

SDG3: Good Health and Well Being

SDG 3 in India: Good Health and Well-Being

Sustainable Development Goal 3 (SDG 3) focuses on ensuring healthy lives and promoting well-being for all. In India, with its vast population and diverse health challenges, achieving SDG 3 is a priority. The government has implemented large-scale health programs, improved healthcare infrastructure, and increased access to essential medical services to address health disparities and ensure equitable healthcare for all citizens.

Efforts by the Indian Government to Achieve SDG 3

- 1. Ayushman Bharat Scheme:**
 - **Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (PM-JAY)** is the world's largest health insurance scheme, providing coverage of up to ₹5 lakh per family per year for secondary and tertiary care hospitalization.
 - The scheme benefits millions of economically disadvantaged families, ensuring financial protection and access to quality healthcare.
- 2. National Health Mission (NHM):**
 - The NHM addresses key health challenges through its two sub-missions: the **National Rural Health Mission (NRHM)** and the **National Urban Health Mission (NUHM)**.
 - It focuses on maternal and child health, communicable diseases, and strengthening healthcare delivery systems in rural and urban areas.
- 3. Immunization Programs:**
 - India's **Mission Indradhanush** aims to achieve full immunization coverage for all children and pregnant women.
 - The **COVID-19 vaccination campaign** was one of the largest globally, ensuring rapid and equitable access to vaccines across the country.
- 4. Tackling Non-Communicable Diseases (NCDs):**
 - The government has launched initiatives to combat NCDs like diabetes, hypertension, and cardiovascular diseases, including awareness campaigns and preventive care programs.
 - Programs like **Fit India Movement** promote healthier lifestyles and physical activity.
- 5. Focus on Maternal and Child Health:**
 - Initiatives like **Janani Suraksha Yojana (JSY)** and **Pradhan Mantri Matru Vandana Yojana (PMMVY)** provide financial incentives and healthcare services to pregnant women and new mothers.
 - Reduction in maternal and infant mortality rates has been a significant achievement in recent years.
- 6. Digital Health Initiatives:**
 - The **National Digital Health Mission (NDHM)** aims to create a digital health ecosystem, ensuring seamless access to health records and services for citizens.
 - Telemedicine platforms like **eSanjeevani** have improved healthcare access, particularly in remote and rural areas.
- 7. Combating Mental Health Issues:**

- The government has introduced the **National Mental Health Programme (NMHP)** to address mental health challenges and reduce stigma.
 - Helplines and awareness campaigns promote mental well-being and accessibility to psychological support.
8. **Public Health Infrastructure Development:**
- Significant investments have been made to strengthen primary healthcare centers, district hospitals, and specialty healthcare facilities.
 - Focus on affordable medicines through **Jan Aushadhi Kendras** ensures access to essential drugs.

SDG 3 at the University of Petroleum and Energy Studies (UPES)

At UPES, SDG 3 is integrated into campus life, education, research, and community outreach initiatives. The university plays a vital role in promoting health and well-being among its students, staff, and the surrounding community.

1. **Health and Wellness Programs:**
 - UPES conducts regular health check-up camps and vaccination drives for students, faculty, and nearby communities.
 - Events like yoga sessions and fitness challenges encourage healthy lifestyles and mental well-being.
2. **Mental Health Support:**
 - The university offers counseling services and mental health support through trained professionals.
 - Awareness campaigns and workshops on stress management, emotional resilience, and mental health destigmatization are regularly organized.
3. **Health-Focused Research:**
 - Faculty and students engage in research projects addressing healthcare challenges, including public health, health technology, and the impact of energy solutions on health outcomes.
 - Collaboration with industries and healthcare organizations fosters innovation in healthcare delivery.
4. **Community Outreach:**
 - UPES organizes health camps in rural and underserved areas, providing free medical consultations, medicines, and awareness sessions on hygiene and preventive care.
 - Students participate in volunteer programs to promote health literacy in nearby communities.
5. **Infrastructure for Health:**
 - On-campus medical facilities equipped with first aid, emergency care, and consultation services ensure prompt healthcare support for the university community.
 - Partnerships with nearby hospitals provide specialized care when needed.
6. **Sustainability and Health:**
 - UPES integrates environmental sustainability with health, promoting clean energy solutions that reduce pollution and enhance public health outcomes.
 - Initiatives like sustainable waste management and clean water systems improve overall well-being.
7. **Education and Training:**
 - UPES offers courses and workshops on public health, healthcare management, and sustainable health practices.

- Students are encouraged to develop projects and solutions addressing global health challenges, aligning with SDG 3.

Impact of UPES's Contributions to SDG 3

Through its focus on health and wellness, UPES aligns its initiatives with India's broader efforts to achieve SDG 3. The university's programs and research foster a culture of well-being, preparing students to contribute meaningfully to global health challenges. By addressing physical, mental, and community health, UPES demonstrates its commitment to creating a healthier and more sustainable future.

UPES-CSR organized free medical camps in three villages near UPES

https://www.linkedin.com/feed/update/urn:li:activity:7217498111097679873/?updateEntityUrn=urn%3Ali%3Afs_updateV2%3A%28urn%3Ali%3Aactivity%3A7217498111097679873%2CFEED_DETAIL%2CEMPTY%2CDEFAULT%2Cfalse%29



We are proud to announce that UPES-CSR recently organized free medical camps in three villages near UPES, marking a significant milestone in our mission to enhance community health through proactive initiatives.

With our dedicated infirmary team comprising doctors, nurses, and interns, we provided comprehensive health check-ups to patients. The camp effectively diagnosed and treated various health issues, garnering positive feedback from the attendees. Many expressed satisfaction with the care received and indicated their interest in recommending our services to others in need.

This enthusiastic response underscores the impact of our efforts in fostering community health awareness and improving access to healthcare. We look forward to building on this success and continuing our journey towards making a lasting difference in the lives of those we serve.

Dehradun, 23rd September 2023: Marked a momentous day at UPES as we ran the extra mile for a healthier and safer world!

https://www.linkedin.com/posts/upes-csr-387860270-upes-marathon-fitness-activity-7111998278812000256-AULN/?utm_source=share&utm_medium=member_desktop



In line with our commitment to meaningful causes, UPES CSR, HR and DSW organized a 5 km Marathon from Kandoli to Bidholi campus, focused on raising awareness for road safety, health, and a drug-free environment. Our esteemed Vice Chancellor, Dr. Ram Sharma, had the honor of flagging off this exciting event from the Kandoli campus.

Dr. Sharma, in his address, emphasized the significance of exercise and running in our lives, encouraging all participants to stay active and healthy. He applauded our organizing departments for their impeccable execution and urged them to continue planning such events in the future.

We were delighted to witness the enthusiastic participation of students & employees, including Deans of various schools, and other dignitaries from the UPES community.

The top 15 runners were not only recognized with Medals and Certificates but also received cash prizes as a token of appreciation from the Hon'ble Vice Chancellor.

At UPES, we're committed to nurturing a holistic development environment for our students and providing a fulfilling workplace for our faculty and staff. This marathon signifies our dedication to their overall well-being, both physically and mentally. We're thrilled to see such an overwhelming response from our UPES family, and we pledge to continue organizing events like these in the future.

Celebrating World Mental Health Day

https://www.linkedin.com/posts/solsm-upes_worldmentalhealthday-holistichealth-creativity-activity-7168855706727649285-sBma/?utm_source=share&utm_medium=member_desktop



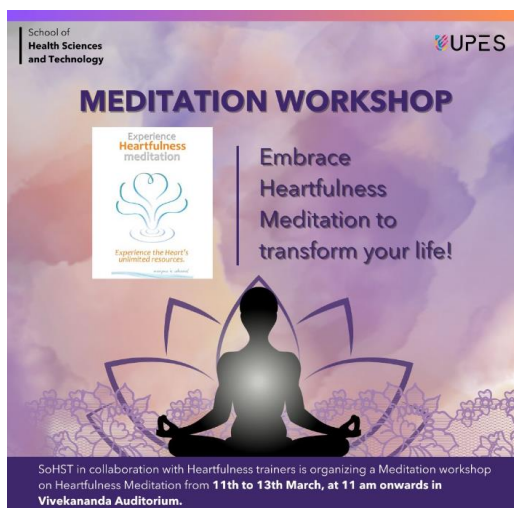
The Psychology Department at the School of Liberal Studies embarked on an extraordinary journey towards holistic well-being. 🌿 Our Kandoli campus witnessed a trailblazing event that underscored the importance of mental health in our lives. 🧠 At the Mental Health Booths, we delved deep into self-awareness through various activities:

- 1 Big Five Personality Test: Discover your unique personality traits – openness, conscientiousness, extraversion, agreeableness, and neuroticism. Understand how they shape your actions and relationships. 🧠
- 2 Attachment Style Assessments: Explore the primary attachment styles that impact our emotional lives. Secure, Anxious-Ambivalent, Dismissive-Avoidant, and more. Empower personal growth and enrich your relationships. ❤️
- 3 Intelligence Test: Uncover your cognitive strengths and areas for growth through the Kohs Block Design test. Enhance your problem-solving skills and spatial reasoning. 🧩
- 4 Mood Board Creation: Express your emotions, thoughts, and aspirations artistically. Use colors to symbolize your feelings and find a therapeutic outlet for self-expression. 🎨
- 5 Talk It Out Booth: A safe space where our compassionate students lend a listening ear and support to those in need. 🗣️

This momentous event marked a significant step towards recognizing and addressing mental health's pivotal role. 🧠 Let's continue to foster well-being and connection.

[Heartfulness Meditation Workshop](https://www.linkedin.com/posts/school-of-health-sciences-technology_embark-on-a-soul-nourishing-journey-with-activity-7171892752262029313-1YUr/?utm_source=share&utm_medium=member_desktop)

https://www.linkedin.com/posts/school-of-health-sciences-technology_embark-on-a-soul-nourishing-journey-with-activity-7171892752262029313-1YUr/?utm_source=share&utm_medium=member_desktop



Embark on a soul-nourishing journey with us at the upcoming Heartfulness Meditation Workshop, brought to you by SoHST in collaboration with dedicated Heartfulness trainers. 🌿 ✨ Amidst the tranquil ambiance of Vivekananda Auditorium, immerse yourself in the practice of Heartfulness Meditation from the 11th to the 13th of March, starting at 11 am each day.

💡 This workshop offers more than just a moment of stillness; it's an invitation to explore the depths of your inner being, cultivating a sense of peace and serenity that resonates long after the session ends.

STI Forum 2023

<https://twitter.com/DrSKrishnan/status/1654360058854080520> [3]

Co-organised #STIForum 2023 event with @IndiaDST on Community Resilience Resource Centres for Post-Covid Socioeconomic Recovery. Impactful use cases by @wii_india @AmritaUni @UPESDehradun on community resilience.

@UNDPacCLabs

@Gina_labs

@RozitaSingh

@swetha_kolluri

@ErikaAntoine

Leveraging science, tech & innovation (#STI) for #ClimateResilience.

@IndiaDST & @UNDP

IN organized an event at #STI Forum on role of Community Resilience Resource Centres for SDGs & post COVID-19 recovery.

Over 100 participants from 40 countries🌐participated in the forum.



Walking the talk: How UPES is building a better world through its CSR initiatives

<https://blog.upes.ac.in/walking-the-talk-how-upes-is-building-a-better-world-through-its-csr-initiatives/> [4]



EKTA KASHYAP · FEBRUARY 22, 2022

UPES volunteers creating a Learnshala at a government school in Uttarakhand as part of CSR initiative

UPES volunteers creating a Learnshala at a government school in Uttarakhand

Building learning centres at government schools, beating period poverty by distributing menstrual cups, and nurturing support staff through a skill development program, are some of the university's upcoming CSR initiatives

The world is interconnected through globalisation. Yet, the benefits and burdens of this phenomenon are not equally distributed among people. The result? Inequality in education, health, and access to resources. The pandemic has further aggravated these deep-seated disparities among the most vulnerable sections of society.

Therefore, it becomes the duty of institutions to work towards building a more equitable and sustainable world as envisioned in the internationally-accepted Sustainable Development Goals (SDGs).

UPES, the 'University of Tomorrow', has always stood at the forefront of giving back to society, especially to the state of Uttarakhand. Continuing to fulfil its responsibility, the university, with a renewed focus, has added a series of initiatives to its extensive list of Corporate Social Responsibilities (CSR). The CSR work will encompass issues such as education, health, safety and women empowerment.

[Nurturing future leaders through learning centres at schools](#)

Government primary schools around UPES have poor infrastructure, which has implications on children's education. It often leads to abysmal learning outcomes.

To make education fun and meaningful for children, UPES is building learning centres known as LearnShalas in four government primary schools: Kandoli, Misraspatti, Donga and Phulsani. These LearnShalas are lively learning spaces made with vibrant colours and engaging learning material. Through these centres, UPES hopes to nurture curious, creative, and critical thinking citizens of the future.

UPES student volunteers will engage children in a variety of learning activities through LearnShalas. They will make the classroom experience interesting and exciting using relevant content and storytelling methods while encouraging a culture of asking questions. The goal is to make learning a joyful experience for the school community, particularly in a language they understand.

Further, UPES will conduct learning camps, especially in Math and Science, through these learning centres. One learning centre at Upper Kandoli village is ready, while others are in the pipeline.

Beating period poverty together

UPES has funded an organisation called DivIn Pro, an impact and strategy-driven BPO managed by women and other marginalised sector professionals, to fill the critical gap of availability of sustainable material to manage menstruation. This project aims to eliminate period poverty, while contributing to sustainable development. The present proposal focuses on benefitting about 1200 women from UPES ground staff and UPES CSR supported and identified villages. The objective is to empower women with menstrual cups and fulfil the basic need for hygienic and safe protection during menstruation.

The direct beneficiaries will include:

Ground staff of UPES and women from identified villages, including Bakarna, Kharakhet, Pulsani, Dhaulas and other menstruators (trans men/non-binary individuals), belonging to underprivileged and vulnerable sections of the society.

Frontline peripheral health workers such as ASHA workers and Auxiliary Nursing & Midwifery/Anganwadi workers will volunteer for the project in their respective areas.

Cup dominant communities produce less menstrual waste and therefore, the environment of these communities is benefited indirectly.

Families of beneficiaries will benefit as they would be saving money spent on pads each month.

Through this project, UPES will create awareness among the beneficiaries to change their behaviour for safe, healthy, and sustainable, hygienic menstrual practices and solutions. Around 1200 menstrual cups (each cup can be reused for ten years) will be distributed to the target population. Training sessions on the usage of menstrual cups will be conducted. It will be succeeded by on-field and telephonic follow-up and beneficiary support through BPO for 90 days (starting from the day of cup distribution).

Supporting staff through UPES Skills Academy

This is a Skill Development Program, which aims to uplift support staff such as security guards and housekeeping staff on campus. As per a survey conducted by the university, the primary requirement of the support staff was Computer skills and English speaking and writing skills. The sessions under the training framework will, therefore, focus on:

- Need for effective communication
- Understanding non-verbal communication
- Learning the etiquettes to greet staff and visitors
- Enhancing endurance during a conflict and resolving the same amicably
- Conveying difficult messages to the audience

The initial batch will comprise 20 trainees. Eventually, the program will be extended to community members from the nearby villages as well. The training will help the support staff to develop a better understanding of their roles and responsibilities, improve their communications skills and personality, understand the importance of teamwork, and learn to write answer applications, emails, messages, and other written communication.

UPES firmly believes that every member of the organisation should have pathways to do better in life. The Skills Academy is focused on working with the support staff to build their capacities and help them for better roles at UPES and elsewhere.

Improving digital literacy through DigitalDhaam

This program is intended for all teachers, middle school students, homemakers or anyone from nearby villages to learn how to use computers and the internet for various day-to-day functions like accessing information.

Spreading the joy of giving with DaanUtsav

A book can turn someone's life around; a garment can bring happiness to someone's life. UPES celebrated a first-of-its-kind festival called DaanUtsav where the university's staff and students donated vast amount of clothes, books, stationary, toys, and electronic items, which were distributed to the underprivileged in a nearby slum. UPES will also kickstart a student and staff volunteering program soon.

The CSR initiatives by UPES are an attempt to achieve greater economic, social, and gender equality and tackle the disproportionate barriers that hold the disadvantaged further behind. Ultimately, building a better world will require systemic changes. These initiatives are a step in that direction.

UPES takes a step towards supporting adolescent girls

<https://blog.upes.ac.in/upes-takes-a-step-towards-supporting-adolescent-girls/> [5]



EKTA KASHYAP · DECEMBER 15, 2021

Adolescent Reproductive and Sexual Health (ARSH) drive by UPES

ARSH drive in progress

UPES Social Internship Team and student society GS3, in collaboration with an NGO, organised a drive in Than village of Uttarakhand to inform adolescent girls about reproductive and sexual health

In 2020, the World Health Organisation (WHO) released a fact sheet on adolescent reproductive health. The statistics were alarming.

It was found that at least 10 million unintended pregnancies occur each year among adolescent girls. Complications during pregnancy and childbirth were the leading cause of death for 15–19-year-olds globally. WHO further estimated that two-thirds of all sexually-transmitted diseases worldwide occurred in teenagers and people in their early 20s.

According to the International Journal of Gynaecology and Obstetrics, Adolescent Reproductive and Sexual Health (ARSH) forms a major part of the global burden of sexual ill-health. This, unfortunately, is a consequence of a knowledge gap among the youth. Therefore, there is an urgent need to educate adolescents in a safe and healthy environment, where they can freely communicate their concerns.

The ARSH awareness drive

On this matter, UPES Social Internship Team and student society GS3, in collaboration with the Global Organisation for Research, Education, and Development (GORED), organised a drive in Uttarakhand's Than village. The event took place at a government school.

Adolescent Reproductive and Sexual Health (ARSH) drive by UPES



The team created a supportive space to interact with girls of age groups 13-18. They informed them about sexual health and provided them with sanitary kits that were sponsored by GORED.

Talking about how the stigma surrounding the issue hinders discussion, Shramishtha Tomar, Social Internship Officer, Career Services, UPES, said, “ARSH is rarely discussed with the right beneficiaries. It is the fear of the unknown and the stigma surrounding menstruation that prevents young girls from having a dialogue about periods. Through the ARSH workshop, hopefully, we could clear clouds surrounding the topic. As expected, the audience was initially reserved and quiet. However, as the session progressed and we shared our experiences with them, we could notice a significant difference in their demeanour. It ended up being an informative and interactive workshop. We also demonstrated how to use the reusable sanitary kit. I am hopeful that through these sessions, we can also include other genders in the dialogue, and debunk the taboo surrounding menstruation.”

Mani Chaudhary, a first-year student at the School of Design, was grateful to be a part of this drive. She said, “ARSH was a successful event. It was a valuable experience for me to enhance the knowledge of young girls. The sweet and innocent souls of those girls filled my heart with joy. It was an extraordinary experience for me, and I am looking forward to more opportunities like this.”

For Shivani Yadav, Social Internship Officer, UPES Career Services, this was a learning experience. She said, “ARSH was one of the best sessions I had attended and delivered in months. This session taught me how to connect with young girls, debunk the myths, and break the stereotypes. I also learnt how difficult it can be for young girls to talk about healthcare and menstrual hygiene. I tried to put my knowledge into practice.”

Adhering to its values of being a ‘University with a Purpose’, UPES continues to lead the discourse on significant matters that shape society. Such awareness campaigns broaden the students’ mindset and benefit the community at large.

Big sporting feats at UPES in 2022

DIANA GEORGE · DECEMBER 16, 2022



UPES alumnus and Commonwealth Games medallist Navneet Singh (left) and student Deeya Chopra (right)

UPES alumnus and Commonwealth Games medallist Navneet Singh (left) and shooting champion and student Deeya Chopra (right)

UPES has seen a series of victories recently in sports with staff members, an alumnus, and students winning accolades for the university at college, state, national and international levels

There has been a torrent of sporting feats at UPES in the recent past.

A three-member shooting team from UPES – Sezal Maan, Deeya Chopra, and Geethika Konasani – recently won an inter-college shooting championship.

An alumnus – Navneet Singh – grabbed the silver in Commonwealth Games 2022, and the gold in the recently concluded National Games in Men’s Lawn Balls.



UPES staff member Sanyam Arora (left) and alumnus Navneet Singh (right)

A university staff member – Sanyam Arora – made it to the Uttarakhand state cricket team, while two others – Himanshu Bisht and Akhil Rawat – have been selected to play for the state’s Ranji team.

To top it all off, the University’s cricket team – Team Orange – are the current champions of the most prestigious cricket tournament organised by the Cricket Association of Uttarakhand.

An elated Dr Nishant Mishra, Dean, Student Welfare, UPES, says, “Sports is a religion at UPES. At UPES, extra-curricular activities are not seen as ‘extra’ but as ‘co-curricular’. We focus on complete and holistic development of students by exposing them to different avenues such as sports, in addition to academics.”

Expressing his pride at the recent achievements by Navneet and the shooting team, he adds, “UPES now feels more committed than ever before to support its students in the best way possible so that they can create history for their respective sports and the country. Both Navneet and Sezal have shown us the way forward.”

UPES is fast becoming a dream university for sports aspirants. Taking cognizance of the need to develop a thriving sports culture in the country and make quality education and career pathways accessible to meritorious individuals, UPES recently announced new sports scholarships for the academic year 2022-23.

The announcement of the 50 scholarships under Project Vijay was made at an event held on the university campus in the presence of the Chief Minister of Uttarakhand, Shri Pushkar Singh Dhama.

Under the project, a total of 50 seats would be allotted for cricket, football, athletics, basketball, volleyball, table tennis, badminton, shooting, and chess.

Apart from these, the university has launched a sports fest for Ph.D. scholars, formed all-women sports teams, signed collaborations with two universities for a year-long Sports League, and planned a few leisure games inspired by India’s cultural ethos. Then there’s Team Orange, which, in coach Dr Atri Nautiyal’s words, is “not just a team but a philosophy and movement that connects and drives people to excellence”.

Navneet feels proud of his alma mater’s initiative to make sports an integral part of the academic curriculum.

“This will benefit talented sportspersons,” he says. “They will be able to focus on their sports and complete their studies without worrying about anything else,” he adds.

Sezal feels sports scholarships are necessary to boost the morale of students who aim to take up sports as a career.



UPES student Sezal Maan at a shooting practice

UPES student Sezal Maan at a shooting practice

“Not only will it motivate them but especially help those students who are not economically sound but have a passion for sports. I highly appreciate this initiative by UPES to award sports scholarships,” she says.

Dr Mishra agrees. Emphasizing the need for a sportsperson to stay motivated, he says, “It is the ability to persevere and remain motivated that is the foundation of sports and athletic accomplishment, and sports scholarship can play a major role in this regard.”

“In the last few years, intercollegiate or inter-university sports have become a multi-million-dollar industry and scholarships have become more lucrative for prospective student-sportspersons to obtain, since scholarships have a strong impact on their behaviour and achievements,” he adds.

Applicable only on the tuition fee, the Project Vijay scholarships will range from 35% to 100%, depending on the number of achievements and the national and international sports representation by the candidate.

Apart from academic eligibility, the scholarship is provided if the student continues the sport as part of the UPES team.

Commenting on the scholarships, Dr Sunil Rai, Vice Chancellor, UPES said, “As a University of Tomorrow, we stand on six strong pillars, one of which is ‘Purpose’. Driving the purpose of education for all, UPES has added this new scholarship to the existing ones. It is a privilege for us to announce Project Vijay in the presence of the Hon’ble Chief Minister of Uttarakhand.”

[A UPES student’s quest to make periods pain-free for women](https://blog.upes.ac.in/a-upes-students-quest-to-make-periods-pain-free-for-women/)

<https://blog.upes.ac.in/a-upes-students-quest-to-make-periods-pain-free-for-women/> [6]

[EKTA KASHYAP](#) · APRIL 22, 2022



Nuveni Raina, a second-year design student at UPES, has built a start-up 'Vindyavasini' to manufacture period pain relief belts. They are meant to alleviate cramps by giving out regulated heat and vibrations

Around 80% of women across the world suffer from period pain or dysmenorrhoea, according to a study by Women's Health Concern. Characterised by pain in the lower abdomen, it is the most common symptom of menstruation. Women experience cramps at some stage during their lifetime – from early teens right up to menopause. For 10% of the women, the pain is so severe that it can disrupt their daily lives.

For Nuveni Raina, too, the problem was no different. She researched and found that period pain affected females at schools, universities, workplaces, and social activities. According to a study published in the British Medical Journal, period pain led to nearly nine days of lost productivity per woman per year. One in five young women reported missing school or university due to dysmenorrhea. And out of those who attended classes while feeling ill (presenteeism), two in five said that pain impacted their concentration and performance in class. Several young girls fell behind during their final years of schooling.

So, Nuveni decided to take the matter into her hands, quite literally. A second-year [design student at UPES](#), she developed 'Vindyavasini', a period cramp relief belt that alleviates period cramps by giving out heat and vibrations. Users can change the heat intensity with an app.

However, there are several products in the market that claim to relieve period pain. "But no one offers this particular product in India," Nuveni says. She explains, "There are heating belts, which are not very handy, so you cannot carry them to say your workplace; hot water bags need to be reheated several times, and then there are heating patches, but you cannot regulate the heat and it does not last for more than five hours per use."

The target audience of this product is women of all age groups. Nuveni says, "First, I am focussing on the women working in the urban sector. Then, I would like to expand the reach to rural areas. I will try to tie up with governments and NGOs so we can take it to the grassroots level. The goal is for every woman, irrespective of their geographical location and economic background, to have access to the product and live better lives. Every woman deserves a pain-free period."

How does she plan to market the product? "I would like to advertise the product on every channel possible. I would also give the prototype to women to try for themselves and then pass the information to more women around them. I would also reach out to the companies already working in this sector," Nuveni says.

Her promising start-up recently raised a funding of INR 1 lakh from investor Rahul Narvekar, Founder and Chief Executive Officer of The India Network, through the Runway Incubator. “I will be using the money to improve my prototype by making changes to accommodate the needs of the user. I am looking forward to helping women get through their period without pain,” Nuveni signs off.

Can mathematical models shed light on clinical depression?

UPES faculty tells us how

<https://blog.upes.ac.in/can-mathematical-models-shed-light-on-clinical-depression-a-upes-faculty-tells-us-how/> [7]



EKTA KASHYAP · MARCH 30, 2023

Clinical depression

Dr. Melissa Reneaux, Assistant Professor, UPES School of Liberal Studies

A computational neuroscientist by training and Assistant Professor at the School of Liberal Studies UPES, Dr. Melissa Reneaux is working on building mathematical models to understand inflammation-associated depression, and the effect anti-depressants and antihistamines have on alleviating depression

When we talk about mental disorders, we often view them only from a psychological perspective, ignoring the role of bodily functions. However, what happens in our brain has a direct connection with our body. For instance, clinical depression has a direct relationship with bodily inflammation.

“At the onset, clinical depression is seen as a chemical imbalance in the brain caused by a reduction in the level of serotonin – a neurochemical in the brain associated with an individual’s mood. However, recent literature shows that depression may also be associated with bodily swelling (also known as peripheral inflammation),” explains Dr. Melissa Reneaux, Assistant Professor at the School of Liberal Studies, UPES.

Peripheral inflammation increases the level of histamine in the brain – a chemical known to be commonly associated with allergies, runny nose, and sneezing to name a few. “This increase in histamine reduces serotonin levels in the brain, which leads to depression,” she says.

A computational neuroscientist with training in Physics, Dr. Reneaux is working on building mathematical models to understand inflammation-associated depression, and the effect of antidepressants and antihistamines on alleviating depression.

How does mathematics fit into solving biological and psychological questions? “If you think about medical imaging techniques like X-ray, CT scans and Functional Magnetic Resonance Imaging (fMRI) used to detect disease in the body, to using probability and statistics to validate a drug’s effectiveness, all these measures were developed by individuals with a training in mathematical sciences. Here, I am addressing mental disorders using mathematical principles,” she says.

Dr. Reneaux highlights that in mental disorders, the approach followed for treatment is psychological, however, the metrics used are grounded in mathematics. “For instance, in depression there are self-reporting assessments like the Patient Health Questionnaire (PHQ). In this test, individuals are asked a series of questions based on their mood, and the severity of depression is graded. Based on the scores obtained, individuals are classified as mildly, moderately or severely depressed, and henceforth the medication course begins.”

As part of her Master’s thesis, Dr. Reneaux worked on understanding rheumatoid arthritis – an autoimmune disease causing severe pain and inflammation in the joints of individuals suffering with this disease – using the principles of physics. She was amazed to see how physics and mathematics could be used to address questions in biology. As her interest in understanding human diseases grew, she decided to use the concepts of physics and mathematics to understand mental illnesses.

It was during her post-doctoral research work at Imperial College London, that she came across a startling revelation. “My research team was working on finding biomarkers in the body of depressed mice. We measured serotonin in the mouse brain while mice were injected with lipopolysaccharide – a chemical that elevates body inflammation. The mice also underwent a chronic mild stress paradigm. We found that another chemical, histamine, which is a marker for bodily inflammation, was also elevated in the mouse brain, which led to a reduction in serotonin. This interaction between histamine and serotonin led to clinical depression,” explains Dr. Reneaux.

This research demonstrated that inflammation in the body could lead to changes in the brain. Dr. Reneaux developed a metric termed Stress Index. “This is a scale that varies from zero to positive values. More the positive value of the Stress Index, greater is the level of stress in the individual. Bodily inflammation causes an increase in stress levels, causing alterations in the level of the neurochemicals, which can be measured,” she adds.

While going through the literature on clinical depression Dr. Reneaux, was shocked to discover that more than 30 crore individuals around the globe were depressed according to the 2017 World Health Organisation (WHO) report. COVID-19 saw a drastic increase in these numbers. About half of the depressed population that happens to be such a large number do not respond to anti-depressant medication. And those individuals who do respond to medication, it took weeks and months for the medication to act on them and make them feel better.

“Antidepressants like the Selective Serotonin Reuptake Inhibitors (SSRIs), which are the first line of treatment for depression, show limited ameliorating effects. Serotonin until recently was known to be the only neurochemical lowered in depression. So, treating depressed individuals with SSRIs, should have made them feel better. However, this was not the case,” she says.

This fact made her team wonder if there was a missing link in the understanding of depression. The depression literature suggested that about a quarter of individuals who had depression also had bodily

inflammation which meant they had increased histamine levels. “The experiments conducted by my team observed that rise in histamine reduces serotonin, and subsequently serotonin aided in the production of more histamine. Hence, when serotonin medication was provided to these mice, a rise in serotonin did occur but so did the level of histamine, that led to the lowering of serotonin. There exists a bi-directional interaction between histamine and serotonin. We found that mice for whom the underlying cause of depression was inflammation, when they were treated with a combination of SSRIs and histamine inhibitors showed a rise in serotonin,” informs Dr. Reneaux.

This study now published in the Journal of Neuroinflammation was performed on mice and used chemical recordings from the mouse brain. However, this invasive approach is not feasible in human subjects. So, Dr. Reneaux is presently involved in building a mathematical model that provides measurable outputs as brain wave frequencies to alterations in the level of inflammation. These brain wave frequencies can be measured using non-invasive electroencephalogram (EEG) recordings. “In depression, there is an observed reduction in theta frequency band (3.5 to 7.5 Hertz) in the pre-frontal cortex – the brain region involved in thinking and an increase in theta band activity in the anterior cingulate cortex – the brain region involved in emotions. This mathematical model will show the impact of antidepressants and antihistamines on these brain waves,” Dr. Reneaux describes.

One of the main concerns associated with depression is the high suicide numbers of depressed individuals around the globe. Dr. Reneaux is also working with researchers at the Miami University, Ohio, on a joint project that is investigating reasons for suicidal ideation among youth in Northern India. Dr. Reneaux is passionate about her research as she sees her research work having the potential to directly influence the well-being of people.

Yoga & Meditation

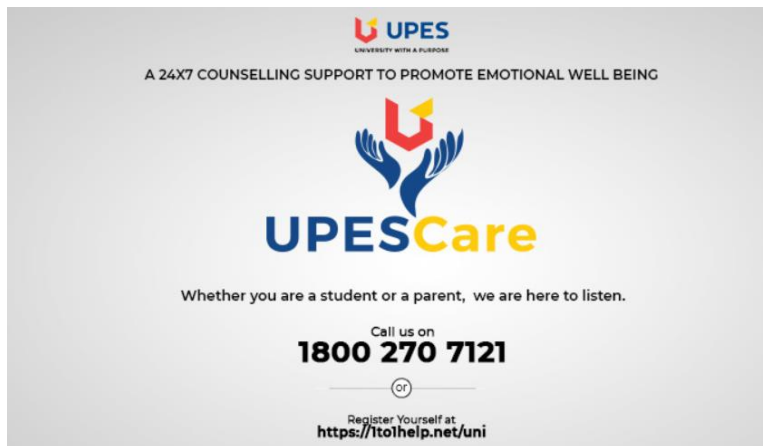
<https://www.upes.ac.in/student-space/student-engagement> [8]

As the proverb goes "sound mind resides in sound body". UPES pays emphasis on the both physical and mental health of its students. Located in the lap of nature, the beautiful serene campus offers conducive atmosphere to the students to relax. We provide ample opportunities to the students to explore new healthy ways of living which they may not have been exposed at home. We believe that yoga and meditation are the perfect activities to foster physical and emotional calmness and wellbeing. Yoga and meditation classes at UPES have proven effective to increase academic success and confidence, improve mental health, decrease substance abuse, improve physical health and heightened focus in class.

It's okay to not be okay: Managing your mental health in a new reality

<https://blog.upes.ac.in/its-okay-to-not-be-okay-managing-your-mental-health-in-a-new-reality/> [9]

BY A CORRESPONDENT · JUNE 15, 2020



UPES offers a tele-counselling service staffed by experts, called #UPEScares

As lockdown comes to an end, and the world prepares to go out, restart factories, and resume commitments again, it helps to take stock of how we're doing from a mental health perspective. Stress, fear and uncertainty are completely normal emotions at a time like this, which even the WHO have taken cognizance of. The added pressure of keeping our dreams afloat and having to continue to focus on our education and careers can cause a lot of anxiety.

If you're facing anxiety and fear over the current situation, here are some ways to stay positive:

Express yourself: A lot of us are conditioned to handle mental distress by denying them and not addressing them. Challenging that is a critical step in mental health-care. Be okay with saying 'I am not okay'. We are in the midst of an unprecedented crisis in public health that has thrown our everyday lives in turmoil. It is okay to not feel whatever you're feeling. Once we admit that there is a problem, we can take steps to remedy that. Reach out to friends and family, faculty, or university resources that make you feel safe about talking about your issues.

Lean into your community: Your peer, family or faculty community is your best resource. Reach out to friends and family if you're not doing well, and accommodate your friends when they share their stories. When a friend opens up to you, don't offer advice or invalidate their feeling. Focus on listening and empathising.

Stay informed: Reject misinformation, conjecture, or rumour-mongering. One of the biggest hindrances during the Covid-19 has been the onslaught on misreporting or deliberate misinformation through fake news. Not only do they impede public health officials from doing their job, they also trigger panic reactions in you and jeopardise your sense of peace. Make sure you maintain a healthy disbelief of news you come across on social media, and get your information from reputed websites like the WHO and the Centre for Disease Control.

Have anchoring techniques in place: When you're stressed or anxious, it helps to practice 'centering techniques' or 'anchor techniques' that can help you refocus your attention towards healing. You can deal with an anxiety attack by closing your eyes, focussing and counting your breaths, while telling yourself that this feeling will pass. Another effective technique called 'marking'. When you have negative thoughts or anxieties, just close your eyes, and label emotions as 'thought' or 'feeling'. Don't try to block them, don't jostle with them. Let the unconscious thoughts come and go, and all you have to do with your conscious mind is to label them as either 'thought' or 'feeling'. When you practice these techniques you will see that soon enough you can breathe again and the feeling has passed.

Dealing with isolation: Human beings are social animals. The need to be around people we like is hard-coded in our DNA. Don't blame yourself if social distancing causes anguish. While it is a medical necessity in these times, it is also okay to feel fear or uncertainty because of it. If you're quarantined alone, you can handle that by –

Staying busy – learn a new skill, pick up a new hobby, upskill yourself on Coursera, or research on a project.

Having a routine – A strict routine that you follow everyday can provide a feeling of comfortable insulation from the uncertainty.

The added pressure of keeping our dreams afloat and having to continue to focus on our education and careers can cause a lot of anxiety

If you're feeling distressed, it helps to reach out to professionals who are trained in this. To facilitate this for our student network, UPES offers a tele-counselling service staffed by experts, called #UPEScares. It is available to take calls 24x7 from our students & their families, and alumni. If you're a UPES student reading this and need someone to talk to, give us a call at 1800 270 7121, and let us take care of you. Remember that the most important word in the phrase 'We will survive' is not survive, it is WE. As conversations about mental health become more important in the times to come, let's take the leap in educating ourselves about it first, and taking care of each other.

