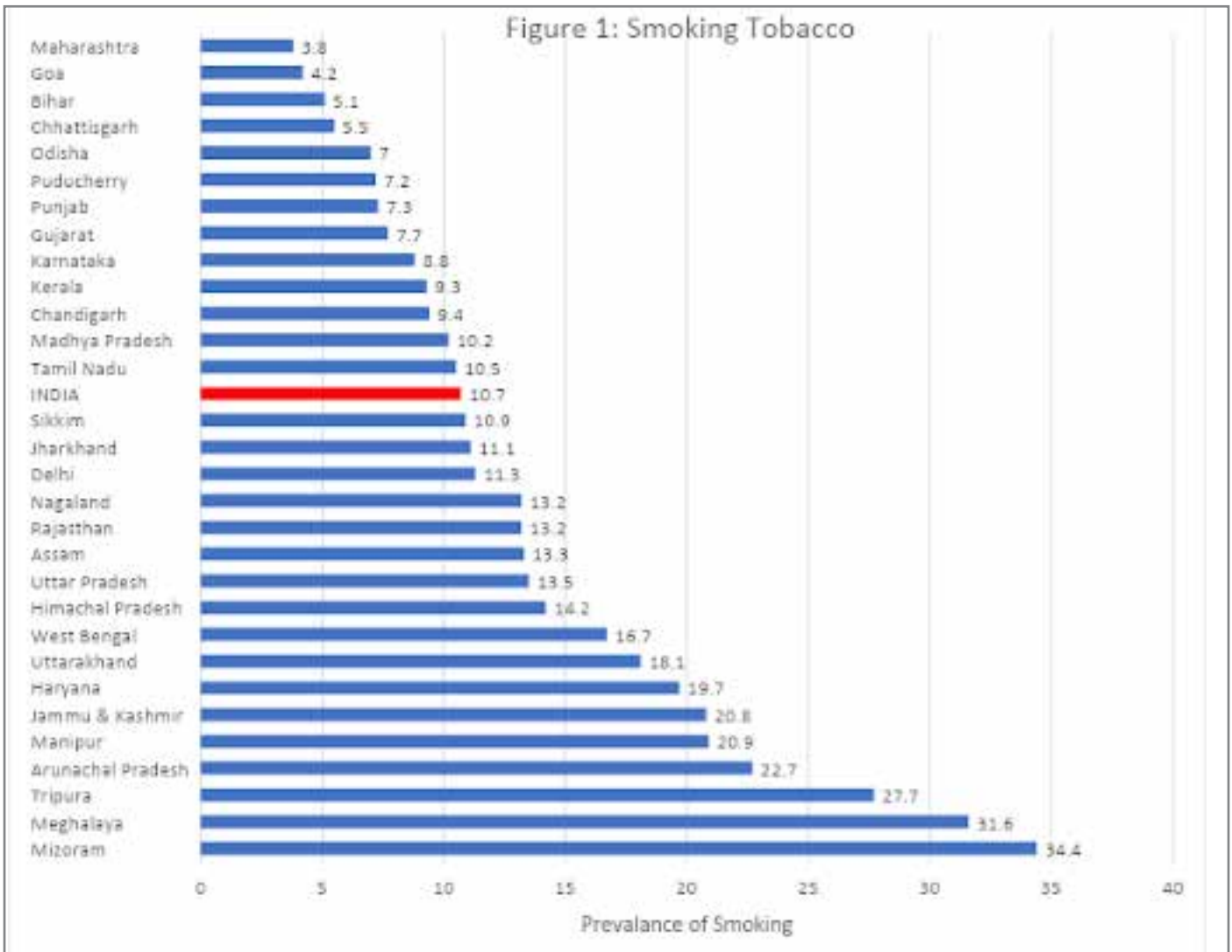
As the entire world tries to tackle the carnage of a severe pandemic, tobacco consumption, which exacerbates the susceptible population's health conditions, continues to be one of the prime threats to public health. The adverse effects seem to do more harm in low- and middle-income nations.

Paradoxically, tobacco consumption presents itself as an avoidable vice. Glaringly, India is home to over 11% of the world's cigarette smokers.

India happens to be currently the third-largest tobacco producing nation and the second-largest consumer of tobacco worldwide. The latest survey data published by the World Health Organisation specifies around 266.8 million current tobacco users.

The World Health Organisation (WHO) approximates around 1.1 billion smokers worldwide and envisages about 1 billion premature smoking-related deaths during the 21st century, till date. Unfortunately, a complicated public health environment characterises the Indian diaspora, given many smokers and convolutions from tobacco usage in diversified forms. India happens to be currently the third-largest

Figure 1: Smoking Tobacco



tobacco producing nation and the second-largest consumer of tobacco worldwide. The latest survey data published by the World Health Organisation specifies around 266.8 million current tobacco users.

The rise in tobacco cessation initiatives was emphasised on World No Tobacco Day, 2021. It is worth mentioning WHO's Quit challenge chatbot available on WhatsApp and Facebook, which aids in encouraging people to remain tobacco-free by frequent notifications for up to 6 months. As a part of the campaign, WHO has quoted "Quitters" as the "real winners in the case of tobacco".

Tobacco Usage in India- A Descriptive Picture: Notably, tobacco use in India is generally attributable to the use of (i) smoking tobacco in its alternative form like bidis, chillum, shisha, water pipes, hookahs and so on. (ii) chewing or Smokeless Tobacco (SLT) like betel quid with tobacco, khaini, tobacco lime

mixture, gutka, oral tobacco, pan masala, snuff (iii) combination of smokeless and chewing tobacco. Dismally tobacco-related deaths in India are estimated to be over 1 million. One of the immediate negative impacts of tobacco consumption is oral cancer. Resultantly, around five people in India die every hour due to the mentioned morbidity. It is easy to acknowledge that tobacco-related mortality in India is mainly linked to the high incidence of oral cancer. Incidentally, tobacco has aggravated the high burden of tuberculosis and Multi-Drug Resistant (MDR) tuberculosis times in India.

Data and Revelations: Adhering to the urgent need for stern intervention to diminish the prevalence of smoking among the masses, the Government of India has taken note of the tobacco epidemic and followed up through the instigation of numerous actions. Realising the importance of data-driven analysis in the modern world, the Government of India has acted as a

vanguard to take up the global tobacco surveys. The Global Adult Tobacco Survey (GATS), which intended to yield internationally comparable data on tobacco use, has established itself as a primary tool for monitoring adult tobacco use and investigating the key tobacco control indicators. The first round of GATS was carried out in 2009-10, whereas the second round was implemented in 2016-17.

GATS 2 proved to be a plethora of revelations. It was noted that around 28.6% of adults in India aged 15 and above actively used tobacco in some form. Among the adults, 1/4th of the population accounted for daily tobacco users, and every tenth adult in India was associated with smoking. The prevalence of tobacco used was conveyed across the states/Union Territories, with Tripura and Goa being at the two extremes. Khaini and bidi were allegedly the most commonly used tobacco products among men.

Figure 2: Non Smoking Tobacco

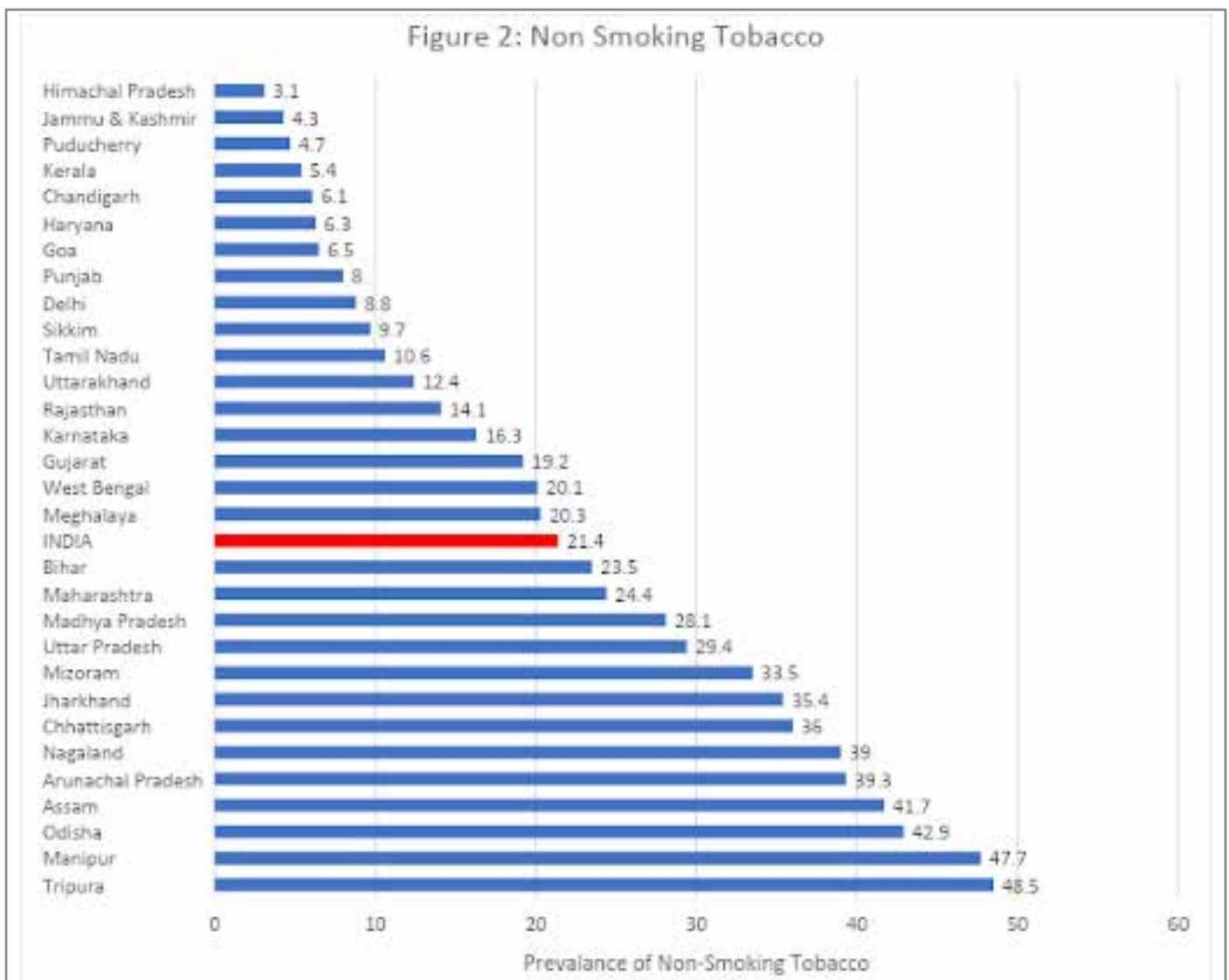
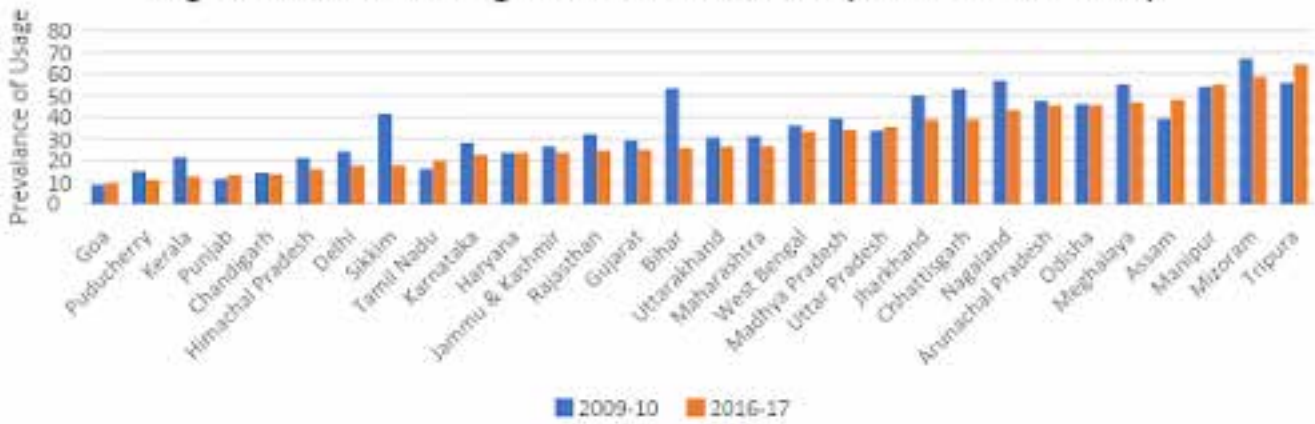


Figure 3: Tobacco Usage in the Indian States (2009-10 & 2016-17)



A remarkable variance was observed during the comparison of the pervasiveness of tobacco usage through the results of GATS 1 and GATS 2. As can be observed from Figure 3, the prevalence of current tobacco users (both smokers and smokeless tobacco users) in India had lessened admirably from 2009-10 to 2016-17. This was mainly due to the ramped-up action by the government leading to the increased promotion of health warnings on packages of cigarette, bidi and smokeless tobacco during the period mentioned above.

1. Government Policies to Fight Tobacco in India: In pursuit of eliminating the impropriety of tobacco smoking among the masses, India became a Party to the WHO Framework Convention on Tobacco Control in February 2005. Accordingly, several practises are adhered to bring down the prevalence of smoking.

Smoking is prohibited in several public places and workplaces, including public transport. Advertising through a majority of mass media is entirely restricted. The government has also ramped up its message against smoking through pictorial health warning labels on tobacco products. The sale of tobacco products via vending machines and within 100 yards of any educational institution is also forbidden in India. Lastly, the production, manufacture, import, export and advertising of e-cigarettes is banned in this nation. To fight for the noble cause, the digitally centre has set up a national-level helpline- Quitline (1800-112-356)

ACTION AGAINST TOBACCO: Govt of India and WHO



Figure 4: Percent distribution of Cigarette smokers by duration of cessation



Figure 5: Percent distribution of Bidi smokers by duration of cessation



Figure 6: Percent distribution of smokeless tobacco users by duration of cessation





for those seeking aid to quit any form of tobacco use.

A roadmap of all government policies implemented in this venture to date is provided below.

Smoking 19, Covid and Cessation: According to the UN health agency, the finding that smokers were more likely to develop severe disease with COVID-19 than non-smokers triggered millions of people to want to quit tobacco. However, without adequate support, withdrawing can be incredibly challenging.

As the risks associated with incidence and resultant fatalities from the lethal COVID-19 continues to terrorise the masses, a significant chunk of the tobacco users (especially smokers) has reportedly adopted for cessation of their malpractices. Fatalities arising out of COVID-19 are often casually linked to a history of smoking.

The survey of GATS-2 (2016-17) had then delved deep into the issue and scrutinised the duration of tobacco cessation across various categories. The following pie charts are graphical analysis of the results obtained:

As is evident from the data shown, parallel to the efforts put in by the government, the expected mass has come a long way to give up this social vice. The data, which is symbolic of the picture prevailing in 2016, suggests that the consternation caused by Covid-19 has only improved these numbers. Although Quitting can be challenging, especially with the added social and economic stress that has come as a result of the pandemic. Interestingly it was found that every 3rd smoker and smokeless tobacco consumer had attempted to quit tobacco use in the past 12 months, which is an indisputably noteworthy feat.

A survey for charity Action on Smoking

and Health (Ash) stated that more than a million people had given up smoking since the deadly pandemic outbreak. Actual figures from India in this context are not available yet. However, even during the pre-COVID times, attempts to cease tobacco consumption (both smoking and smokeless) were observed profoundly.

Despite the plummeting numbers in the pervasiveness of smoking in this nation, there must not be any slack in the attempt to control tobacco use. Given the disparities in variations in tobacco use prevalence across the states, a comprehensive, evidence-based implementation plan is the need of the hour. Mass awareness programmes, expansion of outreach of existing cessation support programmes and anti-tobacco warnings need to be continued in full flow to make the nation tobacco-free shortly.

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The government has also ramped up its message against smoking through pictorial health warning labels on tobacco products. The sale of tobacco products via vending machines and within 100 yards of any educational institution is also forbidden in India.

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RESEARCH

Fermented food from Ayurveda's Lens

■ Dr. Mahesh Sabade



We are born with an excellent ability to adapt to a varied range of weather and places. Our food habits are associated with the place we are in and that gives an opportunity for a specific cuisine of almost every region over the period of time.

Here's a story from an arid state of India – Rajasthan. It is the land of dry and extreme summers and winters. Needless to say, there is a relative scarcity of water. It is a land of great empires, warriors,

and artists too. It boasts a great culture and heritage that was developed in this arid land. The way they adapted to the dryness is through the use of abundant amounts of oils and ghee in their diet. These oily, greasy substances have the ability to maintain moisture inside the body for a longer period. This makes the need for water also limited and makes it a wonderful story of survival and success in the desert. The amount of oil or ghee used gets completely utilized by the body without leaving any residue in the form

of any stagnated lipids inside the body (in form of cholesterol and other fatty substances).

Such stories of human adaptability to nature should always be kept in mind whenever we hear typecast notions about diet plans. Ayurveda advocates, we need to assess our diet as per the status of health, age, the season we are in, and also the region we are living in. This principle is intuitively applied by most cultures and societies around the world.



These adaptations help the communities thrive with their survival and success. However, they may have a few imperfections. Ayurveda can be the tool with which one can assess the correctness of a lifestyle as per the requirement of an individual in given circumstances.

Alternative living with a variety of food plans such as fermented food, veganism, intermittent fasting has been helping individuals worldwide. There is

a commonality amongst the people who benefit from each of these plans and also amongst the people who do not. Comprehending that common thread can be possible with the help of Ayurveda.

Food and Digestion according to Ayurveda –

Ayurveda has an all-pervasive thought that says everything in this universe is composed of five elements – earth, water,

fire, air, and ether (space). From this, we can say that our body is composed of these elements and so are the food items. We replenish the elements inside the body. Ayurveda simplifies nourishment to this level. However, to achieve this replenishment, our body needs to have the ability to digest food. That ability or the digestive capacity is called Agni in Ayurveda. It is nothing but the fire embodied in the form of digestive juices that breaks down the ingested food. The elements from the food cannot nourish the body unless it is properly digested. The same is the case with herbs or medicines in case of a disease.

Human adaptability to nature should always be kept in mind whenever we hear typecast notions about diet plan

This undoubtedly shows the dominance of Agni in the maintenance of health as well as in disease management. This makes it inevitable to nurture the Agni to attain good health. This involves rules and regulations related to cooking as well as cultivating and procuring food; understanding the effects of nature on your Agni, and also understanding when it is low. Heavy meals tend to overwork Agni and recurrent ingestion of heavy meals can disturb the Agni. For the same reason, Ayurveda promotes cooked meals. The act of cooking is nothing but making the food lighter so that our intrinsic fire doesn't overwork. Contrary to cooking, the raw foods, salads juicing, etc. make the Agni work harder. Of course, quantity does matter.

The process of cooking is also graded whether it is roasted, boiled, or mixed with a heavy item. The food that gets cooked in the presence of air helps to cook the food better in contrast to boiled with water. This is noticeable in the case of many food items. Wheat is an excellent example. Also, roasted/barbequed chicken is lighter than boiled in water/gravy.

Indulgence in heavy meals, overeating, snacking, sedentary lifestyle, etc. takes a toll on your Agni or the digestive fire. This makes it slow and weak and that is the foundation of most of the diseases. Furthermore, when the fire element is stronger, it makes Agni sharper and causes digestion at a faster rate. This is an imperfect way of replenishment as it burns the food and for the same reason, the nutritional level is below normal. In the realm of western medicine, this can be understood as slower or faster metabolism.

Unhealthy fasting; various forms of crash diet leading to undernutrition, overuse of spices, alcohol in excess, etc. are the factors that make agni sharper. With a sharper

Agni, there are usually cravings for softer, mushy, cooler, soothing, grounding kinds of foods. Instinctively, it is a bodily response in the form of cravings to heal the imbalance that got created due to the sharpness in Agni.

Love for fermented food can fall into this category. An individual with a sharper agni can have a pacifying effect over the body as well as mind and that makes this person hooked on to such cravings. This is a quick fix and the real treatment is to pacify the sharper agni. To go beyond a short-term benefit, it becomes inevitable to use the right kind of food at the right dosage and at the right time.

On the same lines, overindulgence in fermented food can be the act of going overboard. It eventually can cause dampening of the digestive fire and slowdown of the metabolism. We cannot afford to slow down the metabolism as it acts as a precursor to many diseases such as obesity, diabetes, thyroid disorders, etc.

Use of Fermented food in India – a logical explanation of introduction of fermented foods

Dosa and similar foods are the delectable preparations from South Indian Cuisine. The popularity gained by this cuisine is beyond the borders. However, while treating clients/patients with ayurvedic herbs/lifestyle, more commonly, this tops the list of 'Restricted Foods'.

Being part of the Tropical zone, the Southern part of India gets a lot of heat most of the year. One of the ways of adaptation could be the introduction of fermented food that can help in dealing with the scorch and dryness of the weather by gently creating moisture inside the body. Apart from the moistening effect, it is relatively heavier in comparison with the non-fermented version of

the same ingredient. Because of these factors, fermented food can deal with the sharpness of the weather or even sharp and quicker digestion. Consumption of such foods can certainly help individuals withstand longer without thirst and hunger.

Ayurvedic fermented food - Shrikhand –

Shrikhand is a well-known delicacy as a part of Indian Cuisine and it also tops the list of foods that act as medicine. It is a recipe conceptualized by ancient Saints of India for its health benefits. From the references found in ayurvedic texts, it is prepared by adding cane sugar/honey to hung curd (yogurt without water content in it). The health conditions involving inflammation can get benefitted from the use of Shrikhand. A state of hypermetabolism, anxiety, irritation issues can feel relief with Shrikhand. We can think of many conditions that will manifest such symptoms. It can be one of the best foods that can be used during the convalescent phase after most cancers and chemotherapy.

It is an excellent formula that can satiate, create a calming effect on the mind as well as body, and will also be responsible for strengthening the tissues. According to Ayurveda, this is the kind of fermented food that can be used whenever needed. However, just like any other food, if we go overboard, it can slow down the metabolism.

The importance of cooked food is a well-established fact. Food that is properly cooked, enhances the ability to metabolize it. As per the ayurvedic theory, cooking is an act in which fire and air elements act on the food and make it digestible. However, fermentation is the process that works on the same lines but the impact is relatively lesser. Regular use of fermented food allows more moisture to accumulate inside the body. In a few instances, it is conducive to health but not every time.

Dr. Mahesh Sabade is an ayurveda consultant who has been working in this field for the last twenty-one years as a practitioner, researcher, author, and teacher.

When the fire element is stronger, it makes Agni sharper and causes digestion at a faster rate. This is an imperfect way of replenishment as it burns the food and for the same reason, the nutritional level is below normal

Personalised vaccination and its relevance to COVID-19 vaccines

■ Dr. Shruthi K.Venugopalareddy



Coronavirus disease (COVID-19) has overwhelmed the world with its devastating outcomes. The detection of new variants of severe acute respiratory coronavirus 2 (SARS-CoV-2) has further upraised global concerns. This, in turn, has altered the dynamics of the disease outbreak, contributing to the heterogeneous clinical behaviour of SARS-CoV-2. The reports show the majority of the infected patients (>85%) have mild symptoms or remain asymptomatic, while a few others exhibit aggressive life-threatening disease. These differences in disease severity could be attributed to various host genetic, environmental, and pathogen-related factors.

In order to curb the pandemic, vaccination is deemed to be a promising approach. Vaccines prime the human immune system (the body's natural defenses) to defend and protect against a specific disease. Currently, universal

vaccination is in practice with an assumption that the immune response to vaccines amongst all the individuals is identical. However, there seems to be a substantial variation in immune response between the individuals/subgroups of the population. For example, sub-optimal immune responses are noted in the elderly population and infants due to aging or immature immune systems. Likewise, post-vaccination, women display superior immune responses with a higher propensity for adverse reactions than men. Thus, given the complexity and diversity of the human immune system and the host genome, the conventional 'one-size-fits-all' vaccination approach could be inapt, thereby creating a need for alternative vaccination strategies.

Personalised vaccination, a newly evolving approach has emerged as a better alternative to the conventional approach. Here, the vaccines are administered

based on the individual or subgroup characteristics of the population, by taking into account the influence of genetic and non-genetic factors on the immune response to vaccines. Further, given the heterogeneous nature of SARS-CoV-2, the development of COVID-19 vaccines through personalised vaccination approach could prove advantageous. On this front, this article aims to provide an overview of personalised vaccination and its relevance to COVID-19 vaccines.

Personalised vaccination

Personalised vaccines target a particular vaccine antigen to produce an optimal immune response. The study of personalised vaccination strategies is referred to as 'personalised vaccinology', comprising of two terminologies namely 'vaccinomics' and 'adversomics'. In 'vaccinomics', the influence of genetic and non-genetic factors on the heterogeneity



the heterogeneity of immune response to vaccines are studied. On the other hand, ‘adversomics’ provides a scientific basis to understand the mechanisms of vaccine induced adverse reactions.

Through this, a new methodology of vaccine development paradigm “discover-validate characterize-apply” is established. Here, first, the genetic variants associated with immune responses, and the host-pathogen interaction mechanisms are discovered using high dimensional bioinformatic approaches. Second, the discovered findings are replicated and validated in the subgroups of interest. Third, the functional studies of well-defined genetic variants are performed to characterise and determine the variations in the immune response. Lastly, these characteristics are applied to predict beneficial/adverse immune responses, and to develop new vaccines. Thus, the above paradigm forms an iterative process, wherein, new developments enhance scientific understanding and lead to novel breakthroughs.

Application of personalised vaccination can offer multitude benefits:

- Individualised vaccination approach - the type of vaccines, dosage, and timeline of vaccination could be tailored to individuals/subgroups of population.
- Predict the likelihood of beneficial or adverse immune response to vaccines.
- Aid in the design of new vaccines based on the specific genotype or mutant variants.

Furthermore, personalised vaccination could also provide early insights on pathophysiological mechanisms of infectious diseases like COVID-19, which in turn, helps in early identification, diagnosis and prevention of such disease outbreaks.

Relevance of personalised vaccination to COVID-19 vaccine development

The unprecedented COVID-19 global outbreak triggered a pressing need to develop novel vaccines within a short timeline. As a result, we now have 17 different COVID-19 vaccines approved by at least one national regulatory authority. Till now, these vaccines have proven to be effective with acceptable levels of safety

in the general population. However, amongst the vaccinated individuals, significant concerns do exist over the varied immune responses. This could be due to the differential role of various host, genetic and environmental factors as described below.

A collaborative study ‘COVID-19 host genetics initiative’ elucidated the role of host genetic factors, and determined 15 genetic loci to be strongly associated with COVID-19 susceptibility/ severity. In addition, a comparative genetic analysis of the SARS-CoV-2 binding receptor angiotensin converting enzyme-2 (ACE-2), reveals increased ACE-2 expression/function in the East Asian population compared to South Asians. These observations unfold the genetic predilection of an individual/subgroup population towards differential susceptibility to COVID-19.

Furthermore, the extant literature shows gender related differences in immune response with higher COVID-19 severities and fatalities in men than women. However, post-vaccination with COVID-19 vaccines, cases of

unusual blood clots are seen mainly in women under 60 years of age. Besides, smoking, body mass index, pre-existing immunity, co-morbidities like Human Immunodeficiency Virus (HIV), cancer, etc can also affect the immune responses. Hence, owing to these heterogeneous immune responses, personalised vaccination strategies could be of profound importance to the development of COVID-19 vaccines. Also, the detailed assessment of the characteristics of the individual immune responses guide in the appropriate design of personalised vaccines.

Personalised COVID-19 vaccines: preliminary studies

Few preliminary studies of personalised vaccination strategies to COVID-19 vaccines show promising results. 'AV-COVID-19', a personalized vaccine candidate, developed using an autologous cell therapy platform has passed pre-clinical and phase 1 vaccine trials. Here, the vaccine is prepared from the extracted autologous immune cells and is

primed with multiple SARS-CoV-2 spike antigens. These are then re-administered to the same individual to develop specific rapid immune responses. This offers two unique advantages over traditional vaccines. First, the vaccine ingredients are available in the form of ready kits, which in turn, helps in local manufacturing of vaccines. Second, the modification of antigens in ready kits aid in the rapid development of vaccines to target new mutant variants. Thus, through this cost-effective personalised model, precise and rapid immune responses to both existing and new variants could be achieved.

Another illustration of personalised vaccination strategy is via 'age-personalized-dosing', experimented with the Moderna vaccine. In general, compared to the younger population, the elderly have lower immunity, and are at high risk of COVID-19 fatalities. However, social interaction seems to be higher amongst the younger with increased rate of COVID-19 transmission. By adapting the 'age-personalized-dosing' approach, both the mortality and transmission

rates were reduced through vaccination of the elderly population at full dose and younger at a quarter dose, which proved to be beneficial. Thus, deploying personalised vaccination strategies optimize individual/subgroup specific immune responses against COVID-19.

The prevailing COVID-19 pandemic commands a decisive action to prevent the rampant spread of infection and deaths. Although vaccination is the key to overcoming the crippling effects of the pandemic, varying immune responses to vaccination through the conventional one-size-fits-all approach is still a concern. On the contrary, personalized vaccination helps to predict the immune responses considering the unique characteristics of an individual/the population subgroups. Overall, personalized vaccination approach enables effective management of the ongoing pandemic, mitigating the impact of the mutant strains.

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Personalised vaccination could also provide early insights on patho-physiological mechanisms of infectious diseases like COVID-19

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Plant based seafood substitutes

■ Aakriti Sharma



Plant based alternatives to seafood, ranging from slices of aubergine marinated and pressed over rice to sauteed tofu wrapped in seaweed, have experienced a notable surge in their consumption in recent years. This is in accordance with the increasing health concerns among people concomitant to the ongoing times of global crisis. The alarming situation of our marine ecosystems, as has been well picturized in a recent documentary named 'Seaspiracy', has also gathered people's interest towards animal welfare thus making them forgo natural seafood and stepping towards a 'greener' diet. Keeping in mind the sufferers of seafood allergies alongside, plant-based seafood substitutes have come out to be a healthier and easier alternative without needing to compromise the taste and texture.

Vegans and vegetarians may find it difficult to choose sustainable options among seafood, thus might see plant-based substitutes as an attractive alternative offering an additional dietary choice. As per recent findings, plant-based seafood

industries have been found to be worth more than \$900 million and have enjoyed a rise in sales by 18% in the previous year. This industrial sector has incurred a relatively slower but consistent growth in the past years.

A wide variety of seafood including salmon, scallops, tuna, shrimps, caviar, crabs and squids have already gained popularity in their plant-based form in the markets. Good Catch, Ocean Hugger Foods, Sophie's Kitchen, Gardein, BeLeaf, JINKA, Plant Based Seafood Co. are the few amongst pioneering plant-based seafood industries. Considering the positive impact of plant-based substitutes of seafood on our oceans, an all-female family ventured into the seafood industry (Plant Based Seafood Co.) with the passion of letting our oceans thrive again. An innovative alternative to raw tuna i.e., AHIMI was developed by James Corwell (the founder of Ocean Hugger Foods) which is a tomato-based Ahi tuna.

Although, aforesaid circumstances demonstrate high demands of plant-

based seafood substitutes in present times, they have been still considered to be where veggie burgers were around 10 years ago, as per Chad Sarno (co-founder and chief culinary officer of plant-based seafood brand Catch). Plant-based seafood could make only 1% of all the retail sales of plant-based meat in 2019 in the US which is the country with most startups of vegan seafood. And in turn the share of plant-based meat in total meat sales was also just 1%. This is indicative of how small the sector of seafood in the food supply chain at present. Among the most highlighted challenges faced by this sector are the under marketing, high cost, replicating exact taste and texture, nutritional benefits close to the real deal, comparatively less global outreach and lack of environmental awareness among seafood lovers. Countries have also been found to have done far less expenditures in the R&D sector of this industry. However, the sector holds massive potential and with the drastically changing times in terms of health, plant-based seafood industries may be seen making a mark with soaring high demands in the markets in near future.

A wide variety of seafood including salmon, scallops, tuna, shrimps, caviar, crabs and squids have already gained popularity in their plant-based form in the markets.

Aakriti Sharma is an aspiring Biotechnologist and an enthusiastic explorer, avid reader and often loves to pen down her thoughts.

► NEWSCOPE

LATEST NEWS IN HEALTHCARE

PUNE LAB DEVELOP INDIA'S FIRST HOME COVID TEST KIT; MYLAB COVI-SELF AT CHEMISTS' FOR RS 250

In order to break the chain of transmission of the virus, several measures are being taken by governments around the globe. As most of the western countries have already allowed self-test for their citizens, India has also developed its first home COVID-19 test kit. This really looks promising step towards the efforts to break the chain and our fight against COVID-19.



The Indian Council of Medical Research (ICMR) on Wednesday approved the country's first COVID-19 self-testing kit for home use. That essentially means anyone can collect their own nasal sample and test it for SARS-CoV-2.

The self-use test kit can be used by symptomatic individuals and immediate contacts of confirmed cases as per the ICMR's guidelines.

The test kit, named CoviSelf, will cost Rs 250, and can be bought without a

prescription from pharmacies and online, the company said.

The test requires the user to download an app on their mobile phone, but will not need a healthcare professional to collect a swab sample.

How does a self-test kit help?

Many states are going through a second wave of infections, putting pressure on diagnostics laboratories. The RT-PCR test, considered the gold standard for COVID-19 testing, takes 3-4 days to

give results, delaying hospitalisation and treatment.

Self-test kits can potentially be a game-changer in COVID-19 management in India. These can cut queues in laboratories, reduce costs, dissipate the burden on existing manpower for sample collection from homes, and provide quick results (within 15 minutes), leading to prompt treatment and isolation.

Such a self-test kit was first approved in the US last November. A rapid-result all-in-one test kit produced by Lucira Health

was given emergency use authorization. Similar kits have been approved in Europe and South Korea too.

What is the kit approved by ICMR?

CoviSelf has been developed by MyLab Discovery Solutions, a Pune-based molecular company. It uses a rapid antigen test, in which a nasal swab sample is tested for the virus and gives results within 15 minutes. Taking the test takes hardly two minutes.

This testing kit cost Rs 250, while RT-PCR test costs between Rs 400 to Rs 1,500 and a rapid antigen test in laboratory costs Rs 300-900 in different states.

“For India, we will make millions of kits available at a fraction of the cost of such kits in the US,” said Dr Hasmukh Rawal, managing director in MyLab. MyLab’s current production capacity is 70 lakh kits per week, and it plans to scale up to one crore kits per week in the next fortnight. The kits will be available across at least seven lakh chemists and e-pharmacy portals in India, the company said.

“This easy-to-use test combines with MyLab’s AI-powered mobile app so that

a user can know his/her positive status, submit the result to ICMR directly for traceability, and know what to do next in either result. We are sure this small step will be a big leap in mitigating the second and subsequent waves,” said Sujit Jain, director, MyLab Discovery Solutions.

Who can use this test?

ICMR has advised this test only for those who have symptoms or are high-risk contacts of positive patients and need to conduct a test at home. If positive, the person will be considered COVID-19 positive and will not require RT-PCR as a confirmatory test. All government guidelines for isolation and high-risk contact tracing will be followed. This test is synced with a mobile app, CoviSelf, which will help directly feed the positive case’s report on the ICMR portal. This test is not advised for general screening in public places of hawkers, show owners, or commuters. If a person tests negative but has symptoms, he or she has to undergo an RT-PCR test.

How do I test myself?

The kit comes with a pre-filled extraction tube, sterile nasal swab, a testing card,

and biohazard bag. First download the CoviSelf app and enter all your details. The app will capture data on a secure server connected with the ICMR portal, where all test reports are available to the government.

Before taking the test, sanitise your hands and clean the surface on which the kit is to be placed. Insert the swab into your nose 2-4 cm inside, or until it touches the back of the nasal tract, and rub it well to collect the specimen. The swab is then swirled inside the extraction tube to mix with the liquid inside, the tube is tightly closed, and two drops from the extraction tube’s outlet are spilled onto the testing card.

The result comes within 15 minutes. A person is positive for COVID-19 if two lines appear on the testing card — on marker ‘t’ for the testing line, and ‘c’ for quality control line. If the person is negative, a single line appears on marker ‘c’. If the result takes more than 20 minutes to show, or if a line does not flash across marker ‘c’, then the test is invalid.

Seal the tube and swab in the biohazard bag and dispose of it as biomedical waste.

SOURCE: www.indianexpress.com/article/india

SBI LAUNCHES ‘AAROGYAM HEALTHCARE BUSINESS LOAN’

This pandemic has taken the entire healthcare industry by swing and now we all are making efforts to build a resilient ecosystem around it to mitigate any similar situation in the future. State Bank of India NSE 2.27 % (SBI) has launched a business loan for the entire healthcare ecosystem. This could be really helpful to strengthen the healthcare infrastructure across the entire country.



The SBI has launched 'Aarogyam Healthcare Business Loan'. Under this new product, the entire healthcare ecosystem such as hospitals, nursing homes, diagnostic centres, pathology labs, manufacturers, suppliers, importers, logistics firms engaged in critical healthcare supply can avail of loans up to Rs 100 crore (as per the geographic location) repayable in 10 years.

To provide enhanced support to the healthcare sector amid the pandemic, State Bank of India NSE 2.27 % (SBI) has launched the Aarogyam healthcare business loan. Under this new product, entire healthcare ecosystem such as hospitals, nursing homes, diagnostic centres, pathology labs, manufacturers, suppliers, importers, logistic firms engaged in critical healthcare supply can

avail of loans up to Rs 100 crore (as per the geographic location) repayable in 10 years, SBI said in a statement.

The Aarogyam loan can be availed either as term loan to support expansion/modernisation or as working capital facilities such as cash credit, bank guarantee/letter of credit, it said.

In metro centres loans under Aarogyam can be availed up to Rs 100 crore, Tier I & Urban centres up to Rs 20 crore and in Tier II to Tier VI centres upto Rs 10 crore, it said.

The beneficiary units/borrowing Companies availing loan of up to Rs 2 crore will not be required to offer any collateral or security to the bank as this will be covered under the guarantee scheme of

Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE), it said.

SBI Chairman Dinesh Khara said, "We believe this special loan product will provide the much needed financial support to enable expansion/modernisation of existing facilities and also creation of new facilities. With Aarogyam Healthcare Business Loan, our endeavour is towards strengthening the healthcare infrastructure across the entire country."

Aarogyam Healthcare business loan will be eligible under the COVID loan book being created by banks announced by RBI as part of COVID relief measures.

SOURCE: economictimes.indiatimes.com

GOOGLE'S DEEPMIND RELEASES STRUCTURE OF EVERY KNOWN PROTEIN

Protein structure is the core of biochemistry and has profound implications for medicine and technology. With thousands of protein structures being established, there will be improvement in the productivity of pharmaceutical research pipelines. Google's AlphaFold 2 indisputably won the 14th Critical Assessment of Structural Prediction competition, a biannual blind test where computational biologists try to predict the structure of several proteins whose structure has been determined experimentally – yet not publicly released. Their results are so incredibly accurate that many have hailed this code as the solution to the long-standing protein structure prediction problems.

DeepMind—a British subsidiary of Alphabet Inc.(a.k.a. Google)—announced it'd solved a "grand challenge" in biology. The challenge is known as "the protein folding problem." It required the AI company to develop a way to predict proteins' structures based solely on their amino acid sequences. Using the cutting-edge method, AlphaFold, the company says it will sequence every protein scientists know. And it's already released structures for 350,000 of them on a searchable database.

MIT Technology Review reported on DeepMind's newest application of AlphaFold. Notably, in a very Google-ish fashion, the company has set up a searchable database that anyone can use online. AlphaFold DB's tool is already up and running, and people can search the entire human proteome. As well as the proteomes of 20 other scientifically relevant organisms such as yeast, fruit flies, and mice.

AlphaFold can structure the various proteins that make up an organism's

proteome. Using machine learning, the organism's entire set of constituent proteins. DeepMind trained the AI on roughly 170,000 protein structures from a large database. The training allowed the AI to "learn" which amino acid sequences lead to which types of proteins. Thanks to its gleaning patterns from the data, AlphaFold can now identify novel protein structures after only seeing their amino acid sequences.

SOURCE: www.nerdist.com

WHO ISSUES FIRST GLOBAL REPORT ON ARTIFICIAL INTELLIGENCE (AI) IN HEALTH AND SIX GUIDING PRINCIPLES FOR ITS DESIGN AND USE

With the increase in cyber risks/ threats and healthcare digitalisation, have you ever wondered how ethical is the algorithm that you use to improve your healthcare delivery? Now with the release of WHO guidelines, one can evaluate them and make sure that it works for the public interest in all countries.

Artificial Intelligence (AI) holds great promise for improving the delivery of healthcare and medicine worldwide, but only if ethics and human rights are put at the heart of its design, deployment, and use, according to new WHO guidance published today.

The report, Ethics and governance of artificial intelligence for health, is the result of 2 years of consultations held by a panel of international experts appointed by WHO.

“Like all new technology, artificial intelligence holds enormous potential for improving the health of millions of people around the world, but like all technology it can also be misused and cause harm,” said Dr Tedros Adhanom Ghebreyesus, WHO Director-General. “This important new report provides a valuable guide for countries on how to maximize the benefits of AI, while minimizing its risks and avoiding its pitfalls.”

Artificial intelligence can be, and in some wealthy countries is already being used to improve the speed and accuracy of diagnosis and screening for diseases; to assist with clinical care; strengthen health research and drug development, and support diverse public health interventions, such as disease surveillance, outbreak response, and health systems management.

AI could also empower patients to take greater control of their own health care and better understand their evolving needs. It could also enable resource-poor countries and rural communities, where patients often have restricted access to health-care workers or medical professionals, to bridge gaps in access to health services.

However, WHO’s new report cautions against overestimating the benefits of AI for health, especially when this occurs at the expense of core investments and strategies required to achieve universal health coverage.

It also points out that opportunities are linked to challenges and risks, including unethical collection and use of health data; biases encoded in algorithms, and risks of AI to patient safety, cybersecurity, and the environment.

For example, while private and public sector investment in the development

and deployment of AI is critical, the unregulated use of AI could subordinate the rights and interests of patients and communities to the powerful commercial interests of technology companies or the interests of governments in surveillance and social control.

The report also emphasizes that systems trained primarily on data collected from individuals in high-income countries may not perform well for individuals in low- and middle-income settings.

AI systems should therefore be carefully designed to reflect the diversity of socio-economic and health-care settings. They should be accompanied by training in digital skills, community engagement and awareness-raising, especially for millions of healthcare workers who will require digital literacy or retraining if their roles and functions are automated, and who must contend with machines that could challenge the decision-making and autonomy of providers and patients.

Ultimately, guided by existing laws and human rights obligations, and new laws and policies that enshrine ethical principles, governments, providers, and designers must work together to address ethics and human rights concerns at every stage of an AI technology’s design, development, and deployment.

Six principles to ensure AI works for the public interest in all countries

To limit the risks and maximize the opportunities intrinsic to the use of AI for health, WHO provides the following principles as the basis for AI regulation and governance:

- **Protecting human autonomy:** In the context of health care, this means that humans should remain in control of health-care systems and medical decisions; privacy and confidentiality should be protected, and patients must give valid informed consent through appropriate legal frameworks for data protection.
- **Promoting human well-being and safety and the public interest.** The designers of AI technologies should satisfy regulatory requirements for safety, accuracy and efficacy for well-defined use cases or indications. Measures of quality control in

practice and quality improvement in the use of AI must be available.

- **Ensuring transparency, explainability and intelligibility.** Transparency requires that sufficient information be published or documented before the design or deployment of an AI technology. Such information must be easily accessible and facilitate meaningful public consultation and debate on how the technology is designed and how it should or should not be used.
- **Fostering responsibility and accountability.** Although AI technologies perform specific tasks, it is the responsibility of stakeholders to ensure that they are used under appropriate conditions and by appropriately trained people. Effective mechanisms should be available for questioning and for redress for individuals and groups that are adversely affected by decisions based on algorithms.
- **Ensuring inclusiveness and equity.** Inclusiveness requires that AI for health be designed to encourage the widest possible equitable use and access, irrespective of age, sex, gender, income, race, ethnicity, sexual orientation, ability or other characteristics protected under human rights codes.
- **Promoting AI that is responsive and sustainable.** Designers, developers and users should continuously and transparently assess AI applications during actual use to determine whether AI responds adequately and appropriately to expectations and requirements. AI systems should also be designed to minimize their environmental consequences and increase energy efficiency. Governments and companies should address anticipated disruptions in the workplace, including training for health-care workers to adapt to the use of AI systems, and potential job losses due to use of automated systems.

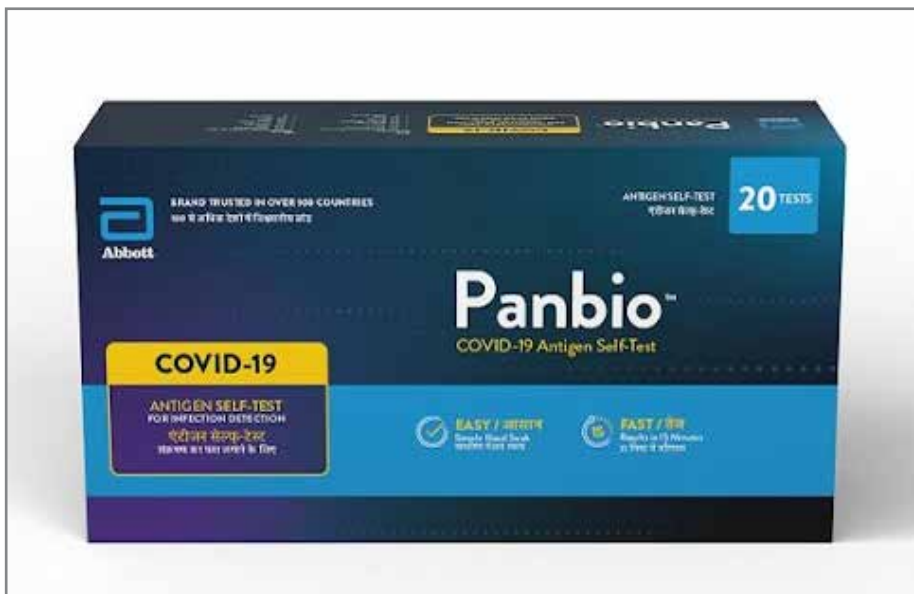
These principles will guide future WHO work to support efforts to ensure that the full potential of AI for healthcare and public health will be used for the benefits of all.

SOURCE: www.who.int/news

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ABBOTT'S KOREA-IMPORTED PANBIO COVID-19 SELF TEST LAUNCHED AT RS 325

With the COVID-19 self-testing landscape maturing in India, US-based pharma and diagnostics giant Abbott launched Panbio, a rapid antigen self-test kit in India for Rs 325 a test. This is the second such test kit available in the country after Pune-based Mylab Discovery Solutions launched CoviSelf (priced at Rs 250 per test) in May.



Abbott's PanBio, which will be imported from its Korean plant, will be available at retail outlets by the end of this month. Ambati Venu, Vice President, Pharmaceuticals, Abbott India said that compared to an RT-PCR test, this is much more economical, and therefore, access to a self-test will be much higher.

Venu added that PanBio would be distributed through collaboration between Abbott's diagnostics and pharmaceutical divisions. "We will make the product available across half a million stores, which will not only cover semi-urban but also tier-2 and 3 cities where the access to RT-PCR was always a challenge," he said. PanBio Self-Tests will be available via retail pharmacies and through e-commerce platforms, as well as through organizations and institutions. The PanBio professional test demonstrated 95.7 per cent sensitivity and 97.6 percent specificity when benchmarked against RT-PCR tests.

"Abbott is the only diagnostics manufacturer to provide performance data on a rapid antigen test specific for use on children 15 years and younger, including infants," the company claimed. PanBio is on the World Health Organization (WHO) Emergency Use Listing.

Abbott expects to import a few million kits, but did not give a specific number. Venu said, "We are targeting three segments—home testing (self testing); assisted testing in clinics, labs etc; and third is 'return to work' segment. As corporates start opening up, airline travel picks up, educational institutions re-open, and hotels resume hosting clients, there is huge potential for such point of care COVID-19 testing."

In India, Abbott will offer self-tests for use at home, assisted professional testing at point of care and laboratories, as well as workplace testing to help enable a sense of normalcy in returning to places of employment.

"Rapid antigen testing is critical in the fight against COVID-19 and Abbott is delivering a variety of diagnostics options at a critical juncture in the pandemic," said Sanjeev Johar, divisional vice president of Abbott's rapid diagnostics business in Asia Pacific. "Self-testing is a proven tool that provides an added layer of defense along with public health protocols and the vaccine roll out."

The company has also priced the kit competitively. Johar elaborated: "The test is available in four pack sizes – one test pack is available for Rs 325 at the retail outlet to the consumer. As one moves to larger packs, the price per test becomes economical—for 20 test packs, it is Rs 280 per test."

The PanBio COVID-19 Antigen Self-Test is easy-to-use, Abbott said. "People can take the test by using a simple nasal swab (not the deep nasopharyngeal swab) while following the Instructions for Use steps on pack. For children younger than 14 years, an adult caretaker should help collect the nasal samples and conduct the test procedures. The kit contains all the materials required including nasal swabs, test devices and reagent ampules. No additional instrumentation is required to conduct the test," it explained.

The results come in 15 minutes, and the test is to be used along with Abbott's NAVICA mobile app.

The app offers a process of self-registration, automatic reading of results and reporting as per ICMR guidelines. Since last August to date, Abbott has shipped 300 million PanBio COVID-19 Antigen Rapid tests for professional use in more than 100 countries across Europe, the Americas, Asia and Africa.

SOURCE: www.business-standard.com

INNOVATIONS IN HYDROGEL TECHNOLOGY ARE TRANSFORMING WOUND CARE

Nobody likes scars on their body. Whenever our skin is injured, be it by accident or from any surgery, our body works to repair the wound. As our skin heals, a scar may form, as this is a natural part of the healing process. But the appearance of a scar often depends on how well the wound heals. With the advent of new innovations in hydrogel technology, wound care can be transformed.



Using revolutionary technology, hydrogel wound care can help prevent unnecessary infection and heal wounds before they become chronic.

The benefits of employing antimicrobial peptides in wound care have been researched for years, but unfortunately as the peptide degrades quickly upon contact with bodily fluids it was impossible to actually employ as it would simply break down before it could have a positive impact. However, researchers at Chalmers University of Technology, Sweden, have developed a new material, a hydrogel, that suspends and protects the peptides, meaning they do not break down as readily. This innovative new technology will allow peptides to be used in dressings, as wound care, for the very first time and due to the unique nature of

the peptides this technology can even be used to treat wounds that have antibiotic resistant bacteria.

The big challenge when managing and treating wounds is infection. If the wounds get infected, it can greatly hamper the healing process and sometimes you can have such a severe infection that it could become fatal. Another challenge is that of chronic wounds, these are wounds that never heal, sometimes growing, causing extended discomfort to the patient and often requiring surgical intervention. Chronic wounds are especially difficult when dealing with patients who have other diseases, such as diabetes, that affect their ability to heal. Also, if patients are on certain drug treatments that limit their immune system their wounds become more difficult to treat. When combined, chronic wounds and the risk of infection

are the biggest challenges we face within wound care.

The hydrogel focuses on eradicating bacteria that is present in the wound and in the surrounding skin and it is very effective as it has a rapid, almost immediate, killing effect. It is what is known as a contact killing device, so as soon as the bacteria gets in contact with the device, it is killed. It also attaches to the surface, therefore as you remove the wound patch you also remove the bacteria. One of the key benefits here is that it is very selective towards bacteria, but at the same time, it has a broad efficiency when it comes to different types of bacteria including gram-negative, gram-positive or resistant strains. It has also been proven that it has very low toxicity, so it does not cause irritation or pain when applied to the skin. Low toxicity is highly beneficial when healing wounds because if a treatment has any toxicity present, it can affect the tissue-forming cells and hamper the healing process. Furthermore, because it is a hydrogel that contains a lot of water, it creates a moist environment for the wound, which is ideal for promoting healing.

It is a quicker process. As a device it does not leach out any substance into the wound, ensuring that it stays as a local effect and does not need to be taken up by the body in any way. And because of that it is not dependent on the release, you do not need to build up a certain dosage or certain concentration, which is a common thing with many other devices that do release substances, in which you must reach a specific therapeutic dosage before the product will work effectively.

SOURCE: www.healtheuropa.eu

Compiled by:
Parthvee Jain, Editor
InnoHEALTH Magazine

What kept us (IC) busy during the second wave of the pandemic

■ Parthvee Jain



Like several parts of the world, especially Europe, India experienced a massive surge of COVID-19 cases since the middle of March 2021, when the second wave started. While each day, we were praying for our near and dear ones to be safe, healthy and most importantly alive, our dedication towards supporting our community and hard work kept us positive and got us going.

We, InnovatioCuris (IC), as the technology partner, supported the entire joint event “the fifth Science-Policy Forum for Biodiversity and the Eighth International Conference on Sustainability Science” on the technical front by providing end-to-end technology solutions and logistical support for, including the event’s official website: www.science4biodiversity.org.

The event aimed to provide space for scientists, policymakers, along with other relevant stakeholders to discuss in order to recommend on the relevance of science, technology, and innovation to contribute to the effective implementation of the post-2020 global biodiversity

framework. This was done to bend the curve of biodiversity loss and obtain positive biodiversity outcomes to foster transformative change for achieving the 2050 Vision.

The programme included five virtual sessions held on 13th, 15th, 19th, 21st and 23rd April 2021. The sessions lasted up to an average of 120 minutes, starting at 6 A.M. (Montreal Time). Each session had four to six panelists and a moderator was also included to interact with the participants via the chat and Q&A. Some days even had parallel sessions running via breakout rooms.

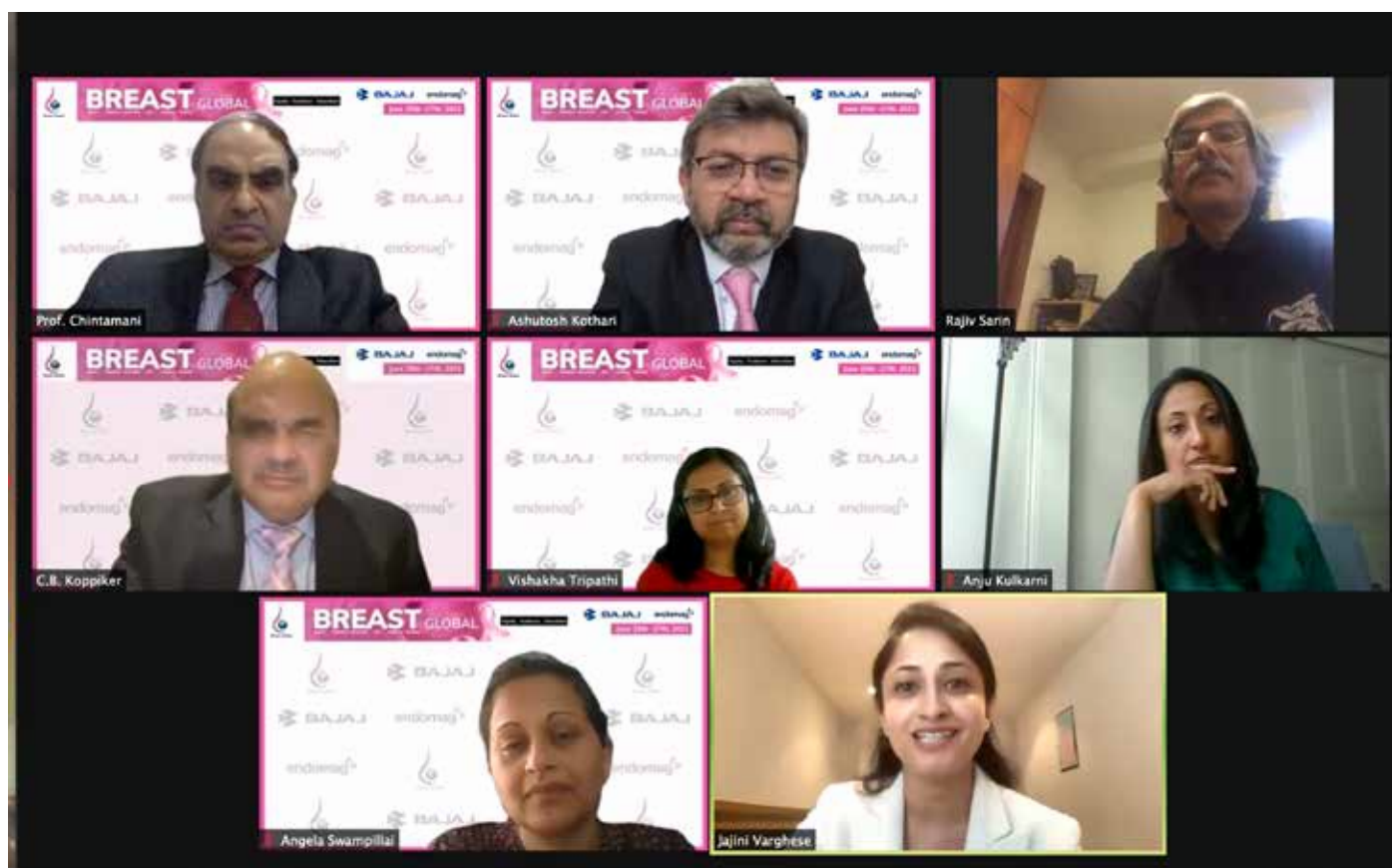
The event saw participation from more than 25 stakeholders across the globe with more than 70 speakers spread across five sessions. Also, the viewership spanned over about 139 countries worldwide. Further details can be looked up on: <https://innovatiocuris.com/veaas/>

Just as this was successfully concluded, another international project’s opportunity knocked our door and

without any delay, we started prepping for the first of its kind inaugural event “Breast Global Conference 2021: Crux to Consensus”.

The objective of this event was to address geographical disparities in cancer care provision through evidence-based discussions, sharing of data driven innovations in treatment and arriving at an acceptable consensus, considering local patient cohorts and infrastructure. An international faculty of key opinion leaders will moderate, present and debate data on controversial issues such as the de-escalation of interventions aimed at improving outcomes and Quality of life (QOL).

The conference saw some 2300 registrations and 1305 attendees. Distributed over 3 days, the conference generated a high value educational content of about 32 hours, with comments and experience rich knowledge shared by more than 60 speakers across the globe. It was overwhelming to see the support from more than 30 partners & stakeholders.



The website was receiving viewership from around 60 countries apart from this there were participants who actually attended the conference.

BreastGlobal has been established by a group of like-minded individuals who believe that access to specialist breast training should be universal, regardless of geographical location. The aim of the breast global community is to bridge the gaps in knowledge by providing a single platform where experts, trainees and industry can have access to a plethora of global learning and training opportunities.

We are also happy to let you know that in the month of August 2021, InnovatioCuris (IC) turned six and we want to convey our heartfelt gratitude to the entire community for their unanimous support and looking to receive the same in our upcoming years.

We celebrated this by organising an open to all virtual meet on Aug 7, 2021, on the theme "Transformation of Indian healthcare system: Post Covid". The meeting saw expert opinions and discussion from some of the eminent names of the healthcare industry

like Honorary Brig. Dr. Aravind Lal (Chairman & Managing Director, Dr Lal PathLabs, India) and Dr Shibhan Ganju (Chairman, Atrimed Pharmaceuticals & Founder, Save A Mother Foundation, USA). This was followed by a concept note on outcomes of the meeting that would bring out the pain of the healthcare system during pandemic and possible remedy to make the system robust and resilient to tackle the adversities of the future. While some of us were busy making the events successful, others were exploring new avenues.

With people becoming busier by the day, an obscure method of spreading audio information, has become quite recognized and prevalent. Yes, I am referring to Podcasts! According to Wikipedia "A podcast is an episodic series of spoken word digital audio files that a user can download to a personal device for easy listening. Streaming applications and podcasting services provide a convenient and integrated way to manage a personal consumption queue across many podcast sources and playback devices."

Since this is becoming one of the favorite ways of consuming knowledge and

meeting like-minded people, we decided to try our hands on the same; and we started an inhouse podcast series with our innovation community (You can check podcasts here: www.innohealthmagazine.com/podcast/). We have also started a club on the clubhouse app, which will have engaging conversations every now and then. You can join the community now via bit.ly/clubhouse-innohealth.

We, as a team, believe in the spirit of adventure hence we keep exploring newer opportunities every time to present. We will be happy to have you on our journey of leaving no stone unturned. To explore the possibilities for doing so, please feel free to reach out to us on info@innovatiocuris.com. We are sure, together we can do wonders.

Parthvee Jain is an engineer with specialization and interests in fields of Biotechnology, Healthcare, Food Processing, and Nutraceuticals. Currently working to build key partnerships to impact people's lives in emerging markets through technology and entrepreneurship. She has an expertise in the area of organising and handling virtual events and also in strengthening the collaboration across national and international organisations.

▶ BOOK REVIEW

Reviewed by Sachin Gaur, Executive editor for InnoHEALTH Magazine

Girish Bharadwaj has thrown a new perspective of 'LIGHT' in the book 'LIGHT, MOLECULAR MECHANISM & SLEEP (BASICS)'. Light is universal and seen as a positive concept from spirituality to philosophy. As a young scientist Einstein also was fascinated with light and wanted to glide with the light. This thought process led him to come up with the theory of relativity! As a person who is amazed by the topics of physics, I probably never thought beyond the physical aspects of light. However, when something is so pervasive, universal and to some extent even existential for life then it is bound to make a profound impact on living beings.

As I write this review experiencing the Nordic Summer, I cannot appreciate the 'light' better than anyone else. Also, with modern luxury comes the built environment and artificial lifestyles. This book explores the topic of light and how it has impacted the biological processes of humans. It also touches upon the topic of loss of sleep and other negative impacts due to wrong lighting environments in their surroundings. I hope that Mr Girish would work more on this topic to make it more accessible and approachable for the layman. As in the modern times, good sleep is the new luxury and the common man seems to be deprived of it!

LIGHT, MOLECULAR MECHANISM & SLEEP (BASICS)

LIGHT IS THE GOVERNOR OF
THE UNIVERSE

GIRISH BHARDWAJ

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INDIA • SINGAPORE • MALAYSIA

We at **InnoHEALTH Magazine** would like to dedicate a section to innovation success and failure stories

In this regard, we request you to share your journey in about 300 words.

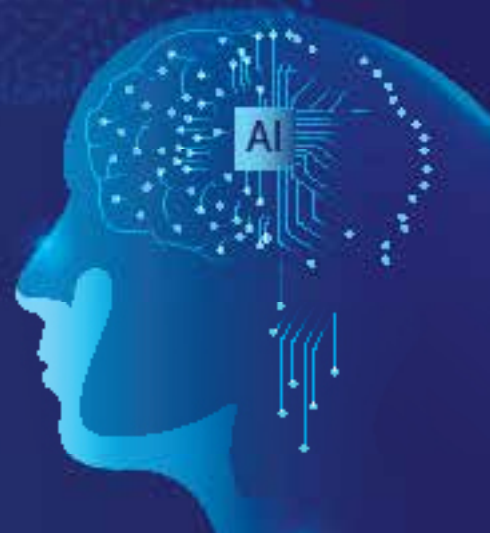
Mail your stories to magazine@innovatiocuris.com

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Finding methods, tools and techniques to deliver qualitative healthcare at optimum cost at all levels

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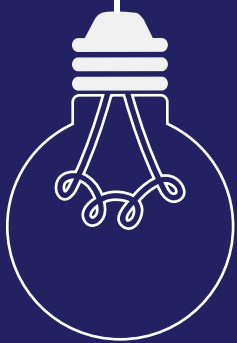
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