DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY

Tuesday 20190625

विश्व विटिलिगो दिवस

विश्व विटिलिगो दिवस आज: मधुमेह के बाद अब सफेद दाग पर सरकार को मिली बड़ी कामयाबी (Amar Ujala:20190625)

https://www.amarujala.com/india-news/after-the-diabetes-the-government-has-given-great-success-to-white-spots

मधुमेह के लिए बीजीआर-34 के बाद अब सफेद दाग को लेकर ल्यूकोस्किन दवा के रूप में सरकार को बड़ी कामयाबी मिली है। रक्षा वैज्ञानिकों की इस खोज ने न सिर्फ चिकित्सा को नई दिशा दी है। बल्कि शोध करने वाले रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) के वैज्ञानिक डॉ. हेमंत पांडे को विज्ञान पुरुस्कार से सम्मानित भी किया है।

अब तक 1 लाख मरीजों में सफल परिणाम मिलने के बाद अब सरकार ग्रामीण अंचलों तक इसे ले जाने की तैयारी में है। आयुर्वेद शोधों को लेकर ऐसा पहली बार है जब सरकार को सीएसआईआर के अध्ययन बीजीआर-34 और ल्यूकोस्किन के रुप में बड़ी कामयाबी मिली हो। वर्ष 1958 से भारतीय थल सेना एवं रक्षा विज्ञान संस्थान के तकनीकी विभाग के रूप में संचालित डीआरडीओ इलेक्ट्रॉनिक्स, रक्षा उपकरण के अलावा चिकित्सीय क्षेत्र में भी कई अध्ययन कर चुका है। यहां राडार, प्रक्षेपास्त्र के अलावा देशी जड़ी बूटियों से संबंधित कई बड़ी परियोजनाएं चल रही हैं।

दरअसल शरीर पर उभरने वाले सफेद दाग के पीड़ित देश में करीब 4 से 5 फीसदी हैं। राजस्थान और गुजरात के कुछ हिस्सों में तो 5 से 8 फीसदी लोग इससे प्रभावित हो रहे हैं। भारत में इस त्वचा रोग को

ले कर लोगों को समाज में बहुत परेशानी झेलनी होती है, क्योंकि अक्सर लोग इसे कुष्ठ रोग समझ लेते हैं जो जीवाणु संक्रमण है। इसके लिए जागरुकता लाने के लिए ही 25 जून को दुनिया भर में विश्व विटिलिगो दिवस मनाया जाएगा।

सरकार ने इसी दिवस पर अपनी ये उपलब्धि भी साझा की है। उत्तराखंड के पिथौड़ागढ़ स्थित डिफेंस इंस्टीट्यूट ऑफ बायो एनर्जी रिसर्च (डिबियर) के हर्बल औषधि विभाग के प्रमुख डॉ. हेमंत पांडे ने बताया कि सफेद दाग को लेकर लोगों को बेहतर चिकित्सा उपलब्ध कराने के उद्देश्य से हिमाचल की करीब एक दर्जन जड़ी बूटियों पर गहन अध्ययन के बाद ल्यूकोस्किन दवा का निर्माण हुआ।

ल्यूकोस्किन मलहम और मुंह से ली जाने वाली ओरल लिक्विड दोनों ही स्वरूप में उपलब्ध है। समय के साथ ल्यूकोस्किन की सफलता दर उम्मीद से कई गुना ज्यादा मिली। इसीलिए अब एक बार फिर से ल्यूकोस्किन के नए रुप में लाने के लिए भी वे प्रयास कर रहे हैं।

Physical Fitness:20190625)

http://epaper.livehindustan.com/imageview_94754_96431218_4_1_25-06-2019_i_20.pagezoomsinwindows.php

घर में व्यायाम करना जिम जितना ही फायदेमंद

सेहत

नई दिल्ली | हिन्दुस्तान टीम

अगर आपको व्यायाम करने के लिए जिम जाने का समय नहीं मिल रहा है तो परेशान होने की जरूरत नहीं है। एक हालिया शोध के अनुसार घर में व्यायाम करना भी जिम जितना ही फायदेमंद हो सकता है।

यूके के शोधकर्ताओं द्वारा किए गए एक अध्ययन में कहा गया है कि घर में हाई इंटेंसिटी (उच्च क्षमता) का व्यायाम करना जिम में 20 घंटे व्यायाम करने

शोध

- घर में उच्च क्षमता का व्यायाम करना जिम के 20 घंटों के बराबर
- पैसों की बचत भी, सक्रिय लोगों को और ज्यादा फायदा होता है

जितना ही फायदेमंद हो सकता है। लिवरपूल जॉन्स मोरिस यूनिवर्सिटी के शोधकर्ता सैम स्कॉट के अनुसार, घर में व्यायाम करने से समय और पैसों की बचत होती है और इससे सक्रिय लोग पहले के मुकाबले ज्यादा सक्रिय हो जाते हैं।

Universal Blood Group (Hindustan:20190625)

http://epaper.livehindustan.com/imageview_94754_96431528_4_1_25-06-2019_i_20.pagezoomsinwindows.php

हर तरह का खून 'ओ' ग्रुप में बदला जा सकेगा

नई दिल्ली | हिन्दुस्तान टीम

बीते साल अमेरिकी रेडक्रॉस सोसाइटी ने खून की कमी के कारण खून की कमी की आपात स्थिति की घोषणा कर दी थी। अब यूनिवर्सिटी ऑफ ब्रिटिश कोलंबिया ने इस समस्या को लेकर शोध किया। अगर लोग जरूरी मात्रा में रक्तदान नहीं कर रहे हैं तो कम प्रयोग में आने वाले खून को यूनिवर्सल ब्लड ग्रुप यानी ओ ग्रुप में बदलकर उसे उपयोग में लाया जा सकता है।

यूनिवर्सिटी के शोधकर्ताओं की ओर से अपनी रिसर्च को अमेरिकन केमिकल सोसाइटी में प्रस्तुत किया गया है। इसके साथ ही इसे पत्रिका नेचर बायोलॉजी में प्रकाशित किया गया है।

क्यों अलग-अलग होते हैं ब्लड ग्रुप

रक्त कोशिकाओं की सतह पर मौजूद शुगर के कारण लोगों के ब्लड ग्रुप अलग-अलग होते हैं। यह शुगर के कण शरीर ही बनाता है। टाइप-ए ब्लड ग्रुप में अलग तरह का शुगर होता है और टाइप बी में अलग तरह का। टाइप एबी में दोनों तरह का शुगर मौजूद होता है।

तनाव

अब तनाव के शुरुआती लक्षणों को पहचान कर बजेगा अलार्म, मिलेगा फायदा (Dainik Jagran:20190625)

https://www.jagran.com/world/america-california-tests-a-digital-fire-alarm-for-mental-distress-jagran-special-19342447.html

अमेरिकी कंपनी एक ऐसा सॉफ्टवेयर बनाने की दिशा में काम कर रही है जो तनाव गंभीर होने से पहले ही चेतावनी दे देगा। यह किसी डिजिटल फायर अलार्म की तरह काम करेगा।

वाशिंगटन (न्यूयार्क टाइम्स)। तनाव और अवसाद वर्तमान जीवनशैली के सबसे बड़े दुष्प्रभाव के रूप में सामने आए हैं। स्थिति गंभीर होने पर कई लोगों के मन में खुद को नुकसान पहुंचाने की इच्छा पैदा होने लगती है। कुछ लोगों के मन में आत्महत्या के विचार भी आने लगते हैं। कुछ दवाएं अवसाद के लक्षणों से राहत तो देती हैं, लेकिन इसके लिए जरूरी है कि परेशानी का पता भी चले। अक्सर लोग तनाव की गंभीरता को शुरुआत में समझ नहीं पाते हैं। जब तक पता चलता है, तब तक स्थिति गंभीर हो चुकी होती है।

अब टेक्नोलॉजी ने इस दिशा में उम्मीद की किरण दिखाई है। अमेरिका में कैलिफोर्निया प्रशासन के साथ मिलकर माइंडस्ट्रॉन्ग कंपनी एक ऐसा सॉफ्टवेयर बनाने की दिशा में काम कर रही है, जो तनाव गंभीर होने से पहले ही चेतावनी दे देगा। यह किसी डिजिटल फायर अलार्म की तरह काम करेगा। जैसे फायर अलार्म धुआं देखते ही आग की चेतावनी देने लगता है, ऐसे ही यह सॉफ्टवेयर भी शुरुआती स्तर पर ही लक्षण को पहचान कर चेतावनी देने लगेगा। इस कंपनी के सह-संस्थापक नेशनल इंस्टीट्यूट ऑफ मेंटल हेल्थ के एक पूर्व निदेशक हैं। शोधकर्ता लिन फर ने कहा कि बहुत से लोग बॉर्डरलाइन पर्सनेलिटी डिसऑर्डर से ग्रस्त होते हैं। ऐसे लोग एकदम मुहाने पर खड़े होते हैं। उनके लिए कोई भी तनाव घातक हो सकता है। अगर उन्हें यह पता लग सके कि किस समय और किस परिस्थिति में उनका तनाव बढ़ जाता है, तो वे ऐसी परिस्थिति में स्वयं पर नियंत्रण का प्रयास भी कर सकेंगे।

कैलिफोर्निया प्रशासन कर रहा प्रयास

कैलिफोर्निया प्रशासन ने माइंडस्ट्रॉन्ग और 7 कप नाम की कंपनियों के साथ मिलकर इस दिशा में प्रयास शुरू किया है। यहां स्वास्थ्य अधिकारी और तमाम मरीज मिलकर ऐसा सॉफ्टवेयर को तैयार

करने में मदद कर रहे हैं, जो संकेतों को शुरुआती स्तर पर ही पकड़ने में सक्षम हो। मनोचिकित्सक डॉ. थॉमस आर. इंसेल ने कहा, 'इसकी शुरुआत थोड़ी मुश्किल हैं। सफलता में कुछ साल का वक्त भी लग सकता है। शुरुआती दौर में विफलता भी हाथ लग सकती है।' इस व्यवस्था से जुड़े अधिकारी केलेची उबोजो ने कहा, 'हम कुछ ऐसा कर रहे हैं, जो पहले नहीं हुआ। यहां यूजर खुद एप डेवलपर के साथ मिलकर काम कर रहे हैं।' डिजिटल मेंटल हेल्थ नेटवर्क की तरह काम करने वाली 7 कप्स इस समय 189 देशों में 140 भाषाओं में सेवा देती है। इससे करीब 3,40,000 प्रशिक्षित लोग जुड़े हैं, जो लोगों की परेशानियों को सुनते हैं और जरूरत के अनुरूप मदद देते हैं। इसकी स्थापना मनोवैज्ञानिक ग्लेन मोरियार्टी ने की है।

पहले से भी मौजूद हैं कई एप : दिमागी सेहत के मामले में डिजिटल टेक्नोलॉजी में अपार संभावनाएं हैं। इस समय बाजार में ऐसे करीब 10,000 एप उपलब्ध हैं, जो यह दावा करते हैं कि उनकी मदद से व्यक्ति अपनी सेहत पर नजर रख सकता है। हालांकि इस संबंध में पर्याप्त शोध की कमी है कि ऐसे एप कितने प्रभावी हैं।

पार्किंसन

पार्किंसन के इलाज की दिशा में दिखी नई उम्मीद, तंत्रिका तंत्र से जुड़ी है ये बीमारी (Dainik Jagran:20190625)

https://www.jagran.com/news/national-new-hope-for-parkinson-patients-jagran-special-19339638.html

एक विशेष एंजाइम को निशाना बनाकर पार्किंसन का कारगर इलाज खोजना संभव हो सकता है। पार्किंसन तंत्रिका तंत्र से जुड़ी बीमारी है जिसमें व्यक्ति को संतुलन बनाने में मुश्किल होती है।

नई दिल्ली [जागरण स्पेशल]। वैज्ञानिकों ने पार्किंसन का कारण बनने वाले एक विशेष एंजाइम की पहचान करने में सफलता हासिल की है। इस एंजाइम को निशाना बनाकर पार्किंसन का कारगर इलाज खोजना संभव हो सकता है। पार्किंसन तंत्रिका तंत्र से जुड़ी बीमारी है, जिसमें व्यक्ति को संतुलन बनाने में मुश्किल होती है। प्रमुख शोधकर्ता नारायण अवधानी और मृत्तिका चटोपाध्याय ने बताया कि इस एंजाइम का नाम माइटोकॉन्ड्रियल सीवाईपी2डी6 है।

पार्किंसन के इलाज के लिए इसे निशाना बनाना ज्यादा कारगर हो सकता है। पार्किंसन का सटीक कारण नहीं मिलने के बाद इस शोध में वैज्ञानिकों ने बीमारी की प्रक्रिया को समझने का प्रयास किया। उन्होंने बताया कि यह एंजाइम दिमाग में बनने वाले घटकों में बदलाव करने में सक्षम है। इस एंजाइम को कई दवाओं के असर को बदलने में भी सक्षम पाया जा चुका है।

क्या है पार्किंसन

पार्किंसन दिमाग से जुड़ी बीमारी है, जिसमें शरीर के विभिन्न अंगों की गतिविधियों पर प्रतिकूल असर पड़ता है। गौरतलब है कि दिमाग में न्यूरॉन कोशिकाएं डोपामीन नामक एक रासायनिक पदार्थ का निर्माण करती हैं। जब डोपामीन का स्तर गिरने लगता है, तो दिमाग शरीर के विभिन्न अंगों पर नियंत्रण रख पाने में असक्षम होता है।

अक्सर यह बीमारी उम्रदराज लोगों को होती है, लेकिन आजकल युवाओं में भी यह मर्ज देखने को मिल रहा है। आंकड़ों के अनुसार दुनियाभर में इस वक्त लगभग 70 लाख से 1 करोड़ लोग पार्किंसन बीमारी से प्रभावित हैं। इन आंकड़ों से संदेश मिलता है कि इस संख्या में और भी बढ़ोतरी होगी, खासतौर से एशिया महाद्वीप में। इसका कारण बुजुर्गों की संख्या का बढऩा और आयु में वृद्धि होना है।

पार्किंसन बीमारी को अक्सर डिप्रेशन या दिमागी रूप से ठीक न होने की स्थिति से जोड़ा जाता है, लेकिन इस संदर्भ में यह समझना बहुत महत्वपूर्ण है कि इस बीमारी से पीड़ित रोगी मानसिक रूप से विकलांग नहीं होते है। उन्हें समाज से अलग नहीं देखना चाहिए। शुरुआती स्टेज पर डॉक्टर लक्षणों को मैनेज करने के लिए दवाओं का सहारा लेते है, लेकिन दवाओं के प्रभावी न होने और इनके साइड इफेक्ट के सामने आने पर अंत में डीप ब्रेन स्टीमुलेशन (डीबीएस) थेरेपी काफी कारगर साबित हुई है।

लक्षण

शारीरिक गतिविधि में सुस्ती महसूस करना

शरीर को संतुलित करने में दिक्कत महसूस करना

शरीर को संतुलित करने में दिक्कत महसूस करना

हंसने और पलकें झपकाने में दिक्कत महसूस करना

बोलने की समस्या और लिखने में दिक्कत महसूस करना

हाथों, भुजाओं, पैरों, जबड़ों और मांसपेशियों में अकडऩ होना

ऐसे पीड़ित लोगों में डिप्रेशन, अनिद्रा, चबाने, निगलने या बोलने जैसी समस्याएं भी पैदा हो सकती हैं

पार्किंसन बीमारी का प्रमुख लक्षण कंपन है, लेकिन 20 प्रतिशत रोगियों में यह लक्षण नहीं भी प्रकट होता

लक्षणों के बदतर हो जाने पर इस रोग से पीड़ित व्यक्ति को चलने-फिरने और बात करने में परेशानी होती है

रोग की पहचान

पार्किंसन की पहचान करना आसान नहीं है। इसके लिए कोई भी प्रयोगशाला परीक्षण (रक्त परीक्षण या ब्रेन स्कैन जैसे टेस्ट) नहीं होते। आमतौर पर डॉक्टर इसके लक्षण और रोगी की हालत देखकर ही इस रोग के बारे में बताते है। न्यूरोफिजीशियन अपने पूर्व अनुभवों के आधार पर और रोगी के परिजनों से बात कर इस निष्कर्ष पर पहुंचते हैं कि व्यक्ति पार्किंसन से पीड़ित है या नहीं।

कारण

आम धारणा है कि पार्किंसन का मर्ज मस्तिष्क में तंत्रिका कोशिकाओं (नर्व सेल्स) द्वारा पर्याप्त मात्रा में डोपामीन नामक ब्रेन केमिकल के उत्पन्न नहीं होने के कारण होता है। इस रोग के बढऩे पर मस्तिष्क में उत्पन्न होने वाले डोपामीन की मात्रा कम हो जाती है। इस कारण व्यक्ति अपनी शारीरिक गतिविधियों को सामान्य रूप से नियंत्रित करने में असमर्थ हो जाता है। इसके अलावा पार्किंसन बीमारी का कारण आनुवांशिक भी हो सकता है। इसी तरह पर्यावरण से संबंधित कारण, उम्र बढऩा और अस्वस्थ जीवनशैली भी इस रोग को बुलावा दे सकते हैं। महिलाओं की तुलना में पुरुषों में यह बीमारी कहीं ज्यादा होती है।

इलाज

पार्किंसन रोग का उपचार न्यूरो फिजीशियन करते हैं। इस रोग के विभिन्न लक्षणों के लिए विभिन्न प्रकार की दवाएं दी जाती हैं। कुछ समय के बाद रोगी पर किसी दवा का असर नहीं भी हो सकता है। दवा के इस्तेमाल से रोगी में जो लक्षण खत्म हो जाते हैं, वे धीरे- धीरे बढऩे लगते हैं। इस कारण कुछ रोगियों में दवा की खुराक में लगातार वृद्धि करनी पड़ सकती है।

गौरतलब है कि जिन रोगियों पर दवा का असर नहीं होता है या दवा का अधिक दुष्प्रभाव होता है, उनके लिए सर्जरी उपयुक्त है। पार्किंसन का इलाज करने के लिए डीप ब्रेन स्टीमुलेशन (डीबीएस) सबसे मुख्य सर्जरी है। इस सर्जरी से शरीर की विविध गतिविधियों से संबंधित लक्षणों को नियंत्रित करने में मदद

मिलती है। डीबीएस के तहत मस्तिष्क में गहराई में इलेक्ट्रोड के साथ बहुत बारीक तारों को प्रत्यारोपित किया जाता है। इलेक्ट्रोड और तारों को सही जगह पर प्रत्यारोपित किया जा रहा है या नहीं, इसे सुनिश्चित करने के लिए मस्तिष्क की एमआरआई और न्यूरोफिजियोलॉजिकल मैपिंग की जाती है।

इलेक्ट्रोड और तारों को एक एक्सटेंशन से जोड़ दिया जाता है। यह एक्सटेंशन कान के पीछे और गर्दन के नीचे होता है। इलेक्ट्रोड और तार एक पल्स जनरेटर (एक डिवाइस) से जुड़े होते हैं, जिसे सीने या पेट के क्षेत्र के आसपास त्वचा के नीचे रखा जाता है। जब डिवाइस को ऑन किया जाता है, तो इलेक्ट्रोड लक्षित क्षेत्र के लिए उच्च आवृत्ति का स्टीमुलेशन भेजता है। यह स्टीमुलेशन पार्किन्संस के लक्षणों वाले व्यक्ति के मस्तिष्क में कुछ इलेक्ट्रिक सिग्नल को परिवर्तित करता है।

जनसंख्या विस्फोट

जनसंख्या विस्फोट: महज आठ साल में चीन से ज्यादा हो जाएगी भारत की आबादी (Dainik Jagran:20190625)

https://naidunia.jagran.com/world-in-just-8-years-india-will-surpass-china-as-worlds-most-populous-country-claims-un-report-3004674

यूएन की रिपोर्ट में कहा गया है कि इस सदी के अंत तक दुनिया की आबादी 11 अरब के करीब पहुंच जाएगी।

संयुक्त राष्ट्र। महज आठ साल में भारत आबादी के लिहाज से चीन को पीछे छोड़ देगा। संयुक्त राष्ट्र की रिपोर्ट के अनुसार, साल 2017 तक भारत की आबादी दुनिया में सबसे ज्यादा होगी। वहीं, साल 2050 तक चीन की जनसंख्या में 2.2 फीसद या करीब 3.14 करोड़ की कमी दर्ज की जाएगी।

संयुक्त राष्ट्र के आर्थिक एवं सामाजिक मामलों के विभाग के जनसंख्या प्रभाग की तरफ से 'विश्व जनसंख्या संभावनाएं 2019 : मुख्य विशेषताएं' शीर्षक से एक रिपोर्ट प्रकाशित की गई है। इसमें कहा गया है कि 2050 तक विश्व की आबादी दो अरब बढ़कर 7.7 अरब से 9.7 अरब हो जाएगी।

यह रिपोर्ट वैश्विक जनसांख्यिकीय पैटर्न और संभावनाओं का एक व्यापक अवलोकन प्रदान करती है। इसमें कहा गया है कि इस सदी के अंत तक दुनिया की आबादी लगभग 11 अरब के करीब पहुंच जाएगी। साल 2050 तक दुनिया की बढ़ने वाली आबादी की 50 फीसद बढ़ोत्तरी सिर्फ नौ देशों में ही होगी। इनमें आबादी के हिसाब से घटते क्रम में क्रमशः भारत, नाईजीरिया, पाकिस्तान, कांगो, इथियोपिया, तंजानिया, इंडोनेशिया, मिस्त्र और अमेरिका शामिल हैं।

जबकि भारत सबसे अधिक आबादी वाला देश बनने की ओर अग्रसर है, वहीं चीन सहित कई देश जनसंख्या लगातार कम हो रही है। रिपोर्ट के अनुसार, 2010 के बाद से 27 देशों या क्षेत्रों ने अपनी आबादी के आकार में एक प्रतिशत या उससे अधिक की कमी दर्ज की है। यह गिरावट प्रजनन क्षमता के निम्न स्तर के कारण हुई है।

साल 2019 और 2050 के बीच 55 देशों या क्षेत्रों में आबादी में एक प्रतिशत या उससे अधिक की कमी का अनुमान है। इनमें से 26 देशों में कम से कम 10 प्रतिशत की कमी देखी जा सकती है। रिपोर्ट में यह भी कहा गया है कि माइग्रेशन कुछ देशों में जनसंख्या में परिवर्तन का एक प्रमुख घटक बन गया है। साल 2010 से 2020 के बीच 14 देशों या क्षेत्रों में 10 लाख से अधिक प्रवासियों का जाना होगा।

Global population could peak sooner than we think (Hindustan Times:20190625)

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

By 2025, India’s fertility rate will fall to 2.14 from 2.24 — roughly the levels at which population hits a steady state

Since the days of Thomas Malthus, we’ve worried that overpopulation is about to overwhelm our planet. Those fears haven’t gone away. A further two billion people will be added to the current world population of 7.7 billion by 2050, the United Nations Population Division said in a report this week. Numbers will still be rising as the total approaches 11 billion people in 2100, according to the UN’s central forecast.

India’s fertility rate is falling, so also of other large Asian nations. For example, Bangladesh’s is already below where it was in the US in the mid-2000s

Agricultural productivity has confounded Malthus’s predictions by keeping the world’s population well-fed despite its headlong growth in the past century. Still, a further 40%

increase in the number of humans would put fresh pressure on the globe's 33 million square kilometers of agricultural land – not to mention a climate that's already overburdened. At the same time, signs are starting to emerge that this picture may be too pessimistic. Malthus's key error was his failure to foresee how fertility rates would fall with increasing incomes – and the pace of change on that front has been staggering; in most of the world's large countries, fertility rates have fallen below replacement levels in recent decades.

While India is forecast to overtake China as the world's most populous country around 2027, its number will start to level-off by midcentury thanks to a fertility rate that's already fallen to 2.24 births per woman, around where Ireland was in the late 1980s. By 2025 the rate will fall to 2.14, roughly the levels at which population hits a steady state. Other large Asian nations have seen even sharper declines. The rate of 2.05 in Bangladesh is already below where it was in the US during the mid-2000s. Thailand's 1.53 is barely higher than Japan's, at 1.37. Of the world's top 30 countries by population, 19 are already around or below replacement-level fertility.

Things fall apart: In most parts of the world, population will barely grow between now and the end of the century; in Africa, the UN estimates it will explode. The exception is sub-Saharan Africa. More than half the growth the UN expects to see in the global population up to 2050 will happen there. From about one-seventh of the world's population at present, the region will grow to account for a fifth in 2050, and a third in 2100, according to the latest forecast. In Nigeria, where the fertility rate is 5.4, there are about 43 million women between the ages of 15 and 45, and a further 43 million who'll hit child-bearing age by the mid-2030s.

Bullish expectations for African population growth depend on the idea that the region is fundamentally different from the rest of the emerging world. Demographic transition – the process whereby countries switch from high to low fertility rates as they urbanise and women get better access to education, contraception and employment – is expected to play out there in a unique way.

This time is different: Many large countries in sub-Saharan Africa have yet to see a decline in fertility rates, and the UN estimates their demographic transition will take longer than elsewhere. While most Asian, Latin American and Middle Eastern countries took about two decades to make the transition to fewer than three children per woman from more than five, the UN expects sub-Saharan African countries to take almost twice as long. Indonesia made the switch in just over 16 years; Tanzania is expected to take about 50.

Is that forecast right? There's reason to think that after overestimating the pace of African fertility decline in previous decades, demographers are now underestimating it. If most countries in the region haven't started a steep drop yet, it's plausible that in most cases it's because most countries have only just hit the sub-five levels at which the process starts to gather pace. Those that reached that point early, such as Botswana, South Africa, and Kenya, seem to be transitioning at a similar pace to countries elsewhere.

Life force: In most of Africa's large countries, under-5 mortality rates have fallen to levels below 80 where fertility starts to decline. Sharp improvements in infant mortality also suggest

a change may be around the corner. One tragic reason that African women have many children is that so many of them die before their fifth birthday. But there's now only a handful of countries where the chance of that happening is higher than 8%, roughly the level at which fertility rates start to fall. Fewer infant deaths and mouths to feed will mean less stress for African families. At the same time, a large working-age population will bring in the "demographic dividend".

To be sure, fertility rates are unpredictable. The availability of contraception in west and central Africa is still low by global standards, as is female education. Healthcare improvements can be reversed, too, while chaos and conservative social policies can cause birth rates to spike, as has happened in Egypt since the Arab Spring.

Still, those who fear a Malthusian outcome for the world's population should think twice. Shrinking families confounded his grim predictions about the world's future. The same may go for our current forecasts.

Malaria

Malaria cases on the rise (The Hindu:20190625)

The Capital saw a rise in the number of malaria cases, with 13 more being recorded last week, stated a report released by the civic bodies on Monday.

The total number of malaria cases this year has gone up to 31. Of these, 22 cases were recorded this month. At the same time last year, 40 cases of malaria were recorded.

The number of cases of vector-borne diseases is expected to rise with the onset of the monsoon. Of the cases recorded, 10 were "untraced after investigation", stated the report, while one each were reported from South and North Delhi Municipal Corporation areas. Meanwhile, the number of cases of dengue this year stands at 14, with one new case being recorded this week and the number of cases of chikungunya this year is seven.

As part of their efforts to check vector-borne diseases, the three corporations have sprayed 3,12,513 houses and issued legal notices for 'musquitogenic conditions' to 25,767.

Acute encephalitis syndrome

AES deaths could have been prevented: IMA (The Hindu:20190625)

https://www.thehindu.com/news/national/other-states/aes-deaths-could-have-been-prevented-ima/article28127614.ece

Crowds scuffling with police personnel in Kolkata during a demonstration to protest the deaths of children in Bihar due to the AES

A study team says an awareness campaign and correct briefing would have made a big difference

The death of children in Muzaffarpur in Bihar due to acute encephalopathy could have been prevented had a health awareness campaign been conducted and correct information provided to the families, said an Indian Medical Association (IMA) study team, which released its ground-report on Monday.

The team said that it can be reasonably concluded that the prevailing heat and humidity, together with malnutrition, contributed substantially to the deaths. Dehydration, hypoglycaemia and the heat syndrome too played a significant part.

“Awareness is key. Tepid sponging and correction of dehydration and hypoglycaemia can start right from home. A package programme focussed on health awareness, free meals to children, especially at night, and public availability of ORS (oral rehydration solution) may be simple interventions which may prevent further deaths of this scale,” noted the report.

Supreme Court on Monday sought a response from the Central and Bihar governments on the steps taken to prevent death of children due to the outbreak of acute encephalitis syndrome (AES) in Muzaffarpur.

Muzaffarpur AES deaths: SC asks Centre, Bihar to explain steps to curb outbreak

The Association said going by its observations, there are no definite conclusions that can be made about the aetiology of the syndrome as of now.

“The current problem seems unlikely to be an infectious cause with the present evidence and we feel that litchi consumption cannot be attributed as the major factor, as even infants have been affected. The persistence of very high atmospheric with temperature humidity through out the day and night without fluctuations might be causing a heat syndrome in children,” noted the report.

It added that reduction in body temperature with tepid sponging, increased fluid intake and adequate food intake may prevent this syndrome. While affected children have to be given IV dextrose for correction of hypoglycaemia to prevent significant brain injury, foolproof

scientific, epidemiological study and follow up among children who survived in previous episodes (in 2014 and 2015) should be done systematically.

Measures to uplift the living conditions of the affected population should be undertaken as an immediate package programme, noted the Association.

‘Most of these tragic deaths could have been prevented’ (the Tribune:20190625)

https://www.tribuneindia.com/news/sunday-special/perspective/-most-of-these-tragic-deaths-could-have-been-prevented/791790.html

Anxious mothers check on their kids as they get treated for AES at Sri Krishna Medical College and Hospital in Muzaffarpur.

Chandrakant Lahariya

“THE true character of a society is reflected in how it treats its children” said Nelson Mandela. The tragic deaths of children in Muzaffarpur and other districts of eastern Bihar is another proof that India needs to do more for its children. This ‘do more’ can start with saving them from preventable ‘hypoglycemic encephalopathy’, improving their nutritional status, providing preventive and promotive health services and provisions for curative healthcare when they need it. The deaths in Muzaffarpur could be termed as a sum total of the political and societal failure on most of these fronts. Acute encephalitis syndrome (AES) is a name given to health conditions caused by a range of causative agents, including viral and bacterial infections (then termed, encephalitis) as well as non-infectious causes (encephalopathy).

The AES cases have been reported from nearly 19 states and around 200 districts in India, with the majority coming from Uttar Pradesh and Bihar. The AES cases reported from eastern Uttar Pradesh, Gorakhpur included, are mostly caused by Japanese encephalitis (JE) virus. The non-infectious etiology (encephalopathy) is predominant in Muzaffarpur and eastern Bihar. It’s primarily attributed to a combination of the consumption of litchi by undernourished children, and then going to sleep without dinner. The litchi and AES link appears plausible (in the absence of a better explanation), though it’s not conclusive yet. By this hypothesis, all deaths in Muzaffarpur were preventable. Yet, the preventable mortalities seem not to have compelled Indian health policymakers to take sufficient corrective measures.

The infant and under-five mortality rates in states such as Madhya Pradesh, UP and Bihar are nearly 4-6 times higher than Kerala and Goa. Which, in other words, means that 60-80 per

cent of child deaths can be prevented by strengthening health services, AES deaths are in that category. The majority of the AES cases are preventable and treatable — preventable by vaccination or sanitation (as in Japanese encephalitis) and through appropriate education about nutrition to the vulnerable community. If the affected child is taken to a nearby primary healthcare facility within four hours of the onset of the disease, and administered 10 per cent dextrose, hypoglycemic encephalopathy (as in Muzaffarpur) can be treated.

Prevention and control mission

For a country aspiring to be a superpower and sending missions to Mars, if children have only litchis to eat and have to sleep without a meal in the night, it is tragic and shameful. If sleeping empty stomach exposes them to the risk of a deadly disease, it is also a matter of public health. It is a societal obligation and moral responsibility of the elected representatives and governments to intervene. To tackle the challenge in a sustainable manner, the immediate step has to be the launching of the AES prevention and control mission with sufficient funding. Considering such mission would need multi-sectoral coordination, it can be directly under the Prime Minister's Office (PMO) and Chief Ministers' Offices.

More specifically, in context of the ongoing outbreak, the governments (union and state) need to ensure that the supplementary nutrition programme, including mid-day meal, are provided uninterruptedly, even during school holidays. There should be a provision for sufficient supply of ration through the public distribution system for the affected communities and public awareness campaigns on the importance of meals at night, especially for the undernourished children.

There cannot be a better argument or opportunity to urgently tackle malnourishment and scale up POSHAN Abhiyan. The process needs to be fully supported by the existing functionaries and mechanisms such as Accredited Social Health Activist (ASHA), Village Health Sanitation Nutrition Committee (VHSNC), etc., under the National Health Mission as well as Anganwadis under Integrated Child Development Services.

The strategies to prevent and control AES in India can be localised. JE vaccination and improved sanitation in districts affected with encephalitis and the harmonised interventions to address hunger and malnourishment in districts with encephalopathy are the two examples of this strategy. This should include training of staff in delivering preventive education and interventions, initiatives for improved nutrition and sanitation as well the strengthening of the primary healthcare services, where children receive timely and immediate attention for AES and all other health conditions. The AES deaths happen generally in states like UP and Bihar, where the primary healthcare system is weak. It's another compelling reason to increase government investment on PHC as envisaged in the national health policy 2017.

Need for research

Alongside, there is a need to increase research on AES in India to understand the pathology and determinants and to design evidence-based programmatic interventions. The Standard Operating procedures (SOPs), for the prevention and treatment of AES, need to be updated

and re-enforced at community and PHC levels. The elected representatives at all levels have to take responsibility, be accountable and lead these initiatives in affected areas. One of the consensus areas is that AES in eastern Bihar is affecting malnourished children, and this demands renewed focus on improving nutrition. In 2005, the Bihar Government had launched 'Muskan: ek Abhiyan' to increase immunisation coverage in the state. The initiatives catapulted Bihar from amongst the worst performers in immunisation coverage to a success story. Bihar can do the same for AES as well.

In the weeks ahead, it is likely that the AES cases and deaths would decline; however, there is need for urgent and effective solutions, sustained over a period of time. If these deaths can make us commit to prevent AES outbreaks in the future, it would be a real tribute to the children who lost their lives.

Rashtrakavi Ramdhari Singh Dinkar has written, Nahin paap ke bhagi keval vyaghra; jo tatasth hai, samay likhega unke bhi apradh. Interpreting this in context of deaths in Muzaffarpur, "It is not the virus or the toxin in litchi fruit, which can be blamed solely; history will judge us for 'inaction and indifference' in the ongoing AES tragedy". We, as a nation, have an opportunity to redeem ourselves.

Diet/ Nutrition

Drinking coffee may help fight obesity: study (The Hindu:20190625)

https://www.thehindu.com/sci-tech/health/drinking-coffee-may-help-fight-obesity-study/article28128442.ece

The study is one of the first to find components which could have a direct effect on 'brown fat'.

In future, it may become part of weight management regime and glucose regulation programmes

Drinking coffee may stimulate the body's own fat-fighting defences, which could be the key to tackling obesity and diabetes, says a study published in the journal Scientific Reports.

The study is one of the first to be carried out in humans to find components which could have a direct effect on 'brown fat' functions, which plays a key role in how quickly we can burn calories as energy.

Initially only attributed to babies and hibernating mammals, it was discovered in recent years that adults can have brown fat too.

“We need to ascertain if caffeine is acting as the stimulus or if there’s another component helping with the activation of brown fat,” said Professor Michael Symonds, from the University of Nottingham.

“... It could potentially be used as part of a weight management regime or as part of glucose regulation programme to help prevent diabetes,” he said.

Genetics

‘Sperm retains viability in outer space’ (The Hindu:20190625)

https://www.thehindu.com/sci-tech/science/sperm-retains-viability-in-outer-space/article28128524.ece

The human sperm retains its viability within the different gravitational conditions found in outer space, a study, performed using a small aerobatic training aircraft (CAP10), which can provide short-duration hypogravity exposure, has found.

The plane executed 20 parabolic manoeuvres, providing 8 seconds of microgravity for each parabola. Overall, sperm samples obtained from ten healthy donors were analysed.

The sperm analysis comprised of concentration, motility, vitality, morphology and DNA fragmentation. Researchers found no difference in any of the parameters between the space samples and the control group samples from the earth.

Drug Dependence

Schoolkids taking to drugs in Haryana (The TRibune:20190625)

https://www.tribuneindia.com/news/haryana/schoolkids-taking-to-drugs-in-haryana/792569.html

268 treated in Rohtak between 2016-2018, all in 10-19 years age group

As per a study conducted by Dr Vinay and Dr Sunila, both consultants at SDDTC, as many as 268 addicts in the 10-19 years age bracket were registered with the centre between January 2016 and December 2018.

Sanjay (name changed), who is in his early teens, belongs to a well-to-do family of Rohtak. He was recently brought to the State Drug Dependence Treatment Centre (SDDTC) at the local PGIMS by his father, who was shocked to discover that his son had become a drug addict.

The boy told the doctors he started consuming heroin last year when in Class IX. “He joined a group of boys older than him and started smoking. He was later introduced to heroin and gradually became addicted to it,” said a doctor at the centre.

In another case, a government employee brought his two sons — one a Class X passout and the other in Class XII. Both were found hooked on smack. “Each would get Rs 10,000 per month as pocket money. They started demanding more money and their father got suspicious. He eventually discovered they had become dependent on drugs,” said a doctor.

As per a study conducted by Dr Vinay and Dr Sunila, both consultants at SDDTC, as many as 268 addicts in the 10-19 years age bracket were registered with the centre between January 2016 and December 2018. Of them, 143 were school dropouts, 89 students, 34 labourers and two were self-employed.

“Adolescents mostly experiment with drugs to counter boredom and loneliness. Most belong to nuclear families and have working parents,” explains Prof Priti Singh, SDDTC. “Drug peddlers and adolescents already hooked on drugs target children of affluent families, initially offering drugs for free. When the victims become hopelessly dependent, they are told to pay a tidy sum for a consignment,” she says.

Experts point out that easy availability of drugs has led to abuse. They advise parents to seek medical help if they observe any change in behaviour. Teachers too must be sensitised, they say.

Telling symptoms in children

Carelessness, reduced interest in studies, communication, physical & recreational activities

Constant fatigue, irritation, involvment in fights, picking arguments

Involvement in illegal activities such as stealing money and accidents

Sudden loss of appetite and body weight; sweating and over-sleeping

Children aged between 10 and 19 years constitute 22.8% of India’s population. Yet substance abuse among children has remained grossly under-researched

Artificial Intelligence (The Asian Age:20190625)

http://onlineepaper.asianage.com/articledetailpage.aspx?id=13254286

AI tool can do brain scan to assess your knowledge

- The tool can measure how well students understand a concept based on their brain activity patterns
- To test the knowledge of concepts, researchers examined how novices and intermediate learners' knowledge and brain activity compared when testing mechanical engineering and physics concepts. The scientists then developed a new method to assess their conceptual understanding.

Washington: Scientists have developed a novel artificial intelligence (AI) tool that can measure how well students understand a concept based on their brain activity patterns.

The study, published in the journal *Nature Communications*, is one of the first to look at how knowledge learned in school is represented in the brain.

To test knowledge of concepts in STEM, researchers from Dartmouth College in the US examined how novices and intermediate learners' knowledge and brain activity compared when testing mechanical engineering and physics concepts.

They then developed a new method to assess their conceptual understanding. "Learning about STEM topics is exciting but it can also be quite challenging. Yet, through the course of learning, students develop a rich understanding of many complex concepts," said David Kraemer, an assistant professor at Dartmouth College.

"Presumably, this acquired knowledge must be reflected in new patterns of brain activity," said Kraemer.

"However, we currently don't have a detailed understanding of how the brain supports this kind of complex and abstract knowledge, so that's what we set out to study," he said.

Twenty-eight students participated in the study, broken into two equal groups: engineering students and novices.

Engineering students had taken at least one mechanical engineering course and an advanced physics course, whereas novices had not taken any college-level engineering or physics classes. — *PTI*

Obesity

Cocoa shells may help prevent obesity-induced insulin resistance (Medical News Today:20190625)

https://www.medicalnewstoday.com/articles/325548.php

Obesity alters cells in ways that can lead to long-term health problems. Examples of obesity-induced cell changes include inflammation and damage to metabolic functions, such as the ability to use insulin and make energy.

Compounds in cocoa may have the potential to prevent obesity-related conditions, according to new research.

Now, new research from the University of Illinois at Urbana-Champaign and other institutions has shown that extract of cocoa bean shells contains three compounds that could potentially reduce or prevent some of these cell changes.

Cocoa, green tea, and coffee also contain the same three compounds, which are: protocatechuic acid, epicatechin, and procyanidin B2.

A recent Molecular Nutrition & Food Research paper gives an account of the study and its findings.

The three compounds are plant phenolics, a group that occurs throughout the plant kingdom. In recent years, scientists have become increasingly interested in the health properties of plant phenolics.

In obesity, white adipocytes, a type of fat cell, acquire too much fat and spur the growth of immune cells called macrophages.

Interaction between the fat-laden adipocytes and the macrophages, in turn, promotes a state of persistent, or chronic, inflammation that accompanies obesity.

Eventually, the chronic inflammation reduces the ability of the cells to take in and convert glucose into energy. This impairment causes insulin resistance, which is a precursor to type 2 diabetes.

Phenols treat obesity-induced cell changes

A combination of too much fat, rising levels of glucose, and inflammation also damages mitochondria, the tiny powerhouses in cells that make energy by burning fat and glucose.

However, after studying these various obesity-related effects in fat and immune cells from mice, the researchers found that they could treat them with cocoa shell extract.

Cocoa compound could 'delay or prevent' type 2 diabetes

Cocoa contains a catechin that could protect insulin-producing cells from the damage that occurs in type 2 diabetes, according to research in rats.

"We observed," says lead study author Miguel Rebollo-Hernanz, Ph.D., "that the extract was able to maintain the mitochondria and their function, modulating the inflammatory process and maintaining the adipocytes' sensitivity to insulin."

Rebollo-Hernanz is a visiting scholar in the Department of Food Science and Human Nutrition at the University of Illinois.

According to figures from the World Health Organization (WHO), there were more than 650 million people with obesity worldwide in 2016.

WHO estimates also suggest that around 2.8 million deaths occur each year because of being overweight or having obesity. In addition, the proportion of people with obesity has nearly tripled in the 40 years leading up to 2016.

People with obesity have a higher risk of developing long-term diseases such as type 2 diabetes, cancer, and conditions that affect the heart and blood vessels.

Previous studies have shown that as obesity progresses, fat accumulates, together with an increase in adipose tissue macrophages that promote "low-grade, chronic inflammation and dysregulated metabolism."

White fat cells turned fat-burning and beige

For the new study, Rebollo-Hernanz and colleagues wanted to find out whether targeting the interaction between adipocytes and macrophages with cocoa shell extract and its main phenolics could prevent the mitochondrial damage and insulin resistance that obesity can induce.

They ran several cell experiments and also used computer models and bioinformatics to analyze the molecular impact of each compound on the adipocyte-macrophage interactions.

In one set of experiments, the scientists got white adipocytes to grow in a culture containing macrophages. Rebollo-Hernanz says that they saw that the white adipocytes that grew in this way had fewer mitochondria and that the mitochondria that did grow were impaired.

However, he and his colleagues discovered that treating the cells with either cocoa shell extract or each of the three phenolics repaired damaged mitochondria and reduced fat accumulation in the cells.

On closer inspection, they found that adding the compounds to the culture caused the white adipocytes to turn into "beige adipocytes."

Beige adipocytes differ from white ones in that they have many more mitochondria and are much more efficient at burning fat.

Should the findings also be true of human cells, the team sees potential in using cocoa shell extract as an additive to boost the nutritional value of foods and drinks.

In addition to these nutritional benefits, the team highlights the potential environmental advantages of using cocoa shell extract to enhance nutrition.

Typically a waste product of the cocoa industry, cocoa bean shells can damage the environment if producers, who discard around 700,000 tons of them per year, do not dispose of the shells responsibly, notes Prof. Elvira Gonzalez de Mejia, a study co-author.

"Assuming that these phenolics were the main actors in this extract, we can say that consuming them could prevent mitochondrial dysfunction in adipose tissue."

Autism

Could processed foods explain why autism is on the rise? (Medical News Today:20190625)

https://www.medicalnewstoday.com/articles/325546.php

For the first time, scientists have found a molecular connection between a common food preservative, neuronal disruption, and autism spectrum disorder. The findings suggest that there may be a link between the consumption of processed foods during pregnancy and the rise of autism.

A new study finds a link between processed foods and autism.

The prevalence of autism spectrum disorder (ASD) is on the rise.

According to the Centers for Disease Control and Prevention (CDC), in 2000, 1 in 150 children had ASD, but by 2012, that number had risen to 1 in 68.

As of 2018, 1 in 59 children have ASD.

Although researchers do not yet know exactly what causes ASD, they think that a combination of genes, environmental influences, and issues with the maternal immune system in the early stages of pregnancy may contribute to its development.

Recently, some studies have pointed to the gut microbiome as a potential key player in the development of ASD.

For instance, some researchers found that the microbiota of autistic children lacked the beneficial strains of bacteria Bifidobacteria and Prevotella, while other studies found "a significant increase in the Firmicutes/Bacteroidetes ratio" and higher levels of the bacterial taxa Escherichia/Shigella and Clostridium cluster XVIII.

Also, autistic children tend to experience gastrointestinal issues such as constipation, diarrhea, and abdominal pain.

Studying a common food preservative

So, researchers Prof. Saleh Naser and Latifa Abdelli — together with undergraduate research assistant Aseela Samsam, from the University of Central Florida (UCF) in Orlando — set out to further examine the link between gut bacteria and ASD.

Specifically, the team focused on the link between propionic acid (PPA) and autism.

Researchers look at the link between gut bacteria and autism

Scientists explore the potential of microbiota transfer therapy for autism.

"Studies have shown a higher level of PPA in stool samples from [autistic children] and the gut microbiome in autistic children is different," explains Prof. Naser, also of the Burnett School of Biomedical Sciences at UCF. "I wanted to know what the underlying cause was," he adds.

PPA is a naturally occurring short-chain saturated fatty acid with antifungal properties. Also, many manufacturers use it as a food preservative and flavoring agent for packaged and processed products.

In the new study, Prof. Naser and colleagues exposed neural stem cells to abnormally high PPA levels. The researchers published their findings in the journal Scientific Reports.

What is the link between PPA and autism?

Experiments with cultured neural stem cells have revealed that very high PPA levels reduce the number of cells that go on to differentiate into neurons and increase the number of cells that go on to become glial cells.

Although glial cells can support neuronal function, an excessive buildup of glial cells (gliosis) can lead to inflammation in the brain and disrupt the connectivity between neurons.

In the new study, too much PPA also damaged the molecular pathways that normally enable neurons to send information to the rest of the body.

The researchers suggest that such disruption in the brain's ability to communicate may explain ASD-related characteristics such as repetitive behavior and difficulties with social interaction.

They also suggest that eating processed foods likely to have high levels of PPA during pregnancy may increase PPA levels in the maternal gut, which could then transfer to the fetus.

"In the current study," write the authors, "we are linking maternal PPA exposure to disturbed neural patterning during early stages of embryonic neural development leading to overproliferation of glial cells, abnormal neural architecture, and increased inflammatory profile; possible precursors for autism."

However, PPA is naturally present in the gut, and the pregnancy changes that occur in the maternal microbiome can naturally cause PPA to increase. Prof. Nasar and team acknowledge the fact that more research is necessary before they can reach any clinical conclusions.

"This is an intriguing finding and a first in the field," write the researchers. Their next steps include replicating the findings in mice and determining whether a high-PPA maternal diet leads to offspring with ASD-like behavior. Prof. Naser and colleagues conclude:

"This research is only the first step toward [a] better understanding of [ASD]. But we have confidence we are on the right track to finally uncovering autism etiology."

Cardiovascular

How calcium in coronary arteries can predict future heart health (Medical News Today:20190625)

https://www.medicalnewstoday.com/articles/325509.php

According to one new study, having high levels of calcium in the coronary arteries could be responsible for detrimental changes to the structure of the heart.

A new study investigates calcium and heart disease.

"Heart disease is the leading cause of death for men and women," according to the Centers for Disease Control and Prevention (CDC).

Being able to identify people at risk is therefore a crucial public health issue.

One way to determine a person's risk of heart disease, stroke, or heart attack is by looking at their coronary artery calcium (CAC) levels.

Calcium plays a number of roles in the body, including keeping bones healthy. However, calcium present in coronary arteries can lead to the accumulation of plaque.

Over time, this calcified substance can cause atherosclerosis, or a narrowing of the arteries. Atherosclerosis restricts blood flow and oxygen supply to vital organs, potentially resulting in a heart attack or stroke.

High cholesterol levels can indicate that a person is at risk; but scientists can also test CAC levels directly.

Using a CT scan to take numerous sectional pictures of the heart, doctors can see specks of CAC. A person's scores tend to range from zero to over 400. The higher the score, the higher the risk of developing cardiovascular disease.

Cholesterol guidelines from 2018 recommend a CAC scan for people ages 40–75 whose risk status is "uncertain," note the American Heart Association (AHA).

A new study, the results of which now appear in the journal Circulation: Cardiovascular Imaging, has examined the CAC scores of younger people and drawn some interesting conclusions.

Heart abnormalities

The scientists used data from almost 2,500 people to track CAC and heart structure differences between young adulthood and middle age. Women made up 57% of the group, and 52% of participants were white.

They took data from participants in the Coronary Artery Risk Development in Young Adults (CARDIA) study, which began in the 1980s with the aim of identifying young adult risk factors for cardiovascular disease.

"We looked at early adulthood to middle age because this is a window in which we can see abnormalities that might not be causing symptoms, but could later increase the risk of heart problems," explains study co-author Dr. Henrique Turin Moreira.

The researchers compared test results from years 15 and 25 of the CARDIA study period. At the 25-year mark, the average age of the group was around 50.

Cardiovascular disease: 7 simple steps that lower future risk

"Life's Simple 7" is a collection of factors that can help predict and protect people's heart health.

When it came to their CAC results, 77% of participants had a score of zero in year 15 of the study. However, in year 25, this had dropped to 72%.

A number of factors were linked to a rise in CAC scores, including being older, being male, being black, smoking, having higher cholesterol levels, and having higher systolic blood pressure.

Middle-aged people who had higher CAC scores also showed a 9% increase in left ventricular volume and a 12% increase in left ventricular mass.

When the left ventricle changes in this way, the heart has to put more effort into pumping blood. This, in turn, leads to a thickening of the heart, which increases the risk of heart failure.

The study authors also note that these abnormalities were more significant among black people. For these people, every one-unit change in their CAC score correlated with quadruple the increase in their left ventricular mass.

Future implications

It is unclear why people exhibited such differences depending on their race. Dr. Moreira explains that it could be "due to genetic factors or perhaps greater exposure to cardiovascular risk factors that usually appear earlier" in black people.

What that do already know, however, is that black people are already more likely to develop cardiovascular disease. Although just 43% of white women and 50% of white men have cardiovascular disease, it affects 57% of black women and 60% of black men.

Further research, explains Dr. Moreira, will be needed to "examine the link between coronary artery calcium and heart health" — especially in relation to race. However, documenting the relationship between CAC and heart failure risk factors in a younger age group is significant.

"Given the burden of morbidity and mortality associated with heart failure, these are important findings," says Dr. Salim Virani, a co-author of the AHA's 2018 cholesterol guidelines.

"Prior studies from this cohort have also shown that a better risk factors profile in young adulthood is associated with much lower CAC and therefore, these results further highlight the importance of primordial prevention and risk factor modification in early adulthood."

Rheumatoid arthritis

Vagus nerve stimulation may reduce the symptoms of rheumatoid arthritis (Medical News Today:20190625)

https://www.medicalnewstoday.com/articles/325532.php

Electrostimulation of the vagus nerve may be key to reducing the symptoms of rheumatoid arthritis, according to findings that scientists presented at the Annual European Congress of Rheumatology in Madrid, Spain.

Electrostimulation of the vagus nerve may help reduce the symptoms of rheumatoid arthritis.

This research gives hope that there may be a new way to help treat this autoimmune condition.

The vagus nerve, which is a very long nerve that runs between the brain and the neck, chest, and abdomen, is a complex structure.

Previous research has found an inflammatory reflex in the vagus nerve that reduces the production of cytokines, including certain molecules that are a component of autoimmune conditions. These molecules are called tumor necrosis factor (TNF).

The immune systems of healthy people block TNF, but in those with certain autoimmune conditions, excess TNF makes its way into the bloodstream and causes inflammation and a higher rate of symptoms associated with the conditions.

TNF is a target in many rheumatoid arthritis (RA) drugs, such as infliximab (Remicade) or etanercept (Enbrel). Many people call these drugs TNF-blockers.

The researchers thought that if they could boost this naturally occurring reflex in the vagus nerve, it might have a similar result — or one that was even better, as drugs that aim for TNF also suppress the immune system and have other unwelcome side effects.

"This is a really exciting development," says Prof. Thomas Dörner, Chairperson of the Scientific Programme Committee at the Annual European Congress of Rheumatology, which this year takes place in Madrid, Spain.

"For many [people living with] RA, current treatments don't work, or aren't tolerated. These results open the door to a novel approach to treating not only RA but other chronic inflammatory diseases. This is certainly an area for further study," adds Prof. Dörner.

Small neurostimulator led to big findings

The researchers implanted a small neurostimulator, called a MicrioRegulator, into 14 people with RA. To qualify for the study, each person had tried at least two medications that worked in different ways but that hadn't helped reduce their symptoms.

The scientists then divided the participants into three groups: a placebo group, a group that had vagus stimulation once per day, and a group that had vagus stimulation four times per day.

Could vitamin D help to keep rheumatoid arthritis at bay?

Some cells lose sensitivity to vitamin D as a result of RA.

The study, which took place over 12 weeks, revealed that those in the once-per-day group had a much better result, symptom-wise, than those in the other two groups — including those that had stimulation four times each day.

Both stimulation groups also had a distinct reduction of more than 30% in their cytokine levels during the course of the study.

How RA affects people

Unlike osteoarthritis, which occurs when cartilage in the joints breaks down over time, RA can develop at any age. That said, it is more likely to affect people ages 30–60.

In the United States, there are around 1.5 million people with the condition, and it tends to affect around three times as many women than men.

In those with RA, the body's immune system is overactive and attacks healthy tissue in the body — in this case, the lining of the joints.

Over time, this inflammation can damage cartilage and the bones themselves, with joint spacing becoming more narrow. This results in a loss of mobility and flexibility. Once the damage has set in, it is irreversible; so, the goal is to identify the condition early and treat it aggressively.

Symptoms can vary from person to person, but early symptoms tend to include joint pain or swelling that lasts for 6 weeks or longer, stiffness in the morning that lasts for at least 30 minutes, or both.

RA tends to affect more than one joint, and it also affects smaller joints in the hands, feet, and wrists more often than it does larger joints. Also, RA is often symmetrical and affects joints on both sides of the body.

What does the future hold?

Although surgically implanting small neurostimulators into every person with RA is probably not feasible, reasonable, or required, this study does shine a light on potential therapy that can help those who do not respond well to traditional medications for the condition.

The findings of this research will also pave the way for future studies.

"Our pilot study suggests this novel MicroRegulator device is well tolerated and reduces signs and symptoms of [RA]," says Dr. Mark Genovese, the James W. Raitt Endowed Professor of Medicine at Stanford University in California.

"These data support the study of this device in a larger placebo-controlled study as a novel treatment approach for [RA] and possibly other chronic inflammatory diseases."

Dr. Mark Genovese

Alzheimer's disease

Hypertension treatment may slow down Alzheimer's progression (Medical News Today:20190625)

https://www.medicalnewstoday.com/articles/325531.php

Researchers have found that nilvadipine, a drug that doctors regularly use to treat hypertension, may help people with Alzheimer's disease by increasing blood flow to the brain.

New research suggests that a high blood pressure drug may slow down the progression of Alzheimer's disease.

Alzheimer's disease is the most common form of dementia. This progressive disorder causes the degeneration and, ultimately, the death of brain cells.

People with dementia experience cognitive decline, and have issues making judgments and performing everyday tasks.

Dementia affects millions of people worldwide. According to Alzheimer's Disease International, the number of people with dementia was close to 50 million n 2017, and the organization say this number will almost double every 20 years, reaching 75 million people by 2030.

In the United States, Alzheimer's disease is the sixth leading cause of death.

Researchers have been looking for treatments to slow the progression of the disorder and recently found that the hypertension drug nilvadipine may have positive effects on the

cerebral blood flow of those with Alzheimer's disease. The results appear in the journal Hypertension.

How nilvadipine affects cerebral blood flow

Nilvadipine is a calcium channel blocker that leads to vascular relaxation and lowers blood pressure, and people often use it to treat hypertension. The objective of the latest study, which included 44 participants with mild to moderate Alzheimer's disease, was to find out whether nilvadipine could slow the progression of the disorder.

"Even though no medical treatment is without risk, getting treatment for high blood pressure could be important to maintain brain health in patients with Alzheimer's disease," says Dr. Jurgen Claassen, Ph.D., associate professor at Radboud University Medical Center in Nijmegen, the Netherlands, and lead author of the study.

Atrial fibrillation may raise dementia risk by 50%

New research finds that A-fib can raise dementia risk even in people who did not have a stroke.

The researchers randomly gave nilvadipine or a placebo to the participants and asked them to continue the treatment for 6 months. They measured the blood flow to specific areas of the brain, using a unique MRI technique, at the beginning of the study and after 6 months.

The findings showed a 20% increase in blood flow to the hippocampus, the brain area linked to memory and learning, among the group who took nilvadipine in comparison to the placebo group. The treatment did not have any effects on the blood flow to other regions on the brain.

"This high blood pressure treatment holds promise as it doesn't appear to decrease blood flow to the brain, which could cause more harm than benefit," adds Dr. Claassen.

Paving the way for future research

In previous studies, which researchers did between 2013 and 2015 in different sites in Europe, one team of researchers compared the effects of nilvadipine and placebo among more than 500 people with mild to moderate Alzheimer's disease.

In that project, the team did not record the effects on cerebral blood flow, so recorded no benefit of nilvadipine as a treatment. However, a subgroup of participants with mild symptoms did experience a slower decline in memory.

In the latest study, the number of participants was too low, and the follow-up time too short to properly study nilvadipine's impact on blood flow to the areas of the brain that Alzheimer's disease affects. Also, the participants were of similar race and ethnicity.

Despite the small size, the latest study used MRI techniques that only a few others have used before to analyze the effects of hypertension treatment on cerebral blood flow.

The researchers believe that using this advanced technique in a bigger and more extensive study could be an excellent next step in research.

"In the future, we need to find out whether the improvement in blood flow, especially in the hippocampus, can be used as a supportive treatment to slow down progression of Alzheimer's disease, especially in earlier stages of [the] disease."

Dr. Jurgen Claassen

Diabetes

Researchers find protein that might prevent, reverse diabetes (Medical News Today:20190625)

https://www.medicalnewstoday.com/articles/325519.php

A recent study finds that targeting a specific protein within the fat cells of mice reverses type 2 diabetes. The results also show that the protein can prevent the disease from developing.

Could new findings lead the way to improved diabetes treatments?

Since the 1980s, the global prevalence of diabetes has almost quadrupled.

According to the Centers for Disease Control and Prevention (CDC), in the United States, around 1 in 10 people have type 2 diabetes (T2D), the most common form of diabetes.

A further 1 in 3 people has prediabetes — higher-than-normal blood sugar levels that increase the risk of T2D.

The steady rise in levels of T2D is largely due to the increase in obesity rates: Obesity is one of the primary risk factors for diabetes.

Insulin is a hormone that regulates the levels of sugar in the blood. In T2D, the body either does not respond to the hormone, or it does not produce enough of it.

Although medications and lifestyle changes can help to manage insulin levels and control diabetes, there is no cure, and researchers are keen to find better interventions.

Recently, a group of researchers — many of whom are from the University of British Columbia, in Canada, or the Karolinska Institute, in Sweden — examined the role of a specific protein in fat cells.

They recently published their findings in the journal EBioMedicine.

White adipose tissue

When we eat more calories than our body needs, a type of fat called white adipose tissue (WAT) expands to store the excess energy as fat. However, if we take on more energy than we need for more extended periods, this system cannot cope, eventually leading to insulin resistance.

In particular, the researchers were interested in how a glycoprotein called CD248 might influence WAT and the eventual development of T2D.

Researchers have previously associated CD248 with tumor growth and inflammation, but no one had investigated its role in T2D.

First, the researchers analyzed the gene expression in WAT from humans who were thin, obese, had T2D, or did not have T2D.

Ultrasound: The future of diabetes treatment?

A recent study finds that ultrasound might be an effective, noninvasive way to boost insulin levels.

In those who had obesity or were insulin resistant, they found that the CD248 gene was upregulated; in other words, the body was making more of the protein. This observation led the scientists to conclude that CD248 might work as a marker of insulin sensitivity that is more sensitive than current methods.

Next, the researchers artificially reduced the activity of CD248 in human WAT cells in the laboratory.

From these experiments, they concluded that CD248 in WAT plays a role in the cellular processes that lead to insulin resistance caused by long-term overconsumption of energy. Specifically, they found that CD248 is involved in how cells respond to hypoxia, which is a hallmark of obesity.

Moving to a mouse model

Then, the scientists moved to a mouse model. They used mice that lacked the gene that codes for CD248 in their WAT (although other cell types were still producing CD248). In these experiments, the researchers found that the mice were protected from developing insulin resistance and T2D.

The mice did not develop diabetes, even when they were fed a high-fat diet and became obese.

Importantly, the mice with reduced CD248 in their fat cells did not appear to experience any adverse events, suggesting that targeting this protein might be a useful therapy in the future.

Aside from the protective effects of reducing CD248, the scientists also demonstrated its potential as a therapy for those who already have T2D.

"A most interesting finding was that the insulin sensitivity of mice that already have diabetes can be improved by reducing CD248 levels in the fat cells, even while they remain obese."

Co-senior author Dr. Edward Conway

Early days

Although these findings are fascinating and add to our understanding of how T2D develops, researchers will need to conduct a great deal of work before the results can make their way to the pharmacy.

Dr. Conway adds a note of caution, "While these discoveries are exciting, we are still some distance from a new treatment." However, he plans to continue his investigations, explaining, "Our immediate goals are to understand how CD248 works so that safe and effective drugs that reduce the protein's levels or that interfere with its function can be designed."

The journey from research in cells and mice to treating human patients is a long, expensive, and often unsuccessful one.

The study suggests a new way to assess insulin resistance, prevent its progression, and even reverse T2D. Because diabetes is advancing at a worrying rate, chasing up these leads is now urgent.