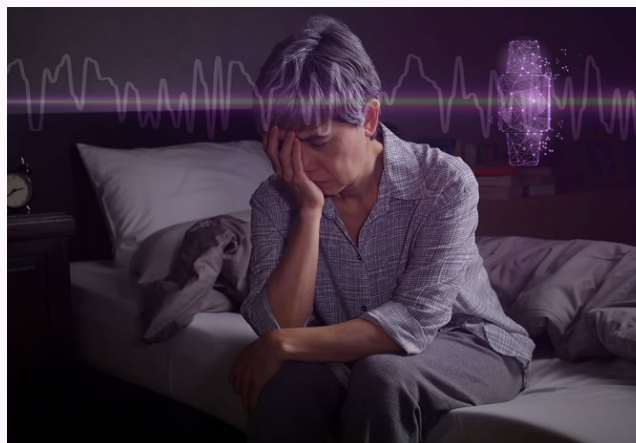**brainbuzz**   **camh**

October 2021

The start of autumn has been busy at CAMH! In this month's *BrainBuzz*, you'll see many new research highlights and successes, including recognitions for our researchers and their recent scientific findings. If you have any questions or feedback, please reach out at any time.

Aristotle Voineskos
VP Research, CAMH

Mental illness associated with poor sleep quality according to largest study of its kind

CAMH study the first to objectively measure sleep patterns on a large scale in people with mental illness compared to the general population.

People who have been diagnosed with a mental illness are more likely to have poor sleep quality compared to the general population, according to the largest study of its kind ever conducted.

The CAMH-led study, "**Accelerometer-derived sleep measures and lifetime psychiatric diagnoses**," has just been published in the journal PLOS Medicine.

"The differences in sleep patterns indicated worse sleep quality for participants with a previous diagnosis of mental illness, including waking up more often and for longer periods of time," said senior author **Dr. Shreejoy Tripathy**, an Independent Scientist at CAMH's **Krembil Centre for Neuroinformatics**. He also emphasized that gauging the quality of sleep was just as important as measuring the total amount with regard to its impact on mental health.

"The relationship between sleep and mental health is bi-directional," said lead author Dr. Michael Wainberg, a postdoctoral researcher at the Krembil Centre for Neuroinformatics. "Poor sleep contributes to poor mental health and poor mental health contributes to poor sleep. Sleep pattern differences were a feature of all mental illnesses we studied regardless of diagnosis."

The study was based on data collected from 89,205 participants in the United Kingdom who agreed to wear an accelerometer on their wrist that tracked body movement 24 hours a day for seven days. They also consented to having their data stored in a digital biobank for research purposes. The authors used computational algorithms—including machine learning—to summarize this vast amount of data into ten metrics, including bedtime, wake time, naps and the longest duration of uninterrupted sleep. They then compared these metrics between participants who had received a previous diagnosis of mental illness in their lifetime and those who had not.

"We know that up to 80 per cent of people with mental health disorders can have problems with falling asleep, staying asleep or waking up earlier than they intended," said CAMH psychiatrist and sleep disorder specialist Dr. Michael Mak. "We know that sleep disturbances cause a great burden to society, including an economic one. And we know that treatments that improve sleep quality, whether it is therapy or some types of medication, can improve mental health outcomes."

This is the first large-scale transdiagnostic study of objectively measured sleep and mental health, and the study's unique methodology allowed for sleep monitoring to be conducted in each individual's natural home sleep environment rather than in a laboratory setting.

"Until now nobody has looked at objectively measured sleep in the context of mental illness at quite this scale before," said Dr. Tripathy. "Part of why we wanted to do this study is that with the emergence of smartphones and wearables, we have access to data streams that we never had before."

The Krembil Centre for Neuroinformatics is currently developing a patient data biobank similar to the one in the UK that was used for this study. The core goal of the **CAMH BrainHealth Databank** is to use patient data, including the use of wearables outside of a hospital setting, to deliver improved, personalized mental health care in the present, while also accelerating future clinical research, discovery and innovation.

Making old brain cells young again

Memory loss is associated with aging, but it is also common in most mental illnesses, including depression. **Dr. Etienne Sibille**, Senior Scientist, Campbell Family Mental Health Research Institute, specializes in exploring the biological connections between memory function, mental illness and aging. He is working on a discovery that could revolutionize how we diagnose and treat the aging brain.

His research team recently announced the incredible results of their research focusing on GABA receptors - neurotransmittors involved in learning and memory. They discovered that by targeting these receptors with an experimental compound, brain cells can regrow, restoring normal memory function.

The implications of this discovery are profound.

In behavioural tests with mice, Dr. Sibille has shown that older animals had far better memory skills half an hour after receiving the experimental drug and, remarkably, after two months on the treatment, brain cells that had shrunk in these animals had grown back.

An old mouse will naturally perform at about 50 to 60 per cent on this test. Its working memory is basically not working. But within 30 minutes of receiving the drug, their performance is back up to 80 to 90 per cent, which is almost at the level of a young mouse. Dr. Sibille's research has achieved a rapid reversal of age-related working memory deficit.

Meaningful progress in drug development for mental illness has been stalled for decades. This discovery represents a significant leap forward in the pursuit of developing new, targeted medications.

We certainly hope this will improve the lives of millions of people. Remember this is not just the symptoms that are being treated. We have shown that we can improve the health of brain cells. We have been able to reverse the effect of normal aging in the brain. The implications may be broader than we think.

Since these results are based on a decade of pre-clinical work, Dr. Sibille believes a new drug based on

this research could become widely available to the public as soon as five to seven years from now.

"The research that is performed at CAMH on multiple levels of investigation, from molecular to clinical models, is a huge asset for researchers. We are in the midst of what I would say is a revolution in brain science where the amount of knowledge has dramatically increased. It's a fantastic time to be in brain research."

This research is part of the featured content within the powerful **Today campaign** which conveys the momentum that CAMH is creating to prevent suicide and invites people to accelerate it. Visit the **campaign website** to see other featured content and to learn more.

One in three LGBTQ2S homeless youth have attempted suicide since pandemic onset

First-of-its-kind CAMH survey highlights need for more inclusive, population-based access to life-saving health and social support services for LGBTQ2S youth

More than one-third (36 per cent) of Toronto-area LGBTQ2S youth experiencing homelessness have attempted suicide since the COVID-19 pandemic began and 82 per cent have engaged in self-harm, according to a new CAMH-led study.

The study, "**Investigating the impacts of COVID-19 among LGBTQ2S youth experiencing homelessness**," published in the journal PLOS ONE, is believed to be the first in the world to look at how this already marginalized group has been impacted by the pandemic. Sixty-one young people aged 14 to 29, who self-identify as LGBTQ2S, at-risk of, or experiencing, homelessness in the GTA and surrounding areas took part in the survey which involved both qualitative and quantitative data collection.

"The impact the pandemic has had on these young people is really shocking," said lead author **Dr. Alex**

Abramovich, Independent Scientist with the **Institute for Mental Health Policy Research** at CAMH. "Prior to COVID they already had much higher rates of depression, anxiety, and suicidal ideation compared to cisgender and heterosexual youth, due to stigma and discrimination. Their needs were not being met then and they certainly are not being met now. This study shows how urgently we need specialized, population-based LGBTQ2S mental health supports for this group of young people."

Previous studies have reported that as many as 40 per cent of youth experiencing homelessness identify as LGBTQ2S. The survey found that since the pandemic began, the number of LGBTQ2S youth living in a public space, vehicle or vacant building increased from 13 to 33 per cent.

"*I had a tough time finding places to go when the pandemic happened, a lot of opportunities and just resources shut down for me*," said one participant.

"*I heard from a friend, even in the graveyard, they're pitching tents in the graveyard and they're living there*," said another. "*It's really getting out of control.*"

The study found that prior to the pandemic, many LGBTQ2S youth were "couch-surfing" at their friends' homes, an option that was no longer available due to public health measures. Others reported experiencing severe mental distress over having to live in isolation with unsupportive parents.

"*I've had nervous breakdowns, I've had panic attacks, I've had anxiety attacks, I've had very severe depressive episodes*," one participant stated.

Lack of access to health care and social supports was also cited as another negative factor, with 74 per cent of study participants reporting delayed or limited access to services, and 31 per cent reporting being unable to access any kind of health care. Sixty-two per cent said they were unable to access counselling or support groups.

Study participants also reported higher levels of substance use, with 67 per cent stating increased use of cannabis and 56 per cent stating increased use of alcohol.

"*It's been really hard in our community because we've lost some people you know who were sober for years and unfortunately it was just the pandemic that kind of hit them and they couldn't cope*," said another survey respondent.

One limitation to the study according to the authors was due to the challenges involved in the recruitment

of LGBTQ2S youth experiencing homelessness during a pandemic, due to hidden homelessness. Only youth who were able to access technology were included in the study, which the authors say may have excluded some of the most marginalized LGBTQ2S youth.

Funding for the study was provided by **Making the Shift**.

Monitoring maternal alcohol use and fetal alcohol spectrum disorder

To mark International Fetal Alcohol Spectrum Disorder Awareness Day on September 9th, CAMH released a new report with a list of recommendations for monitoring and reducing the prevalence of fetal alcohol spectrum disorder (FASD) and prenatal alcohol exposure (FAE) in children, along with alcohol use in people who are pregnant.

The CAMH-led report, ***Developing a Multi-source Surveillance System for Fetal Alcohol Spectrum Disorder and Prenatal Alcohol Exposure***, was funded by the Public Health Agency of Canada.

"The effects of exposure to alcohol before birth, including FASD, must be recognized globally as a substantial public health problem with a prevalence rate that exceeds that of Down syndrome and autism spectrum disorder," the report states. "Addressing the determinants of FASD, which are a complex interplay of factors, including trauma and health inequity, is therefore a critical public health priority."

FASD is a lifelong disability that affects the brain and body of individuals who were exposed to alcohol in the womb. It can be difficult to diagnose and currently there is no coordinated national surveillance system to monitor the prevalence of FASD in Canada.

"Overall, FASD is largely underreported and underdiagnosed," says lead author **Dr. Lana Popova**,

Senior Scientist, **Institute for Mental Health Policy Research** at CAMH. "There is an urgent need for increased funding to expand diagnostic capacity and services. FASD is typically detected through a broad spectrum of psychometric tests conducted by a multi-disciplinary team that includes specialist physicians, psychologists, occupational therapists, and speech pathologists. Inequitable access to this resource-intensive diagnostic process results in many individuals with FASD never receiving a diagnosis and therefore never receiving treatment."

This report is the first of its kind in Canada, presenting all existing data from a variety of sources on FASD and FAE prevalence rates in Alberta, British Columbia, Manitoba, Ontario, Northwest Territories and the Yukon.

Other key report recommendations include:

- Expand Early Detection, Diagnosis, and Care for Individuals with FASD;
- Establish a Canada-Wide Surveillance System for FASD with Consistent Diagnostic Codes;
- Establish a Universal Screening Protocol and Surveillance System for Alcohol Use during Pregnancy in Canada;
- Expand Brief Interventions and Substance Use Programs for Women of Childbearing age; and
- Continue and Expand Preconception Health Promotion and Education.

The report also speaks to the importance of addressing stigma around alcohol use during pregnancy. "Stigma directed at pregnant people who report alcohol use is strong, with serious impacts on their health, adds Dr. Popova. "Anti-stigma strategies need to be employed alongside educational strategies regarding alcohol use and pregnancy."

Click here to read the full report.

Buzz-worthy news

October 3rd to 9th was Mental Illness Awareness Week, an annual public campaign to open the eyes of Canadians to the reality of mental illness, and show that there is hope for recovery. That hope stems from

the life-saving research that happens at places like CAMH. Check out highlights of our research in the below tweets:

- As society shifted to virtual models of interaction during the pandemic, so did healthcare. And research was instrumental in ensuring virtual care was implemented effectively thanks to the work of Dr. Eva Serhal & others! **https://twitter.com/CAMHResearch/status/1445480872107335688**
- Common Myths about mental illness: **https://www.camh.ca/en/camh-news-and-stories/common-myths-about-mental-illness**
- The dedicated team at CAMH's Centre for Youth Bipolar Disorder is making an impact on youth and families affected by bipolar disorder. **https://twitter.com/bengoldstein73/status/1445747384571469833**
- Research leads to evidence-based policy & models of care informed by people with lived experience, enabling improvements to the mental health system. This is thanks to the work led by Dr. Samantha Wells. **https://twitter.com/CAMHResearch/status/1445772122585018368**
- Incorporating big data and predictive models with the help of machine learning will enable researchers to focus on finding better ways to treat mental illness. **https://twitter.com/CAMHResearch/status/1446555943349719057**

Get In Touch!

Aristotle Voineskos | VP Research, CAMH | aristotle.voineskos@camh.ca

Eileen McMahon | Chair, CAMH Research Committee of the Board of Trustees | emcmahon@torys.com

Stephanie Capobianco | Director, Research Practice & Policy, CAMH | stephanie.capobianco@camh.ca

camh
mental health is health

Centre for Addiction and Mental Health
Research Operations, Services & Support (ROSS)
33 Ursula Franklin St., Toronto, ON M5S 2S1