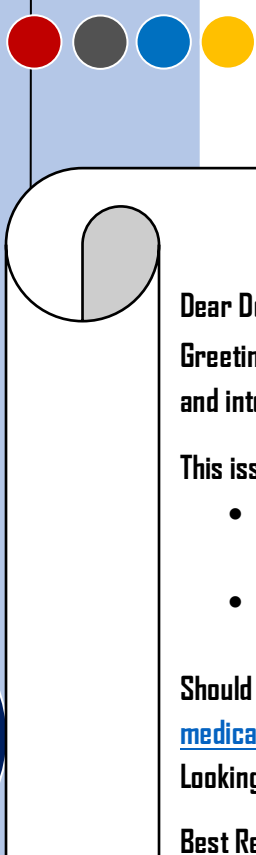




Physician connect

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Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you '**Physician connect**' which contains latest and interesting news in the field of Medicine

This issue contains

- Hypertension Control in Adults Participating in a Blood Pressure Self-Management Program Using Mobile Technology
- Skeletal Fluorosis: A Case Report

Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback

Best Regards,
Medical Team, Micro Labs Limited



Hypertension Control in Adults Participating in a Blood Pressure Self-Management Program Using Mobile Technology

Self-monitoring of blood pressure (BP) is insufficient to lower blood pressure without other co-interventions such as lifestyle counselling. Mobile technology interventions can help people monitor their blood pressure and provide automated lifestyle counselling.

This study aimed to monitor if participating in a hypertension self-management programme that included a blood pressure monitor and a smartphone app with clinically based digital coaching linked to better blood pressure control over a three-year period.

Adults with high blood pressure or hypertension were included in this cohort study. A smartphone app with a Bluetooth-enabled blood pressure monitor. Participants used personal mobile devices to track their blood pressure, weight, and physical activity. The hypertension self-management programme incorporated mobile health best practises such as ease of use, gamification, artificial intelligence, plain comprehension, and clarity to maximise user engagement.

The mean systolic blood pressure throughout the first week was used to classify participants' baseline blood pressure. A systolic blood pressure of 180 mm Hg or more was regarded extremely high. Median systolic and diastolic blood pressure was measured at the following time points to examine blood pressure over time: 2 (weeks 1-2), 4 (weeks 3-4), 6 (weeks 5-6), 12 (weeks 11-12), 26 (weeks 24-27), 52 (weeks 48-55), 104 (weeks 96-11), and 155 (weeks 148-163) weeks after the first BP reading.

The median (IQR) baseline systolic BP was 129.5 mm Hg (120.5-139.6 mm Hg) and diastolic BP was 81.7 mm Hg among 28 189 participants (median [IQR]

age, 51 [43-58] years; 9424 women [40.4 percent]; 13 902 men [59.6 percent]) (75.7-88.4 mm Hg). For 495 of 934 participants (53.0%) with baseline elevated BP, 673 of 966 (69.7%) with baseline stage 1 hypertension, and 920 of 1075 (85.7%) with baseline stage 2 hypertension, median systolic BP improved by at least one category after a year. For individuals who started with high, stage 1 hypertension, and stage 2 hypertension, the mean (SEM) systolic BP reduction was 7.2 (0.4), 12.2 (0.7), and 20.9 (1.7) mmy Hg, respectively, compared to baseline.

	Engagement frequency, median (IQR)			
		Engagement group		
Use measure	All	Low	Medium	High
Weeks of Use	25 (7-57)	9(2-30)	23 (8-49)	59 (28-101)
Weeks of use for participants enrolled before Oct 2019	41 (9-79)	10 (2-42)	34 (8-67)	69 (37-110)
Use/wk	1.8 (0.9-3.6)	1.3 (0.6-2.8)	1.7 (0.9-3.2)	2.8 (1.5-5.3)

Table 1: Application Use

Over time, higher involvement was linked to reduced systolic blood pressure (high-engagement group: 131.2 mm Hg; 95 percent CI 115.5-155.8 mm Hg; medium-engagement group: 133.4 mm Hg; 95 percent CI 116.3-159.5 mm Hg; low-engagement group: 135.5 mm Hg; 95 percent CI 117.3-164.8 mm Hg; P.001). From 3778 participants, an extremely high BP (systolic BP >180 mm Hg) was detected 11 637 times. The estimated probability of having a very high blood pressure was higher in the low-engagement group (1.42 percent, 95 percent CI, 1.26 percent -1.59 percent) compared to the medium-engagement group (0.79 percent, 95 percent CI, 0.71 percent -0.87 percent ; P.001) and the high-engagement group (0.53 percent, 95 percent CI, 0.45 percent ; P.001).

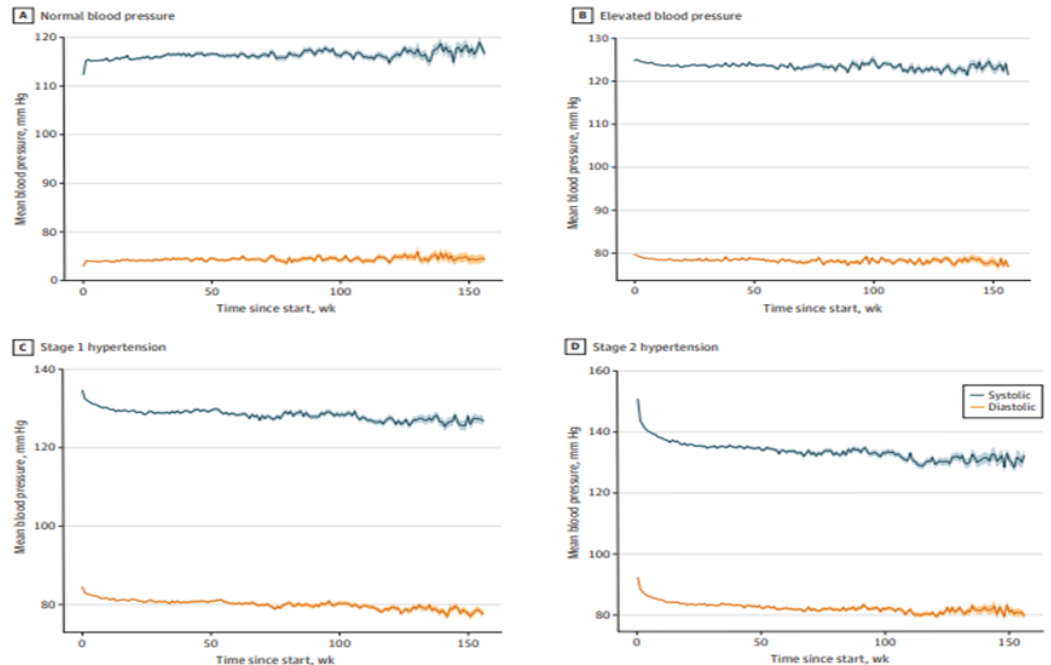


Figure 1: Blood Pressure Change Over Time by Baseline Blood Pressure

The findings of this study demonstrated that a hypertension self-management programme based on mobile technology can help with long-term blood pressure control and very high blood pressure diagnosis. These programmes may help with real-world blood pressure monitoring and control.

Reference:

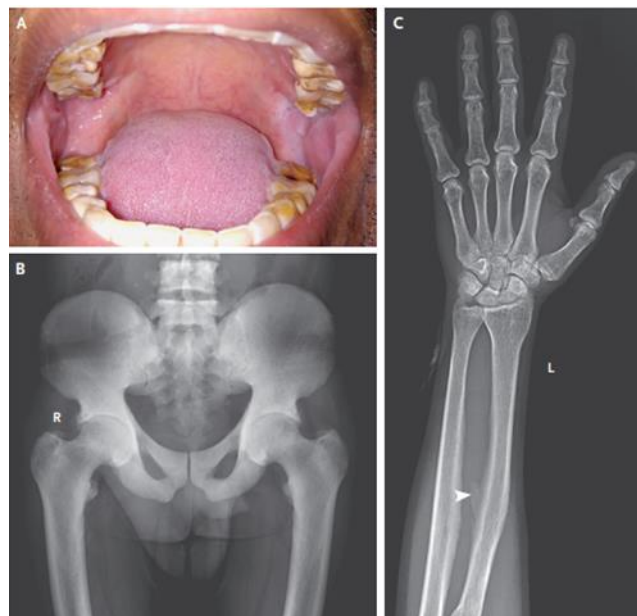
Gazit T, Gutman M, Beatty AL. Assessment of Hypertension Control Among Adults Participating in a Mobile Technology Blood Pressure Self-management Program. JAMA Netw Open. 2021 Oct 1;4(10):e2127008.

Skeletal Fluorosis: A Case Report

Skeletal fluorosis is a disorder caused by long-term exposure to high levels of fluoride during periods of bone modelling (growth) and/or remodelling. The bones are often weaker than normal in skeletal fluorosis, with stiffness and

pain in the joints as early symptoms. Due to periosteal sleeves of improperly constructed osseous tissue, osteophytosis, mineralization of tendons and muscle attachments, and bridging between the borders of the vertebral bodies, muscles are weakened and bones in the central skeleton are irregularly thickened in severe instances. Severe cases are characterised by deformities, notably of the weight-bearing bones.

A 32-year-old man came to the rheumatology clinic with lower back discomfort and stiffness in his neck, shoulders, and hips for several years. He had yellowish-brown tooth discolouration (Panel A) and restricted cervical spine, hips, and shoulder movements on examination. Radiography of the pelvis revealed osteosclerosis without sacroiliitis (Panel B). The lumbar spine had a T score of +12.1 while the hip had a T score of +3.1. With acceptable levels of creatinine, calcium, and vitamin D, laboratory testing revealed an alkaline phosphatase level of 479 IU per litre (reference range, 80 to 240) and a parathyroid hormone level of 103 pg per millilitre (reference range, 15 to 68).



Skeletal fluorosis was suspected since the patient resided in an area with high fluoride levels in the groundwater. Interosseous membrane calcification was seen on radiography in both forearms (Panel C, arrowhead). The serum

fluoride level was 0.05 ppm (the reference value was 0.02 ppm), and the 24-hour urine fluoride excretion was 7.5 ppm (the reference value was 0.1 ppm), confirming the diagnosis. He was prescribed calcium, vitamin D, and nonsteroidal antiinflammatory medicines, as well as being recommended to defluoridate his drinking water. He reported a 50% reduction in pain and stiffness two years later.

Reference:

Meena L, Gupta R. Skeletal Fluorosis. N Engl J Med. 2021 Oct 14;385(16):1510.



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