

In this issue

National Geospatial Policy *Gravimetric geoid modelling*

The National Geospatial Policy 2022 has set the development of a geoid model of the Indian landmass as a milestone to be achieved by 2025. If this is not achieved, the milestones of developing high-resolution topographical maps and high-resolution digital elevation models, to be achieved by 2030, will also be delayed.

A General Article in this issue examines the challenges in achieving the first milestone. To create a dependable geoid model, we need precise data on height. But this data is not only sparse, imprecise and highly duplicated, it is also not easily accessible for researchers who would like to contribute to filling the lacunae.

The article delves into the differences in the methods used for collecting the data, the limitations of each method, the strategies used by other countries, the history of gathering data on height in India and the problems unique to the country. It also has recommendations to enable consistency and precision in data, to avoid duplications and to create a higher resolution dataset of elevation.

Engineering surveyors and national institutions and researchers involved in the effort of implementing the National Geospatial Policy may like to turn to **page 309** in this issue to read more.

Type-2 Diabetes and Cataract *A shared genetic basis?*

The prevalence of type-2 diabetes is growing at an alarming rate. At this rate, it is estimated that there will be more than 73 million cases in India alone. One of the complications of diabetes is cataract, which is responsible for more than 66% of blindness in India today. So we must expect that the incidence of cataract too, will increase.

Aging alone naturally increases the risk for cataract, where the opacity commonly starts developing in the

centre of the lens. But in most diabetic patients, there is a tendency for opacity in the posterior part of the lens. The longer the duration of diabetes, the higher the risk, says a Review Article by diabetes researchers from Chennai.

They discuss the pathogenesis of cataract in diabetes, drawing results from both human and animal studies and the factors that influence the formation of cataract in diabetes including studies on the genome-wide association of diabetes and cataract.

To get insights into the biochemistry and molecular biology of cataract in diabetes, turn to **page 320** in this issue.

Rubber, Natural and Synthetic *Comparing carbon footprints*

The production of both natural rubber and synthetic rubber involves carbon emission. A Research Article on **page 374** in this issue by scientists at the Rubber Research Institute of India, Kottayam analyses carbon emissions from raising a nursery of rubber plants, planting and growing them over one hectare of rubber plantation, maintaining and tapping the latex as well as from processing the latex via different methods for industrial use.

The researchers argue that, since rubber plantations fix carbon at a rate of about 25 metric tonnes of carbon dioxide per hectare per year, the total carbon footprint of natural rubber is highly negative, while in producing synthetic rubber it is highly positive. To move towards carbon neutrality, the authors suggest a carbon tax on synthetic rubber and using it for supporting rubber growers and for helping the rubber products manufacturing industry adopt more sustainable processes.

Cognitive Group Treatment *Reducing obesity*

According to the WHO, the number of obese people has doubled globally in the last four decades. In India too, the

trend of rising obesity is visible. In Punjab, for example, more than a quarter of adults are overweight, with women outnumbering men.

In this issue, researchers from the Department of Food and Nutrition, Punjab Agricultural University, Ludhiana report a cognitive and behavioural group therapy to overcome the pandemic of overweight.

They recruited sixty-four overweight women teaching staff in the university for the study, divided them into control and treatment groups and, for the treatment group, organised weekly meetings, where they were exposed to concepts related to balanced nutrition and exercises. There were video screenings, discussions and demonstrations. There was also cognitive therapy to help the women overcome anxieties – a factor that often leads to overeating.

When the researchers examined the compliance to the eating and exercise regimen, some patterns which may hold good in other regions of India, emerged. For the major meals, compliance reduced from breakfast to lunch and to dinner. But in terms of snacks, compliance increased during the day. Most women were compliant about walking more and less ready to do aerobics. The resistance to resistance training was high.

Though not all were hundred per cent compliant, after ten weeks, when the researchers compared the bodily statistics before and after the treatment they found that the women in the treatment group had lost weight and were physically and mentally healthier.

If all universities undertake similar experiments as discussed in the Research Article on **page 381**, India may be able reduce not only the surge in obesity, but also metabolic disorders that come in its wake.

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