



# DAILY NEWS BULLETIN

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

20191216

## एंटीबायोटिक के इस्तेमाल

एंटीबायोटिक के अधिक इस्तेमाल से खतरे में बच्चे, रोगों से लड़ने की क्षमता हो रही कम (Dainik Jagran: 20191216)

<https://www.jagran.com/world/america-excessive-antibiotic-prescriptions-for-children-can-harm-their-health-jagran-special-19848941.html>

निम्न और मध्यम आय वाले देशों के हालात चिंताजनक ज्यादा एंटीबायोटिक के इस्तेमाल से रोगजनकों से लड़ने की क्षमता हो रही कम।

बोस्टन, प्रेट्र। निम्न और मध्यम आय वाले देशों के बच्चे अपने जीवन के पहले पांच वर्षों के दौरान औसतन 25 तरह के एंटीबायोटिक का इस्तेमाल कर लेते हैं। यह मात्रा इतनी अधिक है कि इससे रोगजनकों से लड़ने की उनकी क्षमता को नुकसान पहुंच सकता है और दुनियाभर में एंटीबायोटिक प्रतिरोध भी बढ़ सकता है। पहले के अध्ययनों में यह बताया गया है कि दवा प्रतिरोध जिसे एंटीमाइक्रोबियल रजिस्टेट कहते हैं, इसकी वजह से दुनिया में प्रति वर्ष हजारों लोगों की मौत होती है। अगर इसे रोका नहीं गया तो 2050 तक इसकी वजह से प्रतिवर्ष मरने वालों की संख्या एक करोड़ तक पहुंच जाएगी।

बच्चों के बीच इन दवाओं के सेवन के बारे में बहुत कम जानकारी

अमेरिका की हार्वर्ड यूनिवर्सिटी के शोधकर्ताओं सहित टीम ने कहा कि इस वैशिक स्वास्थ्य संकट में योगदान देने वाला एक प्रमुख कारक दुनियाभर में एंटी बायोटिक दवाओं का अत्यधिक उपयोग है।

उन्होंने बताया कि उच्च आय वाले देशों में एंटीबायोटिक के उपयोग के बारे में विस्तृत जानकारी उपलब्ध है। निम्न और मध्यम आय वाले देशों में खासकर बच्चों के बीच इन दवाओं के सेवन के बारे में बहुत कम जानकारी है। उदाहरण के तौर पर उन्होंने बताया कि अफ्रीकी देश तंजानिया में 90 फीसद बच्चे जब अस्पताल जाते हैं उन्हें एंटीबायोटिक की एक फुल डोज दी जाती है, जबकि अस्ल में उनको जरूरत केवल उसके पांचवें हिस्से की होती है।

लैंसेट एंफेक्शियस डिसीज' नामक जर्नल में प्रकाशित अपनी तरह के पहले अध्ययन में शोधकर्ताओं ने निम्न और मध्यम आय वाले आठ देशों में बच्चों को दिए जाने वाले एंटीबायोटिक्स को देखा। इन देशों में नेपाल, नामीबिया, केन्या और हैती भी शामिल थे। हार्वर्ड यूनिवर्सिटी की एसोसिएट प्रोफेसर और इस अध्ययन की सह लेखक जेसिका कोहेन ने बताया कि इस अध्ययन के माध्यम से निम्न और मध्यम आय वाले देशों में एंटीबायोटिक्स की खपत के बारे व्यापक जानकारी मिली है।

## एंटीबायोटिक के साइड इफेक्ट

प्रतिरक्षा प्रणाली पर दुष्प्रभाव-  
इम्युनिटी कमज़ोर पड़ने पर  
आप अक्सर या जल्दी-जल्दी  
बीमार होने लगते हैं।

टाइप-1 मधुमेह- बुखार या  
अन्य रोग में एंटीबायोटिक  
का प्रयोग टाइप-1 मधुमेह बन  
सकता है।

पाचन तंत्र समस्या- यूके की  
नेशनल हेल्थ सर्विस के  
अनुसार एंटीबायोटिक्स लेने  
वाले 10 में से 1 पाचन तंत्र  
समस्या का अनुभव करते हैं।



मेटाबोलिज्म से संबंधित  
समस्याएं- इससे मोटापा,  
मधुमेह और चयापचय सिंड्रोम  
के शिकार हो सकते हैं।

मुंह का अल्सर व छाले- गलत  
सेवन से मुंह में अल्सर या  
छाले भी हो सकते हैं।

एलर्जी-इससे त्वचा में चक्कते,  
खुजली, खांसी, गले में घरघर  
और सांस लेने में कठिनाई  
जैसी समस्याएं भी हो  
सकती हैं।

## एंटीबायोटिक की खपत के मामले भिन्न-भिन्न

अध्ययन से पता चलता है कि इन देशों में बच्चों को पांच साल की उम्र में ही 25 तरह के एंटीबायोटिक्स का इस्तेमाल करना पड़ा। परिणामों से पता चलता है कि औसतन एंटीबायोटिक दवाओं का इस्तेमाल सांस की बीमारी वाले बच्चों के हर पांच मामले में चार को, दस्त के 50 प्रतिशत मामले में और मलेरिया वाले बच्चों में 28 प्रतिशत मामलों में किया गया। हालांकि, शोधकर्ताओं ने बताया कि इन देशों में भी एंटीबायोटिक की खपत के मामले भिन्न-भिन्न हैं। जैसे कि सेनेगल में एक बच्चे को पांच वर्ष की उम्र तक प्रत्येक वर्ष एक डोज एंटीबायोटिक की जरूरत पड़ी। वहीं युगांडा में यह आंकड़ा 12 तक था। शोधकर्ताओं ने बताया कि उच्च आय वाले देशों जैसे कि यूरोप में प्रत्येक बच्चा हर साल एक डोज से भी कम एंटीबायोटिक लेता है।

## फ्रैक्चर के लिए खास बैंडेज

**अब फटाफट रिपेयर होगा फ्रैक्चर, वैज्ञानिकों ने बनाया खास बैंडेज, ऐसे करेगा काम (Dainik Jagran: 20191216)**

<https://www.jagran.com/world/america-novel-bandage-may-help-fracture-recovery-by-trapping-body-healing-molecules-19848807.html>

शोधकर्ताओं ने एक ऐसे बैंडेज को विकसित किया है जो फ्रैक्चर के स्थान पर शरीर के स्वयं से उपचार करने वाले अणुओं को इकट्ठा करता है जिससे हड्डियां जल्द जुड़ सकेंगी।

न्यूयार्क, पीटीआइ। शोधकर्ताओं ने एक ऐसे बैंडेज को विकसित किया है जो फ्रैक्चर के स्थान पर शरीर के स्वयं से उपचार करने वाले अणुओं को इकट्ठा रखता है। यह खोज प्राकृतिक चिकित्सा प्रक्रिया को तेज करने के नए तरीकों को जन्म दे सकती है। एडवांस मैटेरियल्स नामक जर्नल में प्रकाशित अध्ययन में बताया गया है कि नए बैंडेज का चूहों में प्रयोग करके भी देखा गया है। इसमें पाया गया कि इसकी मदद से चूहों में केवल तीन सप्ताह में नई रक्त वाहिकाओं के निर्माण में मदद मिली साथ ही हड्डियों की बेहतर मरम्मत भी हुई।

अमेरिका की इयूक यूनिवर्सिटी सहित अन्य शोधकर्ताओं की टीम ने बताया कि यह विधि अभी तक मौजूद सभी अन्य उपचार विधियों की तुलना में ज्यादा तेजी और बेहतर ढंग से काम करती है। दरअसल यह खोज पुरानी खोज पर आधारित है जिसमें बताया गया है कि रासायनिक कैल्शियम फास्फेट से बने बायोमैट्रियल्स हड्डी की मरम्मत और पुनर्निर्माण को बढ़ावा देते हैं। इयूक यूनिवर्सिटी के इस अध्ययन की सह लेखक शायनी वर्गीज ने पाया था कि जैविक अणु 'एडेनोसिन' हड्डी के विकास को बढ़ाने में विशेष रूप से बड़ी भूमिका निभाता है।

वर्गीज और उनकी टीम ने पाया कि शरीर में चोट लगने पर स्वाभाविक रूप से एडेनोसिन अणुओं की चोट वाली जगह पर बाढ़ सी आ गई, लेकिन यह क्रिया ज्यादा देर तक नहीं रही। वर्गीज ने बताया कि एडेनोसिन शरीर में कई महत्वपूर्ण कार्य करता है, लेकिन इसका मुख्य कार्य हड्डी की मरम्मत करना नहीं है। इसलिए बिना किसी साइड इफेक्ट के एडेनोसिन को चोट वाली जगह पर रोककर रखना बड़ा काम था।

यही वजह है कि शोधकर्ताओं ने एक ऐसा बैंडेज बनाया जो फ्रैक्चर की जगह लगाया जा सके। इस बैंडेज में एडेनोसिन अणुओं को पकड़ रखने के लिए बोरोनेट मॉलीक्यूल का उपयोग किया गया है। अणुओं के बीच के बंधन हमेशा के लिए नहीं रहते हैं इसलिए यह बैंडेज एडेनोसिन को पूरी तरह से नहीं पकड़ पाता। नतीजतन एडेनोसिन के अणु धीरे-धीरे रिलीज होने लगते हैं।

### चूहों पर किया गया प्रयोग

शोधकर्ताओं ने विकसित किए गए नए बैंडेज का चूहों पर परीक्षण भी किया। शोधकर्ताओं ने दो चूहों के हड्डियों के टूटने पर अलग-अलग उपचार दिया। एक चूहे को पुरानी विधि तो दूसरे को नए विकसित बैंडेज से उपचार दिया गया। इसमें पाया गया कि जिन चूहों में नए बैंडेज को बांधा गया था उनका उपचार तेज गति से और बेहतर हो रहा था। तीन हफ्ते बाद ऐसे चूहों में रक्त वाहिकाओं का निर्माण बेहतर तरीके से हुआ हड्डी का जोड़ भी अन्य से अच्छा रहा।

## लिंगानुपात

2300 की आबादी वाले मप्र के हरपुरा मड़िया गांव में एक हजार पुरुषों पर 1096 महिलाएं (Dainik Jagran: 20191216)

<https://www.jagran.com/news/national-1096-women-per-thousand-men-in-harpura-madiya-village-of-madhya-pradesh-with-a-population-of-2300-jagran-special-19848995.html>

मप्र के हरपुरा मड़िया गांव में बेटियों के जन्म पर मनता है उत्सव 2300 की आबादी वाले गांव में एक हजार पुरुषों पर 1096 महिलाएं।

मनीष असाटी, टीकमगढ़ (मप्र)। बेटियां एक नहीं, दो-दो घरों की इज्जत बढ़ाती हैं, इसलिए बेटियों को बोझ न समझें और उन्हें वह हर खुशी दें, जिसकी वे हकदार हैं। बुंदेलखण्ड के टीकमगढ़ जिले के हरपुरा मड़िया गांव ने इसे सिर्फ विचार तक सीमित नहीं रखा, बल्कि शिद्धत से अपनाया है। यहां बेटियों के जन्म पर लोग जश्न मनाते हैं। बधाइयों का दौर चलता है। महिलाएं मंगलगीत गाती हैं और जमकर नाच-गाना होता है।

टीकमगढ़ जिले का लिंगानुपात 1000 पुरुषों पर 901 महिलाओं का है, जबकि 2300 की आबादी वाले हरपुरा मड़िया गांव में 1000 पुरुषों पर करीब 1096 महिलाएं हैं। भूषण लिंग परीक्षण जैसी बात तो यहां सुनाई भी नहीं देती। 98 वर्षीय शुगररानी जब नातिनों और बेटियों के किस्से सुनार्ती हैं तो उनका चेहरा खुशी से खिल उठता है। वह कहती हैं कि हमारी बेटियां आज बेटों की तरह कंधे से कंधा मिलाकर चल रहीं हैं। दस बेटियों की मां सुधा चौबे कहती हैं कि आज लोग एक बेटी को बोझ समझते हैं, जबकि मैंने अपनी बेटियों को बेटों की तरह परवरिश दी है। आज सात बेटियां शादी के बंधनों में बंधकर दूसरे परिवारों की मान-मर्यादा संवार रही हैं।

जन्म पर मनाते हैं जश्न

इस गांव में जब किसी परिवार में बेटी जन्मती है तो बधाइयों का लंबा दौर चलता है। हाल ही में सोन सिंह के यहां पर पुत्री का जन्म हुआ। नाम रखा गया जमना। गांव की महिलाओं ने आंगन में मंगल गीत गाए। नाच-गाना किया। गांव की बेटी का जब रिश्ता किया जाता है, सभी से सलाह ली जाती है। लड़के के परिवार के बारे में चर्चा होती है। गांव के सनदकुमार चौबे बताते हैं कि पांच भाइयों के उनके

परिवार में 21 बेटियां हैं। स्वयं उनकी पांच बेटियां और दो बेटे हैं। गांव के रमेश राजपूत के घर में छह और इंद्रल राजपूत के घर में छह बेटियां हैं।

सुविधाओं से वंचित हैं बेटियों का यह गांव

सुनैना राजपूत, भावना, आराधना राजपूत व चांदनी लोधी ने बताया कि गांव में आठवीं तक स्कूल है, जिससे यहां से दूरस्थ गांव खिरिया के लिए हाईस्कूल की पढ़ाई करने जाना पड़ता है। गांव के बुजुर्ग कहते हैं कि हम अपनी बेटियों को इतना मान सम्मान देते हैं। सरकार को भी चाहिए कि उसकी योजनाओं का लाभ हमारी बेटियों को मिले।

### Alcohol (Hindustan: 20191216)

[https://epaper.livehindustan.com/imageview\\_443675\\_61866610\\_4\\_1\\_16-12-2019\\_18\\_i\\_1\\_sf.html](https://epaper.livehindustan.com/imageview_443675_61866610_4_1_16-12-2019_18_i_1_sf.html)

# टोज शराब के सेवन से बढ़ेगा कैंसर का खतरा

## सेहत

लंदन | एजेंसी

एक शोध में पता चला है कि हर शत एक गिलास शराब या बीयर पीना कैंसर के खतरे को बढ़ावा देता है। वैज्ञानिकों ने कहा है कि एक दशक तक हर रोज केवल एक गिलास शराब पीने से कैंसर का खतरा पांच फीसदी बढ़ सकता है।

शोधकर्ताओं ने जापान में 1,26,464 लोगों पर यह अध्ययन किया। इसमें पाया गया कि नियमित रूप से शराब का सेवन करना, भले ही उसकी मात्रा कम हो, महत्वपूर्ण रूप से कैंसर के खतरे को बढ़ा देता है। वैज्ञानिकों ने

### जापान में कैंसर मौत का प्राथमिक कारण

अध्ययन के लेखक डॉ. मासायोशी जित्सु ने कहा, जापान में मौत का प्राथमिक कारण कैंसर है। ऐसे में हमें शराब से संबंधित कैंसर के जोखिम के बारे में सावर्जनिक रूप से लोगों को जागरूक करना चाहिए। इसके साथ ही उन्होंने यह भी स्पष्ट किया कि पूर्वी एशियाई लोगों पर पीने के अलग-अलग परिणाम हो सकते हैं व्योंगी उनमें से बहुत से लोगों में आनुवांशिक अंतर होता है।

कहा, अध्ययन के दौरान यह देखा गया कि जिन लोगों ने अपनी जिंदगी में कभी-भी शराब का सेवन नहीं किया, उनमें किसी भी तरह की बीमारी होने की संभावना बेहद कम थी।

यह शोध टोक्यो और हार्वर्ड यूनिवर्सिटी के वैज्ञानिकों ने किया। उन्होंने 63,232 कैंसर रोगियों और 63,232 स्वस्थ लोगों के डाटा की

तुलना की। इसमें उन्होंने शराब और कैंसर के बीच एक संबंध पाया। यानी कि शराब के सेवन से कैंसर का खतरा बढ़ सकता है। वैज्ञानिकों ने कहा, एक दिन में केवल एक गिलास शराब पीने भर से किसी भी प्रकार के कैंसर का खतरा बढ़ सकता है। यह खतरा तभी बढ़ता है जब आप एक दशक तक नियमित रूप शराब का सेवन करते हैं।

## **Pradhan Mantri Matru Vandana Yojana**

**‘Maternity scheme exclusionary, need benefits for all’ (The Hindu: 20191216)**

<https://www.thehindu.com/news/national/other-states/maternity-scheme-exclusionary-need-benefits-for-all/article30314030.ece>

Several clauses and lengthy documentation excludes single women and young brides, say activists

Three years after a pan-India maternity benefit programme promising ₹6,000 to new mothers was first announced, the chorus on its many exclusions is growing louder leading to a demand for a scheme that is truly universal. The many clauses introduced into the long and tedious documentation work totalling 32 pages has led to single women and young brides being left out of its purview, say activists working at the grassroots level.

The Pradhan Mantri Matru Vandana Yojana (PMMVY) was announced by Prime Minister Narendra Modi in a televised address to the nation on December 31, 2016. Five month’s later when the Union Cabinet approved the scheme, it decided to give a benefit of ₹5,000 to pregnant and lactating mothers for the birth of the first child. This would be disbursed in three installments upon meeting several conditionalities — registration of pregnancy, at least one ante-natal check-up, registration of child birth and vaccinations. The remaining cash incentive of up to ₹1,000 is to be given under a separate scheme called the Janani Suraksha Yojana so that on an “average” women get a total sum of ₹6,000. The objective is to compensate women for wage loss due to child birth.

Activists say that registration for the scheme requires an applicant to provide her husband’s Aadhaar details along with her own, affecting single women which include unwed mothers, deserted wives and widows. Moreover, a mother seeking benefits needs to provide proof of address of her marital home, which proves challenging for a newlywed expecting a child and often residing in her natal home during pregnancy. She is then forced to go from pillar to post to claim benefits.

Newlywed woman

“A mother is unable to get the compensation when she needs it the most, i.e. during the nine months of her pregnancy. While the scheme is solely for the first living child, it ironically leaves out those who are most likely to give birth to one — a newlywed woman,” said Seema Shah of Right to Food Campaign, Gujarat Chapter, at a press conference on Friday.

She added that the requirement that the applicant has to be at least 19 years old also leaves out younger brides, who hesitate in getting their marriages registered as the legal age of marriage is 18 years. “30-35% first-time mothers are under the age of 18 years,” said Annie Raja, CPI leader and General Secretary, National Federation of Indian Women.

The application form requires separate undertakings from the woman and her husband that the child for whom they are seeking the benefit will be “the first living child for both of them”, further making it prohibitive.

Since the scheme came into effect on January 2017, it has benefited a total of 128 lakh women as per the government’s reply in Parliament last week. This is 80% of the total target the government has set out for itself — 53 lakh women per year. Experts estimate that the government’s target itself is 43% of the total 123 lakh first births in the country in a year as derived from the population size of 133.9 crore in 2017 and the birth rate of 20.2 per thousand.

“Is this scheme supportive or exclusionary and punitive. Eligible beneficiaries have to jump through several hoops to claim their entitlement. Moreover, this is a woman’s right under the National Food Security Act, 2013, why then insist on the husband’s identity proof,” said Jashodhara Dasgupta, Feminist Policy Collective. She added that the documentation work is likely to result in many women living on the margins, such as sex workers, women in custody, migrant and those living in post-conflict situations unable to claim benefits even though they are most in need of monetary compensation.

#### ‘Hefty bribe’

Sunita Singh who works for the Uttar Pradesh Chapter of the Right to Food Campaign says women have to pay a hefty bribe during the application process. “In U.P. there is a fee for everything. In Chief Minister Yogi Adityanath’s district of Gorakhpur this is as high as ₹500, which women have to pay with each of the three forms.”

The lengthy documentation work includes filling up six documents totaling 32 pages — an application form to be filled for each of the three installments, an application for linking the Aadhaar card with bank account, another one for linking the Aadhaar card with post office account and a feedback form. Applicants have to also submit at least nine other documents for verification — Aadhaar card (or enrolment slip when there is no card), an identity proof, voter ID card (as age proof) of the mother and her husband; ration card (for husband's address), copy of bank passbook and maternal and child protection (MCP) card.

#### ‘Formal representation’

In response to a query on the concerns highlighted above, an official of the Women and Child Development Ministry said that activists and grassroot workers must make a “formal representation” to the government highlighting their concerns so that corrective actions can be taken.

Activists urge for a need for reviewing the scheme and making it universal by removing restrictions on the number of children as well as including all women, whether they are in the formal or informal sector, engaged in paid or unpaid work. The sum promised should also be at least on par with minimum wages for women in self-employment, unpaid work, or working for less than minimum wages. In order to raise these demands, protest marches are planned across several States on December 31, the third anniversary of the scheme. Workers, part of

the Right to Food Campaign's M.P. Chapter, have also started a signature campaign on the demands, which has so far been endorsed by 1,18,000 people.

## **Food Policy**

### **Food-for-all calls for renewed farm policies (The Tribune: 20191216)**

<https://www.tribuneindia.com/news/food-for-all-calls-for-renewed-farm-policies-11475>

The food policy narrative should be changed from aggregate production to more diversified high-value crops, through climate resilient methodologies and practices, to ensure remunerative prices and farm incomes. The policy should aim at market and trade reforms, agriculture that is cost-effective, uses less chemicals and is more inclusive in terms of women, small farmers and rainfed areas.

Food for all has been the core premise of India's food policy. Though successful in achieving self-sufficiency in foodgrains, the policy journey of the last 75 years has not been easy. Most of the challenges encountered by the country en route have been faced with determination, without letting the national integrity and sovereignty to get compromised.

Over 1.5 million starvation deaths in the Bengal Famine of 1943 had shaken the then quiescent Government of India that constituted a committee headed by Sir George Gregory, Economic Adviser, to suggest measures to remedy the situation. After Independence, new systems, structures and processes were evolved to prevent the repetition of the devastation of 1943. Comprehensive efforts made over the last seven decades fully reflect upon the country's inviolable Ann Surakhsha Chakra which prevented starvation deaths, even if the country had to import foodgrains worth \$4 billion under PL-480.

The Green Revolution was articulated as a major move forward by the national policy planners, researchers, scientists and agriculturists to increase foodgrain production and productivity by introducing new agricultural practices and technologies like the high-yielding variety (HYV) of seeds. Punjab, including the present Haryana and Himachal, was the first state selected for the Green Revolution in 1961 because of the availability of quality soil, water, and of course, its dynamic farmers.

Efforts to stimulate the Green Revolution and reach its benefits to the deserving populations comprised higher input subsidies; the establishment of institutions such as the FCI, Seed Corporations, Commodity Boards, and APMCs; government procurement of foodgrains at

MSP; building buffer stocks; formulation and reformulation of PDS, TPDS, RPDS and enactment of laws such as the Essential Commodities Act, the Prevention of Hoarding and Black Marketing Act and the NFSA, 2013. A number of schemes aimed at food security were also introduced across the states with varying degrees of success. Some of these are the Midday Meal, Antyodaya, Annapurna and the recent Poshan Abhiyaan.

Food policy reforms attempted through repeated reiterations and updatations to suit contextual requirements across the nation have yielded positive outcomes. The production of foodgrains increased: wheat — from 6.46 million tonnes in 1947 to 99.70 million tonnes in 2017; and rice — from 20.58 million tonnes in 1947 to 112.91 million tonnes in 2017. The agricultural productivity also increased during this period: wheat — 663 kg/hectare (1951) to 3,216 kg/hectare (2017); rice — 668 kg/hectare (1951) to 2,550 kg/hectare (2017). These achievements enabled the country to maintain comfortable buffer stocks of foodgrains with a substantial decrease in imports, ensuring a high degree of self-sufficiency and nearly affordable food prices. The per capita availability of food also increased: wheat — from 65.7 grams to 182.7 gm (1947-2017); and rice — from 158.9 gm to 183 gm (1947-2017).

There are, however, apprehensions that food security as obtaining today is not sustainable. And poverty still remains a key aspect of it. Accelerated climate change is also threatening the present agricultural practices and operations. The Green Revolution, though successful, has not been fully inclusive. Despite the rise in food production, many regions and vulnerable populations of the country still remain food deficit and poor with lower growth and primitive agriculture. Only six per cent of agricultural assets in Punjab, including land, are owned by the Dalits (32%) and the participation of women (45%), both in asset ownership and labour force, is about 20 per cent.

Rising food subsidies are not sustainable. The food subsidy increased from Rs 6,066 crore in 1997 to Rs 1,35,172.96 crore in 2017 and the fertiliser subsidy was Rs 79,996 crore in the Union Budget for 2019-20. The water and energy subsidies vary from state to state. In Punjab alone, they are over Rs 6,000 crore per annum.

Poverty continues to be a key aspect of food security and it refuses to relent. There are about 360 million poor in the country. However, as per the Multidimensional Poverty Index (MPI), the number of poor is 645 million, about 55 per cent of the total population. Poverty levels are the highest among India's tribal population (81.4 per cent), followed by Dalits (65.8 per cent) and Other Backward Classes (58.3 per cent). The poverty level among the rest of the population is 33.3 per cent.

Reduced crop and biodiversity in the post-Green Revolution era is threatening the country's nutrition security. A substantial segment of our population is susceptible to many serious ailments with increased carbohydrates and reduced proteins in their daily diet. Of the 360 million poor in the country, over 300 million are malnourished. The problem is further accentuated with the adverse ecological impact of the present agricultural operations. Increased greenhouse gas emissions and depletion of natural resources — soil and water — are clearly discernible and these cannot be ignored any more.

The farm prosperity achieved through the green revolution is being negated by debt stress and impaired financial remuneration. As per the All-India Rural Debt and Investment Survey, 1961-62, the average debt per cultivator in Punjab and India was Rs 1,288 and Rs 719. As per the 70th round of the National Sample Survey Office, the average debt per cultivator in 2012 was Rs 21,6524 for Punjab and Rs 1,53,640 for India.

The positive outcome of the policies so far cannot be undermined. However, the negative effects are more pronounced now, with miseries of the farmers rising. The policies, processes, and structures thus need to be reformulated and updated to mitigate the negative impact and improve the quality of food security to make it more sustainable before the Ann Chakra becomes vicious and violable.

In this endeavour, the food policy narrative should first be changed from aggregate production to more diversified high-value quality crops through climate-resilient methodologies and practices for better remunerative prices and farm incomes. The policy should aim at market and trade reforms, agricultural practices that are cost-effective, use less chemical and pesticide, and are more inclusive in terms of women and youth farmers, small farmers and rainfed areas. Intense interaction between food policy and other non-agricultural macro policies impacting factors like the economy, urbanisation, investments and climate change is a sine qua non to execute and achieve the new ways of agriculture.

Such transformation in agriculture can be targeted with renewed measures like repurposing of subsidies from inputs to livelihood improvement, direct income support and carbon credits; structural reforms in institutions of governance and those impacting agricultural market; diversification of agriculture from being cereal based to non-cereals and high-value crops besides development of allied and subsidiary occupations; value addition and development of a supply chain comprising farming, wholesaling, warehousing, logistics, processing and retailing (farmer producer organisations, cooperatives); improved regulation and targeting of food distribution for the vulnerable populations; deregulation and promotion of private trading and marketing in agriculture and mitigation of the impact of accelerated climate change by enhancing capital investment in water conservation and intelligent irrigation systems, and research and development. Naturalisation of agriculture surely deserves greater attention.

The Food and Agriculture Organisation has emphasised the need to enhance the technical capacity of farmers to enable them to adapt to climate smart conservation agriculture. Risk mitigation of farmers and investors in food processing and development supply chain should also be catered through innovative farm-based crop insurance; price deficiency support; and investment protection even through the Multilateral Investment Guarantee Agency of the World Bank.

## **Contraception**

### **New birth control pill provides contraception for a month (Medical News Today: 20191216)**

<https://www.medicalnewstoday.com/articles/327303.php#1>

Taking a pill once a month is more convenient than taking one once a day. New research introduces a monthly pill and tests it in pigs.

New research introduces a monthly birth control pill.

Researchers estimate that, with typical use, 9% of women in the United States who take the birth control pill become pregnant each year.

A person needs to take an oral contraceptive every day, and preferably at the same time of day, for the drug to be effective.

This consistency can be difficult to maintain, and it may make this form of birth control less attractive.

Now, a study appearing in Science Translational Medicine presents a new alternative: a birth control pill that a person only needs to take once a month.

The new, monthly pill releases the common contraceptive drug levonorgestrel gradually over the course of 4 weeks, explain the researchers.

Why the research is important

An unintended pregnancy can be a life changing experience for anyone.

In the developing world, as elsewhere, it can prevent a woman from supporting herself and her family and from pursuing educational opportunities.

Meanwhile, the World Health Organization (WHO) report, 214 million Trusted Source women of reproductive age who wish to prevent pregnancy are not using modern methods of contraception.

Some believe that part of the problem is the inconvenience of daily oral contraceptives. The authors of the new study hope that a monthly pill will prove more appealing.

Co-lead author Ameya Kirtane, Ph.D., of The Koch Institute for Integrative Cancer Research at the Massachusetts Institute of Technology (MIT), in Cambridge, says:

"Coming up with a monthly version of a contraceptive drug could have a tremendous impact on global health. The impact that oral contraceptives can have on human health and gender equality cannot be overstated."

Expect in-depth, science-backed toplines of our best stories every day. Tap in and keep your curiosity satisfied.

Also, contraceptives may not be the only type of medication that the new system can deliver.

Co-senior author Prof. Robert Langer, also of MIT, adds, "We are hopeful that this work — the first example ever of a month-long pill or capsule, to our knowledge — will someday lead to potentially new modalities and options for women's health as well as other indications."

The other senior author of the study is Giovanni Traverso, Ph.D., a gastroenterologist at Brigham and Women's Hospital, in Boston, MA. The other lead author is Tiffany Hua, previously a technical associate at MIT.

### How the star-shaped pill works

The monthly contraceptive pill has six rigid arms, each of which contains multiple doses of levonorgestrel.

The arms are built of carefully selected polymer materials that take about 4 weeks to break down in the presence of stomach acid.

The polymer arms gradually release the contraceptive into the stomach and bloodstream throughout the month.

At the center of the pill is a rubbery hub that allows the gelatin-coated, star-shaped structure to be folded and slipped into a swallowable capsule.

When stomach acid digests the gelatin, the star unfolds, expanding to a size that allows it to remain in the stomach, without passing into the digestive system until it has delivered its medicine.

The researchers are continuing to experiment with conditions that would cause the arms to break off, including changes in pH or temperature and exposure to certain chemicals.

### Testing the new pill in pigs

Tests of this pill have yielded encouraging results — in pigs.

The authors report that the contraceptive released at a steady rate over about 28 days, and that the amount of the drug detectable in the pigs' bloodstreams was roughly the same as that in a human taking daily levonorgestrel pills.

While the level of the drug from a daily tablet fade over 24 hours, the level produced by the new pill remained steady for almost a month.

## Diet/ Nutrition

### New food labeling system may reduce calorie intake (Medical News Today: 20191216)

<https://www.medicalnewstoday.com/articles/327264.php#1>

How far would you need to run to burn off the calories in a candy bar? A recent paper asks whether providing answers to this type of question on food packaging might reduce calorie intake.

Could a subtle change in food labeling reduce calorie intake?

Including nutritional information on food packaging can help consumers decide whether they want to buy a product.

However, according to the authors of a new review and meta-analysis, "Evidence shows that current front-of-pack nutrition information on food [and] drinks is having a limited effect on changing purchasing or eating behaviors."

Although the numbers of calories are clearly marked on food labels, for many people, these numbers are quite meaningless.

Because obesity is so prevalent, particularly in the Western world, many researchers are looking for ways to address it.

Making changes to food labels is a relatively simple, cost effective intervention; if experts can find a way to use food labels to influence food choices, it could have a substantial impact on the weight of the population of the United States, for example.

The Journal of Epidemiology & Community Health recently published the findings of the new analysis.

A new way of labeling food

One possible way to approach food labels is to explain, in real terms, what the calorie content of a product means. This approach is called physical activity calorie equivalent (PACE).

With this system, a label displays how far — or for how long — a person would need to run or walk to use up the calories in the food item.

As the authors explain, this level of detail would help consumers decide whether the added energy intake was "worth it." Aside from the information it provides, the authors believe that PACE would also serve as a regular reminder of the importance of physical activity in daily life. They write:

"When a consumer sees a visual symbol that denotes it will take 4 hours to walk off a pizza and only 15 minutes to burn off a salad, this, in theory, should create an awareness of the 'energy cost' of food [and] drink."

Amanda J. Daley et al.

Some studies have already looked at the impact of PACE labeling, but to date, studies have been relatively small, and findings have been contradictory.

For instance, one reviewTrusted Source of the evidence, published in 2018, concluded that this method of labeling does not make a significant difference to the number of calories in foods that people order.

The authors of the latest paper note, however, that the earlier review included just seven studies. Since its publication, researchers have done more work on this topic, and the new review provides an up-to-date account of the evidence for and against PACE labeling.

### A fresh look at calorie counting

For the new analysis, the researchers identified 15 papers that met their criteria for inclusion. All the studies were randomized, and they compared PACE food labeling with either a different type of labeling or no labeling. In total, the studies included data from 4,606 participants.

Pooling the data from 14 of the studies, the scientists identified a significant effect. They found that, when the researchers used PACE labels on food and drink items and on menus, participants selected, on average, 65 fewer calories per meal. The authors conclude:

"PACE labeling shows some promise in reducing the number of [calories] selected from menus, as well as the number of calories and the amount of food (grams) consumed by the public, relative to comparator food labeling [or] no labeling."

The scientists estimate that, if the labeling was widely adopted, it might reduce intake by around 195 calories each day. Even small reductions in calorie intake, among a whole population, can make a significant difference.

If the U.S. population, for example, reduced individual intake by just 100 calories each day, "Obesity could be prevented," the authors report.

### More research is needed

One significant issue that plagues this area of research lies in the experimental setting. In the current analysis, most of the studies were performed under laboratory conditions and investigated hypothetical meal selections.

The authors call for more studies based in restaurant or supermarket settings, for instance. It is quite possible that people decide what to eat in different ways, depending on their situation.

The authors write: "Future research should investigate the effects of PACE labeling in more real-life or naturalistic settings."

Amanda J. Daley et al.

Different settings would also introduce other factors that could play a role, including price and marketing. Similarly, people might choose differently when selecting a snack, compared with a full meal — there are still many questions to answer.

In conclusion, scientists need to carry out more research to identify the true benefits of PACE, if any. Because obesity is so widespread and PACE is relatively simple to implement, the theory is well worth pursuing. Even a small dip in calorie intake could benefit society.

## Depression

**Study finds 'strong link' between vaping and depression (Medical News Today: 20191216)**

<https://www.medicalnewstoday.com/articles/327305.php#5>

A recent study concludes that people who smoke electronic cigarettes are twice as likely to report clinical depression as those who have never vaped. The correlation was particularly strong among younger people.

A new study identifies a link between vaping and depression.

Known as vaping, battery-powered e-cigarettes use heat to deliver an aerosol cocktail of nicotine and flavors to the user. An e-cigarette produces a small cloud of vapor, whereas a cigarette releases smoke.

Many people believe that the vapor contains water. In fact, it contains varying amounts of toxic chemicals that have links to heart and respiratory diseases, as well as cancer.

The use of e-cigarettes in the United States has snowballed since their introduction a decade ago.

According to the Annals of Internal Medicine Trusted Source, in 2016, an estimated 10.8 million people in the U.S. used e-cigarettes. Of this number, 2.8 million (9.2%) were 18–24 years old.

Today, some experts consider vaping to be an epidemic among teenagers — the number of high school students who turned to vaping doubled in 2018.

Now, a study published in JAMA Network OpenTrusted Source finds a significant link between vaping and depression.

Although links between traditional cigarettes and depression primarily prompted the study, the results of an earlier study that indicated that 9.1% of those with depression were e-cigarette users, compared with 4.5% among the general population was also a factor.

First author of the study, Dr. Olufunmilayo Obisesan of John Hopkins University in Baltimore, MD, told Medical News Today that "Combustible cigarette smoking has been linked with an increased risk of developing major depressive disorder and has also been shown to be highly predictive of future suicidal behavior among individuals with a history of depression."

"In light of the similarities in some of the constituents of cigarettes and e-cigarettes, we decided to explore the existence of a similar association between e-cigarettes and depression."

#### Concerns for youngsters who vape

The study looked at the responses of nearly 900,000 randomly sampled adults aged 18 and older in a cross-sectional study of 2016–2017 data gathered by the Behavioral Risk Factor Surveillance System (BRFSS)Trusted Source. The BRFSS is the largest national telephone survey carried out in the U.S.

"The researchers found that 34% of current e-cigarette users reported having experienced clinical depression, compared with 15% of those who had never vaped. Also, 27% of former users were more likely to report clinical depression, compared with 15% in those who had never used e-cigarettes.

College students aged 18–25 showed the most significant link between e-cigarette use and depression.

The scientists focused on this group in particular because, typically, young people are more likely to experiment with new products, such as e-cigarettes. Tobacco companies often target this demographic in marketing campaigns.

"This highlights the potential susceptibility of e-cigarette users in this group to depression at a particularly vulnerable time in their lives, but also warrants pause in what this kind of nicotine addiction may be doing to our children, high schoolers, and younger, who we know are using e-cigarettes in epidemic proportions," says Dr. Mariell Jessup of the American Heart Association's (AHA) Tobacco Center of Regulatory Science.

The AHA has launched a major initiative to tackle youth e-cigarette use and nicotine addiction.

"The main implication of our findings for the youth is that they need to know that there are potential mental health effects associated with the use of e-cigarettes."

Dr. Olufunmilayo Obisesan

Depression risk rises with increased use

The study also found that the link between e-cigarette use and depression was stronger in people who vaped the most often.

"Clinically, our study provides information that physicians could consider when counseling patients seeking information about e-cigarettes, especially those with depression," Dr. Obisesan told MNT.

He added that the study emphasized the need for doctors and health professionals to routinely collect information on e-cigarette from individuals during clinic visits, especially among those with mental health conditions. In conclusion, Dr. Obisesan told MNT:

"We hope that our study will provide a baseline for future longitudinal studies that can confirm our findings and establish the direction of association between e-cigarette use and depression, which we currently believe to be bi-directional."

## **Alzheimer's disease**

**How two experimental Alzheimer's drugs reverse aging (Medical News Today: 20191216)**

<https://www.medicalnewstoday.com/articles/327304.php#5>

New research in mice reveals the mechanisms through which two experimental drugs that may treat Alzheimer's disease have broader, anti-aging properties and can reverse age-related cognitive decline.

New research explains how two experimental dementia drugs may reverse normal aging.

Family history, genes, and some lifestyle choices all influence a person's risk of Alzheimer's disease, but age is the greatest risk factor that researchers are aware of.

Most people who receive a diagnosis of Alzheimer's are at least 65 years old. In fact, after that age, the risk of developing the condition doubles every 5 years.

However, scientists do not yet fully understand, on a molecular level, how aging is involved in driving Alzheimer's.

Previous research has shown that faulty glucose metabolism in the brain occurs before the onset of Alzheimer's symptoms. Cerebral glucose metabolism declines with age anyway, but in Alzheimer's, the decline is much more severe.

Furthermore, other studies have shown that dysfunctional mitochondria in the brain's cells are a hallmark of both normal aging and Alzheimer's.

Armed with this knowledge, researchers from the Salk Institute for Biological Studies and the Scripps Research Institute — both in La Jolla, CA — set out to test several drugs under conditions that "mimic numerous aspects of old age-associated neurodegeneration and brain pathology, including energy failure and mitochondrial dysfunction."

Antonio Currais, a Salk staff scientist, is the first and corresponding author of the new paper, which now appears in the journal eLife.

#### Choosing which compounds to test

Currais and team tested two experimental drugs — called CMS121 and J147 — that studies had already shown to be "very neuroprotective" in mouse models of Alzheimer's, possibly even capable of reversing cognitive impairment.

Previous research first-authored by Currais suggested that the compounds boost memory and "prevent some aspects of aging" in mice engineered to age rapidly, especially when administered early in life.

Both compounds are derivatives of plants that have medicinal properties. CMS121 derives from the flavonol fisetin, and J147 Trusted Sourceis a derivative of a molecule present in the curry spice curcumin.

So, although previous tests had shown these two compounds to have neuroprotective benefits, the mechanisms behind these effects were less clear.

"[W]e hypothesized that [the compounds] may mitigate some aspects of aging brain metabolism and pathology via a common pathway," write Currais and colleagues in their new paper.

#### The mechanisms that reverse aging

To test their hypothesis, the researchers fed rapidly aging mice the two compounds and used a multi-omics approach to identify the mechanisms at play.

They fed the rodents the two compounds when they were 9 months old, which is roughly the human equivalent of late middle-age.

Around 4 months into the treatment, the scientists tested the rodents' memory and behavior and examined the genetic and molecular changes in their brains.

The experiments revealed that the mice that received the treatment had a much better memory than those that did not. Importantly, in the treated mice, the genes associated with functional, energy-creating mitochondria continued to be expressed throughout the aging process as a result of the two drugs.

On a more detailed level, the experiments showed that the way in which these drugs worked was by raising levels of a chemical called acetyl-coenzyme A.

This improved mitochondrial function, cell metabolism, and energy production, thereby protecting brain cells from the molecular changes that characterize aging.

Co-corresponding study author Pamela Maher, a senior staff scientist at Salk, comments on the findings, saying: "There [were] already some data from human studies that the function of mitochondria is negatively impacted in aging and that it's worse in the context of Alzheimer's [...]. This helps solidify that link."

"The bottom line was that these two compounds prevent molecular changes that are associated with aging."

Pamela Maher

Currais also shares some of the team's plans for future research, saying, "We are now using a variety of animal models to investigate how this neuroprotective pathway regulates specific molecular aspects of mitochondrial biology, and their effects on aging and Alzheimer's."

## Stroke

### **Stroke: Excessive sleep may raise risk by 85% (Medical News Today: 20191216)**

<https://www.medicalnewstoday.com/articles/327280.php#5>

Stroke is one of the leading causes of death and disability worldwide and in the United States, specifically. New research finds that excessive sleep considerably raises the risk of this cardiovascular problem.

New research suggests that people who take long naps in the day may be at a higher risk of stroke.

Globally, 15 million Trusted Source people experience a stroke each year. Almost 6 million of these people die as a result, and 5 million go on to live with a disability.

In the U.S., over 795,000Trusted Source people have a stroke each year.

The list of traditional risk factors Trusted Source for stroke is long, ranging from elements of lifestyle, including smoking, to preexisting conditions, such as diabetes.

More recently, researchers have started exploring sleep duration as another potential risk factor. Some studies Trusted Source have found that either too much or too little sleep can increase the risk of cardiovascular events, including stroke.

According to these findings, regular sleep deprivation and sleep for more than 7 hours per night are each associated with a higher risk of stroke.

Now, a study appearing in the journal Neurology finds an association between daytime naps, excessive sleep, and stroke risk.

Dr. Xiaomin Zhang, from Huazhong University of Science and Technology, in Wuhan, China, is the corresponding author of the paper that details this study.

85% higher risk in long sleepers, nappers

Dr. Zhang and the team collected information from 31,750 people in China. None of the participants — who were 62 years old, on average — had a history of stroke or any other serious health condition at the start of the study.

The participants answered questions about their sleeping patterns and napping habits, and the researchers clinically followed the group for an average of 6 years.

The team found that 8% of the participants were in the habit of taking naps that lasted longer than 90 minutes, and 24% reported sleeping for at least 9 hours each night.

Over the study period, there were 1,557 strokes among the participants. Those who slept for 9 or more hours per night were 23% more likely to experience a stroke than those who regularly slept only 7–8 hours each night.

People who got less than 7 hours of shuteye or 8–9 hours had no higher risk of stroke than those who slept 7–8 hours.

Importantly, people who both slept for longer than 9 hours and napped for more than 90 minutes per day had an 85% higher risk of stroke than those who slept and napped moderately.

Finally, sleep quality seemed to play a role — people who reported poor sleep quality were 29% more likely to have a stroke than those whose sleep quality was reportedly good.

These results continued to be significant after adjusting for potential confounders, such as hypertension, diabetes, and smoking.

"These results highlight the importance of moderate napping and sleeping duration and maintaining good sleep quality, especially in middle-age and older adults."

Dr. Xiaomin Zhang

#### Study limitations and potential mechanisms

The researchers acknowledge some limitations to their work, as well as the fact that more research is necessary.

First, because the study was observational, it cannot prove causality. Second, the research did not account for sleep apnea or other sleep disorders that may have influenced the results.

Third, self-reported data is not as reliable as data recorded by researchers who observe participants' sleep.

Finally, the results may only apply to older, healthy Chinese adults and not to other populations.

"More research is needed to understand how taking long naps and sleeping longer hours at night may be tied to an increased risk of stroke, but previous studies have shown that long nappers and sleepers have unfavorable changes in their cholesterol levels and increased waist circumferences, both of which are risk factors for stroke," explains Dr. Zhang.

"In addition, long napping and sleeping may suggest an overall inactive lifestyle, which is also related to increased risk of stroke."

## Elderly Care

### Researchers develop risk adjustment model for elderly (New Kerala: 20191216)

<https://www.newkerala.com/news/read/265503/researchers-develop-risk-adjustment-model-for-elderly.html>

Washington D.C. , Dec 15 : Researchers have developed a so-called risk adjustment model to predict how often elderly people seek treatment in a healthcare centre or hospital.

The results suggest that the new model is more accurate than traditional regression models commonly used for this task, and can reliably predict how the situation changes over the years. The research results were published in the scientific publication series of Proceedings of Machine Learning Research.

Risk-adjustment models make use of data from previous years and are used to allocate healthcare funds in a fair and effective way. These models are already used in countries like Germany, the Netherlands, and the US. However, this is the first proof-of-concept that deep neural networks have the potential to significantly improve the accuracy of such models.

According to Pekka Marttinen, Assistant Professor at Aalto University and FCAI, "Without a risk adjustment model, healthcare providers whose patients are ill more often than average people would be treated unfairly."

Elderly people are a good example of such a patient group. The goal of the model is to take these differences between patient groups into account when making funding decisions.

According to Yogesh Kumar, the main author of the research article and a doctoral candidate at Aalto University and FCAI, the results show that deep learning may help design more accurate and reliable risk adjustment models. 'Having an accurate model has the potential to save several millions of dollars,' Kumar points out.

The results show that training a deep model does not necessarily require an enormous dataset in order to produce reliable results. Instead, the new model worked better than simpler, count-based models even when it made use of only one-tenth of all available data.

In other words, it provides accurate predictions even with a relatively small dataset, which is a remarkable finding, as acquiring large amounts of medical data is always difficult.

"Our goal is not to put the model developed in this research into practice as such but to integrate features of deep learning models to existing models, combining the best sides of both. In the future, the goal is to make use of these models to support decision-making and allocate funds in a more reasonable way," explains Marttinen.

## Pregnancy

### Water births are equally safe as land births for mom and baby: Study (New Kerala: 20191216)

<https://www.newkerala.com/news/read/265454/water-births-are-equally-safe-as-land-births-for-mom-and-baby-study.html>

New Delhi, Dec 14: A pain-less delivery would be a dream for many mothers, and a complete solution to that is yet to be found. But a new study found that water births are no more risky than land births.

In water birth, the woman gives birth in a water-filled tub rather than a bed. Few US hospitals or birth centres offer tub births because of perceived risk to the newborn, mainly suggested by case studies of neonatal infections or cord tearing.

University of Michigan researchers analyzed 397 water births and 2025 land births from two midwifery practices. There were no differences in outcomes between water birth and land birth for neonatal intensive care admissions, and postpartum haemorrhage rates were similar for both groups. The results of the study were published in the journal Birth.

"The long and short of it is that if you use proper techniques...the outcomes are very good," said Lisa Kane Low, a professor in the U-M School of Nursing, and senior author on the paper. "They mirror what we see in international studies of water birth."

Ruth Zielinski, clinical associate professor of nursing and study co-author, said more facilities should offer water birth and have guidelines for implementing it.

Professional organizations tend to agree that women in labour should have access to water for comfort, but not all support birth in the water. This means hospitals must make women leave the tub before birth.

During a water birth, babies take their first breath when removed from the tub. Until then, their lungs are filled with water, which is displaced when they hit the air and breathe. The connected umbilical cord provides oxygen.

"It's important not to re-submerge babies", Zielinski said. At U-M, they are birthed in the water, brought out almost immediately, and they're careful to not re-submerge them. Mom and baby exit the tub with help and warm blankets, typically prior to delivering the placenta so that blood loss can be more accurately calculated.

Zielinski said more studies are needed to understand the satisfaction level of women who have water births.

## Cancer

### **Study suggests taking common antibiotic before radiation may help body fight cancer (New Kerala: 20191216)**

<https://www.newkerala.com/news/read/265222/study-suggests-taking-common-antibiotic-before-radiation-may-help-body-fight-cancer.html>

Washington D.C, Dec 14: Whenever you suffer fever or infection, the first thing you are referred to is taking antibiotics as these drugs destroy or slow down the growth of bacteria.

Antibiotics also lead to positive effect on human health. A new study has come up with the new benefit of destroying cancer and tumour cells in the body.

The study on mice has found that giving a dose of common antibiotic not only helped immune cells kill tumours that were directly treated with radiation but also kill cancer cells that were further away in the body, paving the way for researchers to test the approach in a human clinical trial.

The study was published in the Journal of Clinical Investigation.

More than half of all patients with solid tumours undergo radiation therapy at some point during their treatment. In recent years, multiple studies have shown that giving patients higher doses of radiation over the course of fewer treatments, called hypo-fractionated radiotherapy, can induce a stronger immune response in patients.

In addition, hypo-fractionated doses have the ability to impact other tumours cells in the body that weren't directly treated with radiation. This is known as the abscopal effect.

The study's senior author Andrea Facciabene, PhD, says "Our study shows that vancomycin seems to boost the effectiveness of the hypo-fractionated radiation itself on the targeted tumour site while also aiding the abscopal effect, helping the immune system fight tumours away from the treatment site."

In this study, researchers have found vancomycin specifically improved the function of dendritic cells, which are the messenger cells that T-cells rely on to know what to attack.

While researchers used melanoma, lung, and cervical cancer models for this work, they note the approach could have implications for a wide variety of cancer types.

This study also builds off the team's previous research, which showed a similar effect in T-cell therapies, meaning it adds to a growing body of evidence.

"However, what's clear is that antibiotics play a role and can potentially impact treatments and outcomes for cancer patients," adds Facciabene. The researchers are planning a phase one study to translate this approach into the clinic.