EAN 2023

Press Pack

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WELCOME

Dear press member,

The European Academy of Neurology (EAN) welcomes the interest of press in neurological issues and is happy to provide assistance to journalists attending the congress or using the EAN website as a resource in their coverage.

EAN Press Pack

Within this EAN Press Pack, you will find copies of all official EAN press releases (please note their embargoes), details on how to access content, and information on the EAN 2023 Press Briefing, which will take place on Thursday, 29 June at 15:00 CEST via a live Zoom link.

If you have any queries at all during the meeting, please email press@ean.org

We look forward to welcoming you to the congress, both in Budapest and online, and we hope you enjoy the meeting.

With very best wishes,

The EAN Press Team

EAN 2023 PRESS BRIEFING

The official EAN 2023 Press Briefing will take place virtually on Thursday 29 June at 15:00 CEST.

All registered are invited to attend to obtain exclusive first-hand information about some of the most exciting abstracts at this year's congress from the authors themselves. Members of the press will be able to ask direct questions to the abstract authors following each presentation.

Press Briefing Schedule

The press briefing comprises four 10-minute presentations. We will also dedicate 5 minutes after each presentation for questions to the presenters.

EAN Congress 2023 Press Briefing Agenda	
Topic	**Presenter**
The Correlates of Subjective Brain Fog in 25796 UK Participants	Mohammad Mahmud
Predicting brain metabolism in elderly patients with and without cognitive impairment using deep learning	Elena Doering
Weather impact on migraine: an Emergency Department retrospective study	Costanza Sottani
Understanding brain health around the world	Xaviera Steele

Accessing the Briefing

To join the EAN 2023 press briefing, **click here** at 15:00 CEST on Thursday 29 June.

Update

Please find the recorded briefing here:
Passcode: mE3&wxwj

Briefing Instructions for Journalists

❖ We can organise 1-to-1 interviews with the presenters following the briefing

❖ All presentations are under embargo. We ask that this is respected and kindly note that different presentations have different embargoes. This will be stated at the start of the press briefing

Slides will be available to request following the briefing (at the discretion of each presenter). Please email press@ean.org to request these slides.

ONSITE PRESS ACCESS IN BUDAPEST

Upon arrival at the HUNGEXPO, please visit the registration desk and be prepared to show your press ID.

Press attendees who have not registered in advance will be directed to the Press Centre for accreditation.

If you have registered online in advance, you will be directed to the Press Centre to collect your pre-printed badge.

For information about registering ahead of the congress, please click here.

To reach the Press Centre from the Registration Area, take the escalator up to the mezzanine of Hall C. Please note that any items left in the Press Centre are at personal risk to the owner.

At the Press Centre — which will be manned for the majority of the congress — you can ask questions and schedule interviews. If there is no one at the Press Centre at a given time, please email press@ean.org and we will do our best to get back to you as soon as possible.

Onsite access to all scientific and networking events will only be possible with your personal badge. All participants are requested to wear their name badge throughout the congress.

Congress Opening Hours

- Friday, 30 June   16.00 – 19.00 (early badge pick-up only)
- Saturday, 1 July 07:30 – 20:00
- Sunday, 2 July   07:30 – 19:00
- Monday, 3 July 07:30 – 19:00
- Tuesday, 4 July 07.30 – 16.30

Press Office Opening Hours

- Saturday, 1 July 08:00 - 19:00
- Sunday, 2 July   08:00 - 19:00
- Monday, 3 July 08:00 - 19:00
- Tuesday, 4 July 08:00 - 17:00

ACCESSING RECORDINGS AND THE INTERACTIVE PROGRAMME

Press attendees who have registered for the congress will be able to access meeting content, free of charge, from Saturday 1 July. This includes the full Scientific Programme.

To access this content from the beginning of the congress, please ensure that you have a myEAN account and that your registration has been finalised. Otherwise, you will not be unable to access the sessions.

If you have not already done this, you can create a myEAN account here. If you have already set up an account, or forgotten your password, please login here and follow the instructions.

The Virtual Congress Platform, which will contain session recordings, can be accessed here.

Please email press@ean.org if you have any problems with accessing content and recordings.

Please note that if you registered after 28 June 2023 there may be delays in press registration verification, and therefore in accessing the programme.

SHARING YOUR COVERAGE

We would greatly appreciate being informed when you publish your coverage of EAN 2023 online or in print.

Please let us know at press@ean.org or tag the EAN when sharing your coverage on social media.

Facebook: European Academy of Neurology (eaneurology)

LinkedIn: European Academy of Neurology

Twitter: @EANeurology

Instagram: @EANeurology

FAQs

If media cannot view the presentations live, will they have an opportunity to access the presentations afterwards?

The entire congress, including all sessions, ePoster, ePresentations, industry sessions and the virtual exhibition, is available for all congress participants (virtual and onsite) from 1 July 2023, throughout the congress until 18 July 2023 via the virtual congress platform. Live sessions will, in some cases, take up to 48 hours to become available on-demand in the Virtual Congress Platform.

Are you able to share the media attendee list?

No, the EAN does not share media lists.

Please can you confirm the embargo policy?

Information contained in abstracts may not be released until they have been presented (i.e. are available to view in the Virtual Congress Platform). However, there are some press abstracts (see press release section) that have different embargoes.

Will there be an abstract book?

Yes, click here to download the abstract book. Please treat this confidentially, respect embargoes and do not share with others.

*All content in the Book of Abstracts is under embargo until **Friday, 30 June 2023, 18:30 CEST***

Press Releases

PRESS RELEASE

Brain disorders cause as much health loss as cardiovascular disease, study shows

- Brain disorders are a significant driver of illness and death globally, with 406 million years of full health lost to the conditions.

- The burden on society is massive, with $1.22 trillion lost in income for people living with brain disorders and $1.14 trillion spent on direct healthcare costs globally.

- The trend will continue in the near future but could be mitigated by the development of new improved treatments.

(Budapest, Sunday, 2 July 2023) — More than 15% of all health loss is associated with brain conditions, according to the latest results of an ongoing study that will be presented on Sunday, 2 July at EAN 2023, the 9th Annual Congress of the European Academy of Neurology (EAN) in Budapest, Hungary.

In 2021 alone, brain conditions led to as much health loss as cardiovascular disease, with 406 million disability-adjusted life years (DALYs) of full health lost vs. 402 million DALYs. The loss was significantly higher than cancer, which was responsible for 260 million DALYs, new data from the Global Burden of Disease (GBD) study show.

Since 1990, Alzheimer's disease cases and the number of strokes have increased by 178% and 98%, respectively.

Growth of aging populations

While many factors can cause brain disorders, one significant driver is the aging population, according to Shayla Smith MPH, an epidemiologist and Client Services Engagement Manager at the Institute for Health Metrics and Evaluation (IHME) at the University of Washington. IHME has coordinated the GBD study since 2007.

"The burden of brain conditions will increase as populations continue to grow and age. By 2050, more than 50 million people will be aged 65 to 79," she said. "The COVID-19 pandemic has also influenced the prevalence of mental disorders globally, as people were forced to isolate and social networks broke down. We are looking at other drivers of brain disorders such as education level, obesity, and smoking."

The burden caused by brain disease is challenging healthcare systems, employers, and families to respond, according to the IHME, which is leveraging over 200,000 data sources to produce population-based time trends for health outcomes in every country in the Global Burden of Disease study.

In a preliminary analysis, the institute calculated that, to date, globally $1.22 trillion is lost in income for people living with brain disorders and $1.14 trillion is spent on direct healthcare costs related to brain disorders.

"Data such as that derived from our study, and associated efforts, are critical to informing evidence-based planning and resource allocation," she said. "We expect the burden to increase in the coming years, creating new challenges for health systems, employers, patients, and families."

New treatments could buck the trend

To date, the healthcare workforce lacks sufficient staff to care for the aging population globally. In some places, shortages of specialists is also an issue, with only a few neurologists available in certain low- and middle-income countries.

On the bright side, new therapies could help alleviate some of the burden caused by brain disease. "The impact of brain conditions such as stroke has decreased since the 1990s due to improved treatments available," Smith said. "Our goal is to see an improved prevention and treatment landscape for other brain conditions and reverse the growing health loss that we are currently forecasting."

While a global consensus on what constitutes brain health is still missing, the concept is increasingly gaining recognition around the world and among the population, who can do many things to remain healthy.

"There's still research to be done on what is the most effective way to maintain brain health, but some literature suggests a healthy brain can be achieved through a healthy lifestyle of managing conditions such as high blood pressure and diabetes, limiting alcohol consumption and smoking, prioritising sleep, eating healthy, and staying physically and mentally active," she concluded.

ENDS

Notes to Editors:

This press release is about the ePoster/ePresentation 'Understanding brain health around the world' presented at EAN 2023 (link)

A reference to **EAN 2023** or **the 9th Annual Congress of the European Academy of Neurology must be included** when communicating the information within this press release.

Press Enquiries:

For further information or to speak to an expert, please contact Simon Lee at press@ean.org

About the Experts:
Shayla Smith MPH is an epidemiologist and Client Services Engagement Manager at the Institute for Health Metrics and Evaluation (IHME) at the University of Washington, USA.

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PRESS RELEASE

Embargoed: 14:00 CEST, Monday, 3 July 2023

UK study lifts the veil around brain fog

- First large-scale digital study documents the correlates of subjective brain fog, a condition increasingly reported since the COVID-19 pandemic.

- Researchers from London, UK asked over 25,000 individuals to describe their symptoms, comorbidities and lifestyles using a smartphone application for remote data collection.

- The study shows the most overlap of brain fog is with COVID-19, migraines and concussions, shedding light on a condition that has an unmeasured detrimental effect on mental health, productivity and well-being.

(Budapest, Monday, 3 July 2023) Difficulty focusing or concentrating, and trouble following conversations accurately characterise brain fog, according to a digital study presented at EAN 2023, the 9th Annual Congress of the European Academy of Neurology (EAN) in Budapest, Hungary.

Brain fog, a condition that has gained increased attention since the pandemic, is also associated with objectively worse cognitive performance, and higher levels of anxiety, depression, and migraines, as reported by a team in the UK.

The researchers systematically studied the associations between 29 variables with that of the self-reported presence of brain fog via univariate and machine learning methods. Data was collected through Mindstep, a validated smartphone application for remote data collection, in 25,796 users between 15 September and 18 November, 2022.

"We studied variables such as clinical comorbidities, lifestyle factors, symptoms, functional deficits, and cognitive scores," explained senior author Dr Mohammad Mahmud, a neurologist affiliated to the Department of Brain Sciences at Imperial College London and Mindstep.

Of the 25,000+ app users, 7,280 (28.2%) reported experiencing brain fog. Those respondents were 35.7 years old on average, and a slight majority of them were women. Participants also reported lower sleep quality among their comorbidities. Extreme gradient boosting algorithms achieved a training accuracy of 84% with cross-validated accuracy of 74%, and could be used in the future, authors suggest.

"With further prospective data, extreme gradient boosted algorithms show promise in identifying individuals at risk of subjective brain fog," said first author Dr Ali Alim-Marvasti, Consultant Neurologist affiliated with UCL Queen Square Institute of Neurology and Mindstep.

Unveiling part of the mystery

The study is an attempt to systematically describe brain fog, a task that remains challenging to date.

"As neurologists and researchers, we find our patients use the term brain fog variably to explain their difficulties with certain tasks," the co-authors said.
What the majority of scientists accept so far is that the condition is intermittent and can affect a wide demographic of people, including the young. "This is in contrast to neurodegenerative dementia, which is far more common as we age," they said.

One of the best definitions from the literature, according to the authors, suggests that brain fog is the interaction of physiological, cognitive, and perceptual factors that cause a decreased ability to readily process information.

"This is congruent with our data. Our conclusion is that brain fog is best defined as a difficulty to focus and concentrate, and this may affect activities of daily living including completing paperwork, planning ahead, and mental arithmetic. These were the most commonly associated symptoms of brain fog."

Researchers found a close link between brain fog and migraine severity scores, history of concussions and long COVID-19. "It remains to be seen to what extent the mechanism behind these conditions resulting in brain fog may overlap with other conditions including that of neurodegenerative conditions, which are known to be accelerated by certain infections and inflammations."

As the term was popularised during the pandemic, it is not surprising that the strongest association in the dataset was indeed a history of long COVID-19, he added. Anxiety and depression were also associated with brain fog, but to a lesser extent. "It would be interesting to know if COVID-19 in particular has a propensity to result in symptoms of brain fog, or, as we suspect and other studies suggest, whether many infections can result in brain fog," Mahmud said.

"We have also clustered brain fog symptoms in an upcoming study in comparison with migraine and concussion. The next step would be to develop an accurate model that can monitor brain fog symptoms, then objectively determine the defining parameters, before finally being able to evaluate any interventions," Dr Alim-Marvasti concluded.

ENDS

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Press Enquiries:

For further information or to speak to an expert, please contact Simon Lee at press@ean.org

About the Experts:
Dr Mohammad Mahmud is from the Department of Brain Sciences at Imperial College London, UK and the CMO at Mindstep, UK.
Dr Ali Alim-Marvasti is from UCL Queen Square Institute of Neurology, UK and Mindstep, UK

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PRESS RELEASE

Embargoed: 12:40 CEST, Tuesday, 4 July 2023

AI can predict future brain changes in elderly patients with and without cognitive impairment

- Preliminary study shows that a deep learning-based algorithm can forecast brain development from images obtained in fluorodeoxyglucose (FDG)-positron emission tomography (PET) examinations.

- The newly developed tool can predict the third scan taken after two years of consecutive imaging, and up to six years after initial assessment using data modelling, in patients aged 55 or older.

- The trial could help improve early diagnosis of Alzheimer's disease (AD), by looking at predicted longitudinal changes of the whole brain for the first time in brain imaging research.

(Budapest, Tuesday, 4 July 2023) Deep learning can accurately predict brain development up to six years after initial assessment of Alzheimer's disease on FDG-PET scans, according to a preliminary study presented at EAN 2023, the 9th Annual Congress of the European Academy of Neurology (EAN) in Budapest, Hungary.

Researchers from Germany and Iceland have successfully used a convolutional neural network (CNN) to train an algorithm on the first two FDG-PET scans to predict the third scan acquired in elderly (>+ 55 years) participants from the Alzheimer's Disease Neuroimaging Initiative, who received FDG-PET imaging in three consecutive years.

"The algorithm accurately predicted the overall future FDG-PET signal of the entire brain, i.e., metabolic reduction, which reflects neuronal activity," said Elena Doering, a PhD student at the German Center for Neurodegenerative Diseases (DZNE) in Göttingen. "The algorithm was able to anticipate future signal decline - i.e., metabolic reduction, reflecting loss of neuronal activity."

The algorithm could even be extended to predict FDG-PET up to six years after the initial scan, by sequentially using model output as input for subsequent-year predictions.

"With our algorithm, we are currently able to accurately predict brain development up to six years after initial assessment," she said. "Predictions for a particular year were achieved by using scans from the two previous predicted years."

Furthermore, the tool appeared to detect ongoing neurodegenerative processes already at baseline, as it predicted a significant signal decline in year 2 in Alzheimer's disease (AD) patients in AD-prone regions, such as the bilateral inferior temporal and parietal regions, and the posterior cingulate cortex.

A one-of-a-kind study

The trial is exploring unknown territory, as prediction of longitudinal metabolic changes in the brain as measured by FDG-PET has barely been tested yet.

"Previous studies demonstrated that AI could be used to predict clinical symptomatic changes of neuropsychiatric disorders on the basis of baseline neuroimaging information," the authors wrote. "However, studies that successfully predict actual longitudinal changes of the whole brain are very

sparse, compared with the number of studies that observe specific longitudinal changes, such as hippocampal volume."

Having a tool that predicts longitudinal FDG-PET scans from scans collected at baseline and one year later, could help improve patient care.

"Such an algorithm would allow physicians to read an anticipated 'future' FDG-PET brain scan as they would in their normal routine, but years in advance," Doering said.

Previous studies such as IDEAS[1] have shown that imaging-informed diagnoses can lead to changes in clinical management compared to diagnoses provided solely based on clinical characteristics.

As databases continue to increase and to capture longer time frames, the prediction may become available for even more extended time frames than six years, Doering believes.

"We hope that our work can provide clinical benefit in two ways: improving early diagnosis or providing reliable prognosis; and allowing individual prediction of brain pathological changes over time," she said.

The study may also help improve understanding on the natural course of AD, whose etiology remains elusive to date.

"One of the main risk factors is age, but genetic variations and lifestyle factors, such as diet, physical exercise and years of education, also play a part in the development of the disease," she said. "Our results could aid in the identification of factors leading to more or less rapid progression and obtain a more individualised prognosis, even without the need of repeated brain imaging examinations."

For therapy trials, the new tool may become relevant to judge the effect of a specific drug in an individual patient, as assessed by comparison of the actual versus the predicted brain status following therapy.

"Another potential application of our algorithm could be to predict drug efficacy within clinical trials, even without the need for longer follow-up or repeated imaging examinations," she concluded.

ENDS

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About the Experts:
Elena Doering is from the German Center for Neurodegenerative Diseases (DZNE) in Göttingen, Germany

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References

1. Association of Amyloid Positron Emission Tomography With Subsequent Change in Clinical Management Among Medicare Beneficiaries With Mild Cognitive Impairment or Dementia https://jamanetwork.com/journals/jama/fullarticle/2729371

PRESS RELEASE

Embargoed: 12:40 CEST, Tuesday, 4 July 2023

Study confirms impact of weather variations on migraine

- Italian researchers show the clear relationship between meteorological variations and migraine, by correlating weather data with clinical data acquired in the context of emergency care, an unusual setting for a chronic pain disorder.

- The retrospective study followed nearly 2,000 patients admitted to the emergency department (ED) over two years — one of the longest time frames ever studied in migraine research.

(Budapest, Tuesday, 4 July 2023) Weather variations do have an impact on a subgroup of migraine, as confirmed by a retrospective study to be presented at EAN 2023, the 9th Annual Congress of the European Academy of Neurology (EAN) in Budapest, Hungary.

Researchers at the Headache Center of Policlinico Gemelli Hospital in Rome, Italy, collected the clinical data of 1,742 patients who presented to the emergency department (ED) with migraine with or without aura (127 vs. 1,615) between March 2010 and March 2012. They then correlated the clinical data with the weather data from the Italian National Weather Service over the same period, using Spearman's correlation coefficients.

The team found out that a subgroup of migraineurs is highly sensitive to variations of meteorological factors, and that the number of ED admissions were directly correlated with the increase in temperature compared to the previous day.

Admissions were also directly correlated with the humidity level two days before the attack, and inversely correlated with the atmospheric pressure two days before, explained Dr Costanza Sottani, a neurologist at Policlinico Gemelli Hospital.

'The absolute value of modifications of temperature is not so important, but the modification itself is,' she said. 'Migraine attacks correlated with an increase in temperature two days before admission to the ED. The fact that it happens throughout two years mostly in the same way reflects the fact that it is not about absolute values or specific degrees, but really about the sudden changes.'

Sottani and her colleagues hypothesised that any variation of weather parameters may interfere with neuronal excitability of the trigeminal-vascular system directly, or with structures correlated to it, facilitating the onset of attacks.

'Alternatively, it could be possible that quantitative variations of trigger factors may enhance the response of migraineurs to environmental stimuli,' she added.

Confirming a myth

Migraine, a relapsing, remittent pleomorphic disorder characterised by recurrent attacks, may be triggered, or precipitated by several factors. Several clinical studies have considered the relationship

between migraine or other forms of primary headaches and environmental factors such as weather conditions.

These studies have attempted to find correlations between documented migraine attacks and weather, focusing on variables such as barometric changes, lightning, temperature, and precipitation.

The aim of the Italian study was to confirm the influence of meteorological parameters on migraine attacks over two years, one of the longest time frames ever studied in migraine.

"About half of migraineurs identified changes in weather conditions as a trigger for the headache onset or as a cause of worsening of ongoing headache symptoms," she said. "Many of our patients complain that the weather has an impact on their headaches or the frequency of the attacks. Some patients claim that they are "better than the weatherman" in forecasting. So, we actually wanted to confirm a 'myth', which other studies before had theorised and in part confirmed."

The fact that patients visited the emergency department is particularly important because these patients suffer from a chronic pain disorder, which is usually managed in a non-emergency setting, she emphasised. "Visiting the emergency department could mean that patients are having a particularly severe attack or an attack that presents with different characteristics," she said. "It could also mean that their regular medications aren't working. Both these situations are remarkable from a clinical point of view."

While the study only focused on weather conditions, it is reasonable to think that global warming might have a negative impact on migraine and headache disorders in general, as well as neurological conditions, she pointed out.

"A recent article published in Neurology[1] showed that temperature extremes and variability are both associated with stroke incidence and severity, migraine headaches, hospitalisation in patients with dementia, and multiple sclerosis exacerbations," she said.

The Italian team did not identify a specific phenotype among migraineurs, but the vast majority of patients were women (1,052 vs. 563 men), with a median age of 37 years, reflecting the general prevalence of migraine worldwide.

The study also confirms the prevalence of migraine without aura and with aura in the general population, with 1,615 and 127 patients, respectively.

ENDS

Notes to Editors:

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About the Expert:
Dr Costanza Sottani is a neurologist at Policlinico Gemelli Hospital, Rome, Italy

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References

1. Impacts of Climate Change and Air Pollution on Neurologic Health, Disease, and Practice: A Scoping Review
   https://n.neurology.org/content/100/10/474.long

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