



DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY
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अस्थमा

World Asthma Day 2019: बलगम, खांसी और सांस लेने में तकलीफ अस्थमा के हैं संकेत, जानें कारण और उपचार (Dainik Jagran:20190506)

अस्थमा एक मेडिकल कंडीशन है जिसमें फेफड़ों के वायुमार्ग संकीर्ण हो जाते हैं

अस्थमा से दुनिया भर में कुल 339 मिलियन लोग पीड़ित हैं।

इस वर्ष विश्व अस्थमा दिवस की थीम "स्टॉप फॉर अस्थमा" है।

विश्व अस्थमा दिवस (World Asthma Day), अस्थमा के बारे में जागरूकता बढ़ाने के लिए दुनिया भर में आयोजित किया जाने वाला वार्षिक आयोजन है। यह कार्यक्रम अस्थमा के बारे में जागरूकता फैलाने वालों और विभिन्न स्वास्थ्य देखभाल समूहों के सहयोग से ग्लोबल इनिशिएटिव फॉर अस्थमा (जीआईएनए) द्वारा आयोजित किया जाता है। इस वर्ष विश्व अस्थमा दिवस के लिए अपनाई गई थीम है- "स्टॉप फॉर अस्थमा" है जहाँ 'स्टॉप' का एस यानी सिम्प्टम इवैल्यूएशन (लक्षणों का मूल्यांकन), टी यानी टेस्ट रेस्पांस (परीक्षण पर प्रतिक्रिया), ओ यानी ऑब्जर्व एंड असेस (निगरानी और मूल्यांकन), और पी यानी प्रोसीड टू एडजस्ट ट्रीटमेंट (इलाज के तौर-तरीके समायोजित करना) है।

विश्व अस्थमा रिपोर्ट 2018 के अनुसार, अस्थमा से दुनिया भर में कुल 339 मिलियन लोग पीड़ित हैं और भारत में 6% बच्चे और 2% वयस्क इससे जूझ रहे हैं। अगर हम संख्या की बात करें तो अकेले भारत में डब्ल्यूएचओ के अनुसार लगभग 15-20 मिलियन अस्थमा के केस हैं। भारत में आबादी के

बड़े हिस्से को अच्छी स्वास्थ्य सेवाएं नहीं मिल पाती, जिस वजह से अस्थमा के रोगियों की संख्या में इजाफा हो रहा है।

भारत में एक मरीज पर होने वाले खर्च का लगभग 80 फीसदी दवाइयों को खरीदने पर होता है। इस वजह से 2018 में, भारत सरकार ने लगभग 100 मिलियन कम आय वाले परिवारों को मुफ्त स्वास्थ्य बीमा प्रदान करने की घोषणा की है ताकि वे अच्छी स्वास्थ्य देखभाल की सुविधा का खर्च उठा सकें। ग्लोबल अस्थमा रिपोर्ट 2018 के अनुसार, राजस्थान जैसे राज्यों ने सरकारी अस्पतालों के लिए अस्थमा रोगियों को मुफ्त खुराक, सूखे पाउडर वाले इनहेलर कैप्सूल, इनहेलर और नेब्युलाइज़र प्रदान करना अनिवार्य कर दिया है।

अस्थमा कैसे होता है

अस्थमा एक मेडिकल कंडीशन है जिसमें फेफड़ों के वायुमार्ग संकीर्ण हो जाते हैं और अतिरिक्त बलगम का उत्पादन करते हैं। इससे सांस लेना मुश्किल हो जाता है और रोगियों में घरघराहट, खांसी और सांस की तकलीफ शुरू हो जाती है। अस्थमा का कारण स्थिति और पर्यावरणीय कारकों की वजह से विकसित होना और आनुवंशिक गड़बड़ी दोनों हो सकते हैं। अस्थमा के हमलों के कारणों में दो लोगों में अंतर हो सकता है और इसमें पराग, कण, धूल, पालतू जानवरों के बाल, मोल्ड बीजाणु आदि जैसे पदार्थ शामिल हैं। श्वसन संबंधी विकार, वायु प्रदूषकों के संपर्क आदि के कारण भी यह स्थिति उत्पन्न हो सकती है। कुछ दवाओं, बहुत ज्यादा तनाव, अत्यधिक शारीरिक गतिविधि भी अस्थमा के लिए प्राथमिक ट्रिगर के रूप में काम कर सकती हैं।

अस्थमा के लिए निवारक उपाय

अस्थमा गैर-संचारी रोग है। इसे दवाओं और अन्य सहायक थेरेपी से नियंत्रित किया जा सकता है; हालांकि पूरी तरह से ठीक नहीं किया जा सकता। इस स्थिति में नियमित निगरानी और उपचार की आवश्यकता होती है। अस्थमा के रोगियों को ट्रिगर्स रोकने के लिए सरल एहतियाती उपाय करने की सलाह दी जाती है। इससे स्थिति को और बिगड़ने से रोका जाता है। इन उपायों में शामिल हैं, डॉक्टर के साथ नियमित फॉलो-अप, इन्फ्लूएंजा और निमोनिया का टीकाकरण, एलर्जी और जलन पैदा करने वाले तत्वों की पहचान करना, होम पीक फ्लो मीटर का उपयोग करके श्वास प्रवाह पर नज़र रखना, समय पर निर्धारित दवा लेना और हमेशा अपने साथ एक क्विक रिलीफ इनहेलर रखना। इन सभी उपायों का यदि सावधानीपूर्वक अभ्यास किया जाए तो काफी हद तक अस्थमा के हमलों की फ्रिक्वेंसी को कम करने में मदद मिल सकती है।

अस्थमा का निदान और उपचार

एक सही डायग्नोसिस यह सुनिश्चित करने के लिए आवश्यक है कि क्या कोई रोगी अस्थमा या किसी अन्य श्वसन विकार से पीड़ित है। इसके लिए डॉक्टर रोगी की शारीरिक जांच शुरू करता है जिसके बाद एक सटीक डायग्नोसिस के लिए विभिन्न डायग्नोस्टिक टेस्ट किए जाते हैं। इन टेस्ट में फेफड़े के कार्य परीक्षण की जांच शामिल होती है, ताकि यह जाना जा सके कि कोई व्यक्ति कितनी हवा को सांस के जरिये अंदर लेता है और कितनी हवा बाहर निकालता है। अतिरिक्त टेस्ट जैसे मेथेकॉलिन चैलेंज, नाइट्रिक ऑक्साइड टेस्ट, इमेजिंग टेस्ट (एक्स-रे, सीटी स्कैन), एलर्जी परीक्षण, स्पक्टम इयोसिनोफिल्स आदि निर्धारित कर सके।

गहन निदान के बाद स्थिति को हल्के, मध्यम या गंभीर चरण में वर्गीकृत किया जाता है और उसके बाद एक व्यक्तिगत ट्रीटमेंट प्लान दिया जाता है। उम्र, रोगी के लक्षण और अस्थमा ट्रिगर्स के आधार पर अलग-अलग दवाएं निर्धारित करते हैं। एंटी-इन्फ्लेमेटरी दवाओं (इनहेल्ड कॉर्टिकोस्टेरोइड्स), ल्यूकोट्रिएन मोडिफायर्स और बीटा एंटागॉनिस्ट्स जैसी दीर्घकालिक दवाएं हर दिन लक्षणों पर जांच रखने के लिए रोगियों को दी जाती हैं। लक्षणों को तुरंत नियंत्रित करने के लिए रोगियों को क्विक-रिलीफ दवाएं दी जाती हैं। साथ ही एलर्जी के लिए दवाएं उन रोगियों को भी दी जाती हैं जिनमें एलर्जी की वजह से अस्थमा होता है।

अस्थमा कुछ लोगों को मामूली तौर पर परेशान कर सकती है, जबकि यह दूसरों के लिए जानलेवा भी हो सकती है। भारत और दुनिया भर के देशों में सरकार ने स्थिति को नियंत्रित करने के लिए हरसंभव उपाय किए हैं। लेकिन, यह ध्यान दिया जाना चाहिए कि हम में से हर एक को इसे अस्थमा के बारे में जागरूकता बढ़ाने में मदद करने के लिए हमारी जिम्मेदारी के रूप में विचार करना चाहिए।

किडनी की सेहत

किडनी पर भारी पड़ सकता है शाकाहार के नाम पर जंक फूड खाना (Dainik Jagran:20190506)

<https://www.jagran.com/world/america-junk-food-can-be-riskful-for-kidney-19193034.html>

वैज्ञानिकों ने अपने अध्ययन में पाया है कि शाकाहारी होने की कोशिश में जंक फूड का रास्ता अपनाना किडनी की सेहत पर भारी पड़ सकता है।

वाशिंगटन, रायटर। किडनी की सेहत के लिए शाकाहार सबसे अच्छा है। यही कारण है कि शाकाहार से दूर रहने वाले लोग भी अब शाकाहारी होने का प्रयास करने लगे हैं। लेकिन इस कोशिश में अगर आपने शाकाहारी जंक फूड का रास्ता अपनाया, तो ज्यादा भारी पड़ सकता है। अमेरिका के जॉन्स होपकिंस ब्लूमबर्ग स्कूल ऑफ हेल्थ के शोधकर्ताओं ने 14,686 लोगों की खानपान की आदत और किडनी की सेहत का अध्ययन किया।

इनमें से करीब आधे लोगों पर 24 साल तक नजर रखी गई। वैज्ञानिकों ने इसमें पाया गया कि स्वास्थ्यकर शाकाहारी भोजन करने वालों में शाकाहार से दूर रहने वालों की तुलना में किडनी की बीमारियों का खतरा 14 फीसद तक कम रहता है। इससे इतर, शाकाहारी जंक फूड खाने वालों में खतरा 11 फीसद बढ़ जाता है। बता दें कि पूर्व के अध्ययनों में भी जंक फूड को सेहत के लिए हानिकारक बताया गया है।

इससे पहले अमेरिका के बोस्टन विश्वविद्यालय के विशेषज्ञों ने अपने अध्ययन में बताया था कि पिछले तीस वर्षों में फास्ट फूड में गैर सेहतमंद तत्वों की मात्रा में 226 फीसद इजाफा हुआ है। शोधकर्ताओं ने दस प्रसिद्ध अंतरराष्ट्रीय फास्ट फूड चैन के 1787 मेन, साइड्स और डेजर्ट खाद्य पदार्थों पर अध्ययन किया था। अध्ययन में पाया गया था कि फास्ट फूड में मौजूद सोडियम की मात्रा में काफी बढ़त देखी गई है जो हृदय के लिए जोखिम कारक है।

प्राणायाम

हार्ट, ब्लड प्रेशर और अस्थमा के मरीजों के लिए फायदेमंद है उज्जायी प्राणायाम, जानें विधि (Dainik Jagran:20190506)

कहीं भी, कभी भी कर सकते हैं ये आसान सा प्राणायाम।

अस्थमा, हार्ट अटैक और हाई ब्लड प्रेशर में फायदेमंद है उज्जायी प्राणायाम।

जानें किस समय प्राणायाम का अभ्यास है ज्यादा फायदेमंद।

उज्जायी एक ऐसा प्राणायाम है, जो सांस के मरीजों के लिए बहुत फायदेमंद होता है। आजकल बड़े शहरों के साथ-साथ छोटे शहरों और कस्बों में भी प्रदूषण का स्तर काफी बढ़ गया है। प्रदूषण के कारण कम उम्र में ही लोग अस्थमा, ब्रोंकाइटिस, फेफड़ों के इन्फेक्शन, फेफड़ों के कैंसर आदि सांस से संबंधित बीमारियों का शिकार हो रहे हैं। प्रदूषण सिर्फ आपके फेफड़ों के लिए ही नहीं, बल्कि दिल के लिए भी खतरनाक है। उज्जायी प्राणायाम के नियमित अभ्यास से इन बीमारियों से बचाव संभव है।

उज्जायी का अर्थ है 'जीतने वाला', यानी इस प्राणायाम में आप अपनी सांसों पर विजय प्राप्त करते हैं। सांस हमारे जीवन का आधार है, क्योंकि इसके माध्यम से ही हमारे शरीर में ऑक्सीजन पहुंचती है और कार्बन डाई ऑक्साइड बाहर निकलता है। आइए आपको बताते हैं कि उज्जाई प्राणायाम के अभ्यास से आपको कितना फायदा मिलता है और कैसे किया जाता है ये प्राणायाम।

अस्थमा और हार्ट के मरीजों के लिए फायदेमंद

उज्जायी प्राणायाम अस्थमा और हार्ट के मरीजों के लिए फायदेमंद है। इस प्राणायाम के दौरान जब आप सांसों को एक गति में अंदर-बाहर करते हैं, तो आपके फेफड़ों की अच्छी एक्सरसाइज हो जाती है। सांस के द्वारा खींची गई ऑक्सीजन हृदय के पंपिंग के काम को आसान बनाती है, जिससे सभी अंगों तक ऑक्सीजन युक्त खून की सप्लाई होने लगती है। इसके अलावा सांस छोड़ने की प्रक्रिया के दौरान आपके फेफड़ों में मौजूद टॉक्सिन्स बाहर निकल जाते हैं, जिससे फेफड़े स्वस्थ रहते हैं। अस्थमा के मरीजों को इस प्राणायाम का अभ्यास रोजाना करना चाहिए।

हाई ब्लड प्रेशर के मरीजों के लिए फायदेमंद

हाई ब्लड प्रेशर के मरीजों के लिए भी उज्जायी प्राणायाम बहुत फायदेमंद है। इस प्राणायाम के दौरान शरीर के अंदर कंपन्न होते हैं, जिससे धमनियों में जमा प्लाक धीरे-धीरे कम होने लगता है और ब्लड यानी रक्त को प्रवाहित होने के लिए धमनियों में पर्याप्त जगह मिल जाती है।

लंबे समय तक स्वस्थ रहते हैं शरीर के अंग

इसका कारण यह है कि इस प्राणायाम के दौरान आपको गहरी सांसें भरनी होती हैं। इस प्राणायाम के दौरान आपके शरीर में सामान्य से ज्यादा शुद्ध ऑक्सीजन का प्रवेश होता है। ये ऑक्सीजन शरीर के सभी अंगों तक पहुंचकर पोषण देता है और अंगों को जीवन देता है। इससे आपके शरीर के सभी अंग लंबी उम्र तक स्वस्थ रहते हैं।

कब करें उज्जायी प्राणायाम का अभ्यास

उज्जायी प्राणायाम को करने का सही समय सुबह का है, जब आपका पेट खाली हो। सुबह के समय वायु शीतल होती है और वातावरण में ऑक्सीजन का स्तर ज्यादा होता है। इस प्राणायाम को आप अपने घर की छत पर, पार्क में, कमरे में कहीं भी कर सकते हैं। बस यह ध्यान रखें कि इसे ऐसी जगह न करें, जहां आसपास कोई फैक्ट्री हो या व्यस्त सड़क हो, क्योंकि फैक्ट्री या सड़क के आसपास वायु प्रदूषण का स्तर बहुत ज्यादा होता है।

कैसे करें उज्जायी प्राणायाम का अभ्यास

सबसे पहले किसी चटाई या चादर पर आराम से बैठ जाएं और अपनी कमर को सीधा रखें।

फेफड़ों में गहरी सांस भरें और सांसों के अंदर जाने की प्रक्रिया को महसूस करें।

कुछ समय तक सांसों को फेफड़ों में रोके रखें।

अब अपने एक हाथ से नाक के दाहिने छिद्र को बंद करें और बाएं छिद्र से धीरे-धीरे सांसों को छोड़ें।

सांसों को अंदर-बाहर करते हुए अपने मुंह को बंद रखें और गले से हल्की घरघराहट जैसी आवाज निकालें, जिससे आपके शरीर के ऊपरी हिस्से में कंपन्न महसूस हो।

ध्यान दें कि आप जितना समय सांस को खींचने में लगा रहे हैं, उसका दोगुना समय सांस को छोड़ने में लगाएं।

शुरुआत में इस प्राणायाम का अभ्यास आप 2-3 मिनट करें। एक बार अभ्यास हो जाने पर आप इसे जितना ज्यादा करेंगे, आपके लिए उतना फायदेमंद होगा।

C-Section

Minimising maternal mortality ratio, C-Section in State (The Hindu:20190506)

<https://www.thehindu.com/news/national/tehrangana/minimising-maternal-mortality-ratio-c-section-in-state/article27041235.ece>

Health Minister Eatala Rajender handing over midwifery certificate to a nurse on the occasion of International Day of the Midwife in the city on Sunday.

30 certified midwives to be posted in 12 government healthcare facilities in one week

In a week's time, 30 nurses trained in midwifery would be posted in 12 government healthcare facilities that have recorded high number of deliveries. The move is expected to bring down C-Section deliveries and maternal mortality.

According to the Sample Registration System's special bulletin on 'Maternal Mortality in India 2014-16', the MMR across India was 130 per 1,00,000 live births. It is 81 per 1,00,000 live births in Telangana, the fifth lowest State. The lowest MMR of 46 was recorded in Kerala, followed by 61 in Maharashtra.

Diploma course

On the occasion of International Day of the Midwife observed on Sunday (May 5), 30 nurses who completed 18-month Midwifery Nurse Practitioner Diploma Course in April, were presented with certificates by Health Minister Eatala Rajender at a ceremony held here. The course was funded by the Central government through the National Health Mission (NHM), and implemented by the Government of Telangana in collaboration with Fernandez Hospitals and the United Nations International Children's Emergency Fund (UNICEF).

Officials from the Health Department said their focus was on respectful maternity. Apart from recognising emergencies before or during delivery, they said the midwives have been trained to treat pregnant women with respect, ensure their privacy during diagnostic tests and delivery, and they would allow pregnant women to choose their birth positions.

It is claimed that Telangana is the first State to have certified midwives.

After conducting the tests and interviews, 30 nurses were selected for the course, which began in November 2018, when Vakati Karuna was the Commissioner of Health and Family Welfare Department.

For one year, classroom-based training was imparted to them in Karimnagar, followed by six-month internship in Sanagreddy. "The midwives are trained in recognise the signs of an emergency and handle it. When it's an acute emergency, she will deal with it, stabilise the mother, and refer her to a health centre in time thus avoiding maternal mortality," said Evita

Fernandez, the chairperson of Fernandez Hospitals, on the sidelines of the ceremony. Speaking on the occasion, Yogita Rana, the Commissioner of Health and Family Welfare Department, said 60 more nurses would undergo training in future.

According to World Health Organisation's 'Global Strategic Directions for Strengthening Nursing and Midwifery 2016-2020', "There is demonstrable evidence substantiating the contribution of the nursing and midwifery workforce to health improvements, such as increased patient satisfaction, decrease in patient morbidity and mortality, stabilisation of financial systems through decreased hospital readmissions, length of stay, and other hospital-related conditions, including hospital-acquired infections, which consequently contribute to patient well-being".

The WHO's fact sheet on nursing and midwifery states that for all the countries to reach 'Sustainable Development Goal 3' on health and well-being, an additional 9 million nurses and midwives are needed by 2030.

Stroke and heart disease

Training for marathon 'reverses' ageing of vessels, cuts stroke risk (The Hindu:20190506)

<https://www.thehindu.com/sci-tech/health/training-for-marathon-reverses-ageing-of-vessels-cuts-stroke-risk/article27040841.ece>

Lifelong athletes have biologically younger blood vessels.

Novice runners had a four-year reduction in arterial age after training, says study

Training for and completing a first-time marathon reverses ageing of major blood vessels, according to a study which found that the older and slower runners benefit the most.

A hallmark of normal ageing is stiffening of the blood vessels, which increases the risk of stroke and heart disease even in healthy people.

Compared to their peers, lifelong athletes have biologically younger blood vessels, researchers said.

The study investigated if training for a marathon could modify aortic stiffness even in novice runners.

“Novice runners who trained for six months and completed their first marathon had a four-year reduction in arterial age and a four mm Hg drop in systolic blood pressure,” said Anish Bhuva, from the University College London in the U.K.

“This is comparable to the effect of medication, and if maintained translates to approximately 10% lower risk of stroke over a lifetime,” Mr. Bhuva said.

The study included 139 healthy first-time marathon runners aged 21-69 years who were advised to follow a first-time finisher training programme and ran an estimated 10-20 km a week for six months ahead of completing the 2016 or 2017 London Marathon.

Before the training and two weeks after completing the marathon, participants had MRI and ultrasound scans of the heart and blood vessels, a fitness test, and measurements of blood pressure and heart rate.

Biological age of the aorta was calculated at both time points. After completing the marathon, aortic stiffness had reduced and the aorta was four years younger than before training.

Older participants and those with longer marathon finish times had greater reductions in aortic stiffness after training. Reductions in aortic stiffness were independent of changes in blood pressure.

Hypertension

‘Indian adults are unaware they are ailing from hypertension’ (The Hindu:20190506)

<https://www.thehindu.com/sci-tech/health/indian-adults-are-unaware-they-are-ailing-from-hypertension/article27028167.ece>

Hypertension is a major risk factor for cardiovascular disease, which is a leading cause of death in India.

First large-scale study finds only 45% diagnosed, only 8% had BP under control

Despite having a heavy burden of a hypertensive population, the proportion of adults with high blood pressure who are aware of their diagnosis, are treated and achieve control, is dismally low, noted the first large-scale, population-based study of hypertension care in the country.

The study, which has been published in PLOS Medicine, was carried out by researchers at the Public Health Foundation of India (PHFI), Harvard T.H. Chan School of Public Health, the Heidelberg Institute of Global Health, the University of Birmingham and the University of Gottingen.

According to the study, only 3 out of 4 individuals with hypertension has ever had their blood pressure measured, only 45% had been diagnosed, and only 8% of those surveyed had their blood pressure under control.

More than half the number of Indians aged 15-49 years with hypertension were not aware of their hypertension status. Awareness level was lowest in Chhattisgarh (22.1%) and highest in Puducherry (80.5%).

Hypertension is a major risk factor for cardiovascular disease, which is a leading cause of death in India. “The study is significant as there was no population-based large-scale study from India on the steps for screening to successful control of hypertension at which people are lost from care,” noted the study. For the study, researchers used the National Health and Family Survey (NFHS-4, 2015-16) data of 731,864 individuals aged 15-49 years, which covered each district in 29 States and seven Union Territories.

Dr. Dorairaj Prabhakaran, vice-president, Research and Policy, at PHFI, and one of the authors of the study, said: “Detection of hypertension is straightforward, treatments are simple yet effective, and hence hypertension can be easily controlled. However, it is an unfortunate paradox that India does not perform well in any of the measures of detection, treatment and control.”

“Keeping hypertension under control can have huge benefits in terms of preventing heart attacks and strokes,” said Dr. Lindsay Jaacks, faculty, Harvard T.H. Chan School of Public Health.

Cervical Cancer

EDMC immunises over 5,000 girls for HPV, cervical cancer (Hindustan Times:20190506)

<http://paper.hindustantimes.com/epaper/viewer.aspx>

OVER 26,000 ELIGIBLE GIRL STUDENTS BETWEEN THE AGES 10-14 WERE IDENTIFIED BY THE EDMC IN 2017

NEWDELHI: The East Delhi Municipal Corporation (EDMC) has immunised over 5,000 girls studying in 368 of its primary schools against human papillomavirus (HPV), a viral infection that causes genital warts and can lead to cervical cancer.

Under the civic body's immunisation programme, over 26,000 eligible girl students between the ages 10-14 were identified in 2017. Twenty percent of them have been administered the HPV vaccine so far.

In India, 132,000 new cases of HPV are diagnosed and 74,000 deaths occur due to the virus every year.

In Delhi, 10.8% women suffer from cervical cancer, according to the National Cancer Registry.

Delhi was the first state in India to start an HPV vaccination programme in 2016.

So far, the vaccinations have been carried out at the Delhi State Cancer Institute in Tahirpur.

"We will get the vaccines at our schools itself in a few months, so the logistical and transport problems will be solved," Dr Ajay Lekhi, DHO, EDMC, said.

The vaccination is free of cost for the students and after taking due consent from parents.

"Cervical cancer is only kind that is completely preventable, so a vaccination drive will bring down the numbers. The World Health Organisation recommends the two-dose vaccine be given to all girls between ages 9 -13 before they are sexually active. It can also be given to women up to 26 or 30 years of age, but that will only protect against infections she might get in the future," Dr SP Kataria, consultant of medical oncology at Safdarjung Hospital, said.

EDMC primary schools, which run classes from nursery to class 5, are generally spread over slums and urban villages like Trilokpuri, Seemapuri, Bhajanpura, etc. There is little awareness in these localities about female sexual health and cervical cancer, officials said.

Himanshi Pandey, a former chairperson of the EDMC's education committee, and councillor from Kishanganj, said, "We are very happy the way our HPV vaccination programme has progressed. It started in August 2017 with our doctors realising during their menstrual hygiene camps with girl students that the same age group of girls (pre-teens and early teens) is also eligible for HPV vaccination."

Alzheimer's disease

Could a cell phone game detect who is at risk of Alzheimer's? (Medical News Today:20190506)

<https://www.medicalnewstoday.com/articles/325103.php>

An Alzheimer's diagnosis often relies on signs of memory problems. However, these issues usually do not appear until years after the disease has taken hold. A new smartphone game is using spatial navigation to detect Alzheimer's before it is too late.

A simple game that people can play on their smartphones could help detect Alzheimer's risk.

Another person develops Alzheimer's disease every 3 seconds, according to Alzheimer's Disease International. The number of people living with this most common form of dementia currently stands at around 50 million. By 2050, experts expect this figure to have tripled.

The last "significant breakthrough" in Alzheimer's research happened 4 decades ago, states the latest World Alzheimer's Report. However, a recently developed smartphone game may alter that statistic.

"Research shows us that the brain changes associated with diseases like Alzheimer's begin decades before symptoms like memory loss start," says Hilary Evans, chief executive at Alzheimer's Research United Kingdom.

"[F]or future Alzheimer's treatments to be effective, it's likely they must be given at the earliest stages of disease, before there's too much damage to the brain."

Navigating space

A collaboration between the organization, the University of East Anglia (UEA) and University College London in the U.K., and Deutsche Telekom has resulted in a game that may help experts detect who is at risk of Alzheimer's.

"We often hear heartbreaking stories about people with dementia who get lost and can't find their way home," continues Evans, adding that spatial navigation issues "are some of the earliest warning signs for the condition."

Experts draft guidelines for Alzheimer's-like condition

Experts have come to an agreement about a new condition that resembles Alzheimer's disease.

Such problems are the focus of the Sea Hero Quest game, which encourages players to find their way around various mazes. So far, more than 4.3 million people across the globe have tried it.

In the current study, which features in the journal PNAS, the researchers compared how different people played the game and found some interesting results. They analyzed data from more than 27,000 U.K. players between the ages of 50 and 75 years and also recruited a lab group of 60 individuals for genetic testing.

A game changer

Genetic testing revealed that 31 of the participants in the smaller group had the APOE4 gene. Carriers of this gene are almost three times more likely than other people to develop Alzheimer's disease, and it tends to appear when they are younger.

When the team compared the lab group data with the benchmark data, they could distinguish between those with and without the APOE4 gene based on the way that they played Sea Hero Quest.

Those with a genetic predisposition to Alzheimer's "took less efficient routes to checkpoint goals" and "performed worse on spatial navigation tasks," notes Prof. Michael Hornberger from the UEA, who is the lead researcher. "This is really important because these are people with no memory problems."

Waiting until someone demonstrates memory issues to diagnose Alzheimer's may be too late, adds Prof. Hornberger, because such symptoms occur "when the disease is quite advanced."

"[E]merging evidence shows that subtle spatial navigation and awareness deficits can precede memory symptoms by many years."

In fact, a routine memory test was ineffective in recognizing the difference between those who were and were not at risk of the disease.

Assisting diagnosis

Having the ability to detect Alzheimer's risk with a simple game could, therefore, help create more effective diagnosis methods. It could also assist with future treatment.

The number of people who have willingly chosen to play the game is a considerable strength. According to researchers, 2 minutes of game time is the equivalent of 5 hours of lab-based study.

Gillian Coughlan from the UEA describes the project as providing "an unprecedented chance to study how many thousands of people from different countries and cultures navigate space."

"It demonstrates the power of harnessing large-scale citizen science projects and applying big data technologies to help improve the early detection of diseases like Alzheimer's."

Colorectal Cancer

Colorectal cancer vaccine has promising results in early trials (Medical News Today:20190506)

<https://www.medicalnewstoday.com/articles/325102.php>

A clinical trial shows promise for a new colorectal cancer vaccine, as it caused no serious side effects while bloodwork demonstrated immune cell activation.

New research offers hope of an effective vaccine for colorectal cancer.

These results appear in the Journal for ImmunoTherapy of Cancer and outline a phase 1 clinical trial.

The trial set out to establish if the vaccine itself was safe and whether it activated immune cells — both aspects of which were satisfactory. This success paves the way for further study.

A research team at Jefferson (Philadelphia University and Thomas Jefferson University) in the United States is the developer of the vaccine.

The group's latest scientific work involved 10 individuals who had stage 1 or 2 colon cancer.

The team administered the vaccine to the participants who returned for bloodwork at 30, 90, and 180 days after the drug delivery.

The blood samples showed evidence of killer T cell activation, a process that causes the T cells to find and destroy colon cancer cells.

The Jefferson scientists were also interested in the potential side effects of the vaccine during this trial. While the participants had some discomfort at the injection point, they reported no serious side effects.

The vaccine works by mobilizing the immune system against a specific molecule the scientists call GUCY2C. Prior research discovered that this molecule is a marker that colorectal tumors express and that helps these cancer cells stand out from healthy cells.

Researchers paired this molecule with another one that augments an immune reaction with the hope that it would target the cancer cells and kill them.

"There is an urgent need to understand what fuels colorectal cancer growth, and to harness that knowledge for developing novel therapies," says Karen E. Knudsen, Ph.D., who is the director of the Sidney Kimmel Cancer Center at Jefferson Health in Philadelphia, PA.

"This pivotal study provides some of the first evidence that it may be possible to safely direct a patient's own immune system to seek and destroy this cancer type. This is a true milestone

— made possible through the scientists and clinicians in our colorectal cancer team working in synchrony."

Why colorectal cancer research is vital

Colorectal cancer includes cancers that start in the colon or the rectum. Doctors group them because they share many features of the disease and its progression.

The disease begins as one or more growths on the inner lining of the colon or rectum, and these can become cancerous over time.

Colorectal cancer is the third most common cancer in the U.S. among both men and women. The American Cancer Society (ACS) estimate that doctors will diagnose in excess of 101,000 new cases of colon cancer and more than 44,000 cases of rectal cancer this year.

How do oral bacteria make colorectal cancer more aggressive?

New research identifies a molecular mechanism through which oral bacteria drive colorectal cancer.

As well as being the third most common cancer diagnosis, colorectal cancer is also the third leading cause of cancer-related deaths for both men and women. The ACS say the disease is expected to cause around 51,000 deaths in 2019.

Early detection of this type of cancer is crucial, as there may not be symptoms present in the preliminary stages. Colonoscopies can detect and remove polyps before they become cancerous, and there are less-invasive tests of stool that can help detect its presence.

Future research, trials, and studies

In addition to colorectal cancer, several other types of cancers express the GUCY2C molecule, including gastric, esophageal, and pancreatic. This group of diseases, including colorectal cancer, accounts for one-fifth of all cancer-related deaths.

The positive results of this new phase 1 clinical trial are promising enough that researchers say they can begin further studies in the future and will hopefully go to trial this upcoming fall.

They hope to be able to develop an even better version of the vaccine and that it could benefit even more people with different kinds of cancers.

"We are preparing for a phase II study that will begin recruiting patients this fall," says study first author Adam Snook, Ph.D., who is an assistant professor in the Department of Pharmacology and Experimental Therapeutics at Jefferson.

"We used lessons learned in the first study to modify the vaccine to hopefully make it even more effective," he concludes.

Diabetes

Type 2 diabetes: Intensive hypertension therapy may lower death risk (Medical News Today:20190506)

<https://www.medicalnewstoday.com/articles/325101.php>

According to a new study, intensive treatment for high blood pressure may reduce the risk of death from any cause, including cardiovascular disease, in people with type 2 diabetes.

New research suggests that intensive blood pressure treatment may help those with type 2 diabetes.

Diabetes is one of the most common and costly chronic conditions in the United States. Over 100 million people in the U.S. have diabetes or prediabetes, according to the 2017 report compiled by the Centers for Disease Control and Prevention (CDC).

Diabetes is a disease that affects how the body processes glucose. Type 2 diabetes, which is the most common form of the disease, reduces the production of insulin, a hormone that regulates blood sugar levels. When this occurs, blood sugar levels rise, increasing the risk of heart disease.

Hypertension, or high blood pressure, also increases the risk of cardiovascular disease. According to the National Institutes of Health (NIH), blood pressure is "the force of blood pushing against the walls of [the] arteries as the heart pumps blood." Hypertension happens when "this force against the artery walls is too high."

Type 2 diabetes: Gut bacteria may influence drug effectiveness

The bacterial composition in the gut may explain why type 2 diabetes medication works for some people but fails for others.

Doctors measure blood pressure in millimeters of mercury (mmHg). The first number, or the systolic pressure, refers to the pressure in the blood vessels when the heart beats. The second number measures the diastolic blood pressure, which is the pressure in the blood vessels when the heart rests between beats.

Doctors define "prehypertension" as 120–139 mm Hg for systolic pressure and between 80–89 mmHg for diastolic pressure. They consider a pressure of 140/90 mmHg as high.

According to the CDC, about 75 million people in the U.S. have high blood pressure, but only about half of them have the condition under control.

Link between diabetes and hypertension

Many people with diabetes also have high blood pressure. Studies found that at least 1 in 3 people with diabetes also have hypertension.

Diabetes and high blood pressure make for a deadly combination because one condition makes the other worse. Diabetes may increase blood pressure by reducing the blood vessels' ability to stretch, increasing the fluid in the body, and affecting how the body manages insulin.

According to the American Heart Association (AHA), nearly 70% of people age 65 or older with diabetes die from cardiovascular disease, and 16% die of stroke. In addition, people with diabetes are up to four times more likely to die from heart disease than those without diabetes.

Looking for the best blood-pressure targets

Now, a new study, which appears in the AHA's journal *Hypertension*, found that people with type 2 diabetes who received intensive treatment to keep blood pressure levels at or below 130/80 mmHg experienced fewer heart attacks, strokes, and had a lower risk of death from any cause.

"Our findings demonstrate a benefit of more intensive therapy aiming for blood pressure thresholds at 130/80 [mmHg] or below and should help resolve some ongoing confusion over the best blood pressure targets for people with diabetes," says the study's senior investigator J. Bill McEvoy, a professor of preventive cardiology at the National University of Ireland in Galway.

The 2017 AHA blood pressure guidelines recommended intensive treatment for people with diabetes and hypertension to help reduce their blood pressure. The new study revealed that blood pressure levels of 130/80 mm/Hg may benefit people regardless of cardiovascular risk.

"Patients, including those with diabetes, with blood pressure levels above 130/80 on two consecutive checks should discuss with their physicians whether they need [a] change in treatment to get to a lower number."

Prof. McEvoy

Benefits of intensive hypertension therapy

The researchers analyzed the outcomes of about 11,000 people with type 2 diabetes. The researchers clinically followed the study participants over 4 years across multiple clinical centers and locations.

The scientists examined people with type 2 diabetes and high blood pressure, who had different levels of cardiovascular risk, and who received intensive treatment. They then compared them with people with the same conditions who received a placebo.

Previous findings had suggested that hypertension treatment was effective, but researchers did not know whether this benefit also applied to people with diabetes and blood pressure below 140/90 mmHg.

The new study looked at rates of overall death from any cause and found that all people benefited from intensive treatment, regardless of cardiovascular risk.

More than 800 deaths and over 950 major vascular events — including heart attacks, strokes, diabetic kidney disease, and diabetic eye disease — occurred during the study period.

The people who received intensive blood pressure treatment experienced 9% fewer events and 14% fewer deaths than the people who took a placebo.

Sleep Disorder

Stress, insomnia may triple death risk for those with hypertension (Medical News Today:20190506)

<https://www.medicalnewstoday.com/articles/325099.php>

A stressful work environment coupled with a lack of sleep can result in a threefold-higher risk of cardiovascular death in people with hypertension.

Having both a stressful job and difficulty sleeping may dramatically increase a person's risk of cardiovascular death.

Recent research looked at how stress and insomnia affected the health of employees who have hypertension, and the news was sobering.

The researchers found that in comparison with their peers who slept well and did not experience work-related stress, hypertensive employees with stress and insomnia were three times more likely to die from cardiovascular disease.

Researchers analyzed data from nearly 2,000 employees whose ages ranged from 25 to 65 years. These workers had high blood pressure, but, at the time of the study, they did not have cardiovascular disease or diabetes.

Although those with either job-related stress or insomnia did have an increased risk of cardiovascular death, the risk was higher when people had both of these factors present in their everyday lives.

The authors published their findings in the European Journal of Preventive Cardiology.

"These are insidious problems," notes Prof. Karl-Heinz Ladwig of the German Research Centre for Environmental Health and the Medical Faculty, Technical University of Munich.

"The risk is not having one tough day and no sleep. It is suffering from a stressful job and poor sleep over many years, which fade energy resources and may lead to an early grave."

Prof. Karl-Heinz Ladwig

Hypertension is a major risk factor for many

Researchers define hypertension as high blood pressure in the arteries.

According to the American Heart Association (AHA), normal blood pressure readings for adults sit below 120/80 millimeters of mercury (mm Hg), while people with hypertension have either a systolic pressure (upper number) of 130 mm Hg or higher or a diastolic pressure (lower number) of 80 mm Hg or above.

High blood pressure is a widespread problem in the United States, with the AHA estimating that close to 103 million adults have hypertension.

This number equates to almost half of all adults in the U.S., and experts note that the death rate stemming from hypertension is increasing. In fact, it rose by nearly 11% from 2005 to 2015.

Why does insomnia worsen distress of unpleasant memories?

For people with insomnia, recalling a distressing experience can leave them feeling worse. New research explains why.

Many factors can increase a person's risk of heart disease, some of which are uncontrollable, such as increasing age, biological sex, and heredity.

However, other factors — such as smoking habits, high blood cholesterol, high blood pressure, physical inactivity, and being overweight — are modifiable.

High blood pressure is a significant risk factor for heart disease because when blood pressure becomes elevated, the heart has to work harder to pump blood around the body.

This extra work thickens the muscles of the heart, and it can also harden or damage artery walls. As a result, less oxygen makes its way to the body's organs, and the heart becomes damaged over time due to its increased workload.

How stress relates to sleep, heart health

Stress is another factor that can contribute to heart disease.

In the current study, the researchers defined a stressful job as one that places high demands on the employee without giving them much control over what they have to do and achieve each day.

They also noted that most of the people with sleep issues had problems staying asleep, while others had trouble falling asleep.

"Maintaining sleep is the most common problem in people with stressful jobs," says Prof. Ladwig. "They wake up at 4 o'clock in the morning to go to the toilet and come back to bed ruminating about how to deal with work issues."

Hypertension on its own is a major risk factor for heart disease, but pairing it with both insomnia and work-related stress compounds the potential problems.

Prof. Ladwig says that it would be a good idea for employers to offer stress management and sleep treatment in the workplace, while doctors should discuss sleep and job stress with people who have hypertension and may have a higher risk of issues with their cardiovascular health.

Obesity

Obesity: Could fat cell differences predict diabetes risk? (Medical News Today:20190506)

<https://www.medicalnewstoday.com/articles/325107.php>

Differences in the cells that store fat in the body could explain why some people are more prone to obesity-related conditions, such as type 2 diabetes.

This colored scanning electron micrograph shows fat cells in bone marrow tissue.

Scientists at the University of Melbourne, in Australia, led an investigation that examined human white fat cells from samples that volunteers had donated.

The samples came from white fat tissues in different parts of the body.

White fat cells are the cells that store energy in fat molecules called triglycerides.

The human body has reservoirs of regenerative cells, called adipose progenitor cells (APCs), which mature into white fat cells.

Using tools that assessed genes, proteins, and metabolism, the study is the first to identify three distinct subtypes of APCs.

In a recent Cell Reports paper, the authors explain how the APC subtypes differ in the ways that they deal with energy and hormones.

The findings suggest that the makeup and distribution of white fat in the body, in terms of the APC subtypes, could predict a person's risk of developing type 2 diabetes and other metabolic diseases.

The first APC subtype matures into fat cells that discharge lots of fat molecules into the bloodstream, while the second type leads to cells that burn energy fast. The third subtype has a more "neutral" profile and behaves more like scientists might expect a fat cell to behave, if rather more slowly.

How does exercise prompt fat to benefit metabolism?

Fresh evidence reveals that fat plays an active role in the process that makes exercise benefit metabolism and health.

Senior study author Prof. Matthew J. Watt, who heads the physiology department in the School of Biomedical Sciences at the University of Melbourne, suggests that the first subtype could be one that promotes fat deposits on organs and in other parts of the body. This could happen in people of healthy weight as well as in those who are overweight.

He suggests that the second APC subtype could be one that stops people from gaining weight.

Need for better understanding of fat cells

The World Health Organization (WHO) declare that the worldwide prevalence of obesity "has nearly tripled since 1975."

In the United States, figures from the Centers for Disease Control and Prevention (CDC) reveal that 40% of adults, amounting to some 93.3 million people, had obesity in 2015–2016.

Obesity-related health conditions such as heart disease and type 2 diabetes account for a large number of preventable early deaths.

In their study paper, Prof. Watt and his colleagues note that obesity and dysfunction of fat tissues are "inextricably linked to the development of metabolic diseases, such as dyslipidemia and type 2 diabetes."

Given the rising tide of worldwide obesity, "There remains intense interest," they write, in furthering knowledge of how fat cells develop and how their energy and hormone mechanisms work, especially in relation to overeating.

When they examined the fat tissue samples, the researchers found all three APC subtypes in all the samples. There was no part of the body in which white fat tissue did not have all three.

However, they did find that the distribution of the subtypes differed among individuals: Some subtypes were more abundant, while others were less so.

Prof. Watt remarks that this could mean that the makeup of people's APC subtypes in their white fat tissues could be a factor in their metabolic health.

Switching on the fast-burners to lose weight?

He imagines, for example, that future weight loss treatments could involve switching off the fat-releasing APCs and switching on the fast-burners.

Drugs that do this could potentially help to prevent obesity-related conditions and offer less invasive alternatives to surgery.

However, Prof. Watt cautions that there is still a lot of work to do, and it could be 10 years or more before such treatments become available.

Further studies should, for example, confirm whether having more or less of certain APC subtypes actually raises or lowers risk of specific metabolic diseases.

They then need to find out whether increasing or decreasing certain cell types can affect disease outcomes.

Even if treatments that alter APCs become available, Prof. Watt predicts that people will likely still need to adopt healthful lifestyles, reduce food consumption, and increase physical activity.

"The discovery is important because it tells us that not all fat cells are the same and that by understanding the fat subtypes in a human, we might be able to predict their future metabolic health."

Prof. Matthew J. Watt

Diet/ Nutrition

Muscle-building protein shakes may threaten health (Medical News Today:20190506)

<https://www.medicalnewstoday.com/articles/325088.php>

The protein shakes that health supplement stores sell, which people sometimes buy as a dietary aid to build muscle mass, may not actually be safe for health in the long run according to a new study in mice.

Could protein shakes negatively affect health in the long run?

Many fitness protein powders that are commercially available consist primarily of whey proteins, which contain high levels of branched-chain amino acids (BCAAs).

Statistical reports show that in 2017 alone, the global whey protein market had a financial value of about \$9.4 billion, with estimates suggesting that this may rise to around \$14.5 billion by 2023.

BCAAs, which are three essential amino acids called leucine, valine, and isoleucine, are meant to help increase muscle mass in people who are interested in bodybuilding, though some scientists believe this claim to be "unwarranted."

Now, research in mice goes even further, suggesting that a diet that is high in BCCA-containing protein but relatively low in other essential nutrients can have many negative effects on long-term health and lifespan.

The investigators, who hail from the University of Sydney in Australia, have found that consuming excessively high levels of BCAAs may have adverse effects on mood, lead to food cravings and weight gain, and even shorten an individual's lifespan.

BCAAs affect production of key hormone

This research, the findings of which appear in the journal *Nature Metabolism*, stems in part from previous studies that co-lead author Samantha Solon-Biet, Ph.D., conducted.

"While diets high in protein and low in carbohydrates were shown to be beneficial for reproductive function, they had detrimental effects for health in mid-late life and also led to a shortened lifespan," says Solon-Biet.

"What this new research has shown is that amino acid balance is important — it's best to vary sources of protein to ensure you're getting the best amino acid balance."

Samantha Solon-Biet, Ph.D.

The researchers tested the effects of a high-BCAA diet in mice that would typically eat feed high in carbohydrates and low in fats.

How does exercise prompt fat to benefit metabolism?

Researchers have uncovered some of the ways in which exercise stimulates the body to function healthily.

They found that rodents who ingested a lot of BCAAs had high levels of these amino acids in their blood. Here, these amino acids affected the function of tryptophan, an alpha-amino acid from which serotonin, a key hormone and neurotransmitter, later derives.

"Supplementation of BCAAs resulted in high levels of BCAAs in the blood, which competed with tryptophan for transport into the brain," observes co-lead author Prof. Stephen Simpson.

"Tryptophan," he explains, "is the sole precursor for the hormone serotonin, which is often called the 'happiness chemical' for its mood-enhancing effects and its role in promoting sleep. But, serotonin does more than this, and therein lay the problem."

The researchers found that the competition between BCAAs and tryptophan in the blood led to lower-than-normal serotonin levels in the brain, which had unwanted consequences.

"This then lowered serotonin levels in the brain, which in turn was a potent signal to increase appetite," says Prof. Simpson, adding, "The serotonin decrease caused by excess BCAA intake led to massive overeating in our mice, which became hugely obese and lived shorter lives."

The researchers saw these ill effects in a group of mice that they fed double the usual amount of BCAAs for their entire lives.

For this reason, dietitian and public health nutritionist Rosilene Ribeiro, who is from the School of Life and Environmental Sciences at the University of Sydney and was not involved in the current research, advises that people should aim to balance out different protein sources in their daily diet to avoid undesired consequences for their health.

Genetics

Researchers create embryo stem cells from skin cells (New Kerala:20190506)

<https://www.newkerala.com/news/read/137437/researchers-create-embryo-stem-cells-from-skin-cells.html>

Washington D.C. , May 4 : Researchers have found a way to turn skin cells into embryonic stem cells, which could lead to the creation of a complete embryo from skin cells.

The research conducted on mice has significant implications for modelling embryonic disease and placental dysfunctions. The study was published in Cell Stem Cell.

Dr Yossi Buganim and his team discovered a set of genes capable of transforming murine skin cells into all three cell types that comprise the early embryo the embryo itself, the placenta and the extra-embryonic tissues, such as the umbilical cord.

In the future, it may be possible to create entire human embryos out of human skin cells, without the need for sperm or eggs. This discovery also has vast implications for modelling embryonic defects and shedding light on placental dysfunctions, as well as solving certain infertility problems by creating human embryos in a petri dish.

Back in 2006, Japanese researchers discovered the capacity of skin cells to be "reprogrammed" into early embryonic cells that can generate an entire foetus, by expressing four central embryonic genes.

These reprogrammed skin cells, termed "Induced Pluripotent Stem Cells" (iPSCs), are similar to cells that develop in the early days after fertilization and are essentially identical to their natural counterparts. These cells can develop into all foetal cell types, but not into extra-embryonic tissues, such as the placenta.

Now, the Hebrew University research team, headed by Dr Yossi Buganim, Dr Oren Ram from the HU's Institute of Life Science and Professor Tommy Kaplan from HU's School of Computer Science and Engineering, as well as doctoral students Hani Benchetrit and Mohammad Jaber, found a new combination of five genes that, when inserted into skin cells, reprogram the cells into each of the three early embryonic cell types -- iPS cells which create foetuses, placental stem cells, and stem cells that develop into other extra-embryonic tissues, such as the umbilical cord. These transformations take about one month.

The HU team used new technology to scrutinise the molecular forces that govern cell fate decisions for skin cell reprogramming and the natural process of embryonic development.

For example, the researchers discovered that the gene "Eomes" pushes the cell towards placental stem cell identity and placental development, while the "Esrrb" gene orchestrates foetus stem cells development through the temporary acquisition of an extra-embryonic stem cell identity.

To uncover the molecular mechanisms that are activated during the formation of these various cell types, the researchers analysed changes to the genome structure and function inside the cells when the five genes are introduced into the cell.

They discovered that during the first stage, skin cells lose their cellular identity and then slowly acquire a new identity of one of the three early embryonic cell types and that this process is governed by the levels of two of the five genes.

Recently, attempts have been made to develop an entire mouse embryo without using sperm or egg cells. These attempts used the three early cell types isolated directly from a live, developing embryo.

However, HU's study is the first attempt to create all three main cell lineages at once from skin cells. Further, these findings mean there may be no need to "sacrifice" a live embryo to create a test tube embryo.

Cardiovascular disease

Heart abnormalities from premature birth can be corrected with exercise in young adulthood (New Kerala:20190506)

<https://www.newkerala.com/news/read/137877/heart-abnormalities-from-premature-birth-can-be-corrected-with-exercise-in-young-adulthood.html>

Washington D.C. , May 5 : People who suffer from heart abnormalities due to preterm birth could correct the damage with exercise in young adulthood, according to a study, which was presented at EuroCMR 2019.

Around one to two per cent of adults today were born more than two months prematurely (very preterm) and have heart abnormalities that increase their risk of cardiovascular disease. For instance, the heart is smaller and has to pump harder to supply the body with blood.

"Until now we did not know if this was permanent or amenable to improvement. Now, for the first time, we have shown how to make preterm hearts function as well as their peers. No drugs were required - just a 14-week exercise programme," said Anne Monique Nuyt, co-principal investigator.

The study enrolled 14 participants aged between 18-29 years, of whom eight were born very preterm and six acted as controls. All participants underwent a 14-week exercise programme of aerobic and resistance training three times a week. This included two supervised 90-minute group sessions and one home-based monitored session.

The heart's structure and function were measured before and after the exercise programme using cardiovascular magnetic resonance (CMR) imaging.

Compared to controls, heart structure and function were worse in preterm participants at the start of the study but similar after the exercise programme. Specifically, the heart's pumping and contracting functions normalised, meaning the heart no longer had to work extra hard to provide the body with blood.

"We found that a short exercise programme may improve overall cardiac performance and subtle abnormalities in cardiac function in preterm adults," said first author Elizabeth Hillier.

"Advances in neonatal care have enabled premature babies to survive but the abnormal shape and function of the heart are sustained. Exercise in early adulthood corrects these impairments, which should reduce the risk of cardiovascular disease," Hillier added.

The team used a CMR protocol that visualises subtle changes in heart shape and function. Imaging was performed during hyperventilation for 60 seconds followed by a breath-hold to assess how the heart functioned in a stressful situation (similar to diving).

Hillier said "With this technique, we can detect even mild abnormalities and track the response to interventions. Unlike other methods, we did not have to inject a dye, no radiation was used, and we did not need to administer drugs to put the heart under stress."