

For poor, health can wane toward end of month

Erin Allday, Victoria Colliver, Stephanie M. Lee
Published 5:52 pm, Tuesday, January 7, 2014

FOOD INSECURITY

Budget strain can worsen health

Many households, especially low-income ones, tend to spend heavily on food during the beginning of the month when funds arrive in the form of paychecks, welfare benefits, food stamps and other federal and state assistance.

But when that money runs out at the end of the month, food supplies dwindle and health outcomes suffer, a UCSF study has found.

Researchers looked at the spending habits of diabetic patients with hypoglycemia, a condition that occurs when the body's blood sugar levels become too low and cause a person to experience visual disturbances, confusion, seizures and loss of consciousness. The condition was chosen because the researchers expected it to be closely tied to food access.

From 2000 to 2008, California hospitals admitted about 5,200 adults with a primary diagnosis of hypoglycemia. There were many more low-income patients who were admitted than high-income ones, according to the study.

Among low-income patients, the risk of admission for hypoglycemia increased 27 percent in the last week of the month compared with the first week. There wasn't a similar increase in risk among their high-income counterparts.

Food budgets that are exhausted by the month's end may contribute greatly to health inequities, and policymakers should find ways to improve stable access to nutrition in low-income populations, the researchers recommended.

The study was published Monday in the journal *Health Affairs*.

- *Stephanie M. Lee*

SOCIAL SCIENCES

Errors, inexact standards cited in research

A group of scholars, led by professors from UC Berkeley and Stanford University, has published an article calling for greater stringency and transparency in social science research.

Getting a paper published gives a scholar's career a big boost, but the authors of the new article point out that academics tend to be rewarded more when they can promise novel, tidy or statistically significant results, rather than more nuanced or mixed findings.

In addition, scholarly journals and funders have lax oversight over mistakes and confusing data, the authors said. In turn, errors can slip into papers, as in the case of a 2010 paper by Harvard University researchers that outside experts found to have coding errors and selective exclusion of available data.

The interdisciplinary group of academics who want to change the system propose that researchers document and disclose information about their data collection and analysis, provide step-by-step accounts of how they will analyze data before they actually see it, and archive and share research materials that will allow independent researchers to weigh in.

The paper appeared Friday in the journal *Science*.

- *Stephanie M. Lee*

IMAGING

MRI 'films' yield injury insight

UC Davis scientists have developed a technique to create short "movies" of the body in motion using magnetic resonance imaging scans that have been pumped up to take faster images.

The technique, which so far has been used to make videos of people moving their wrists, could help doctors better diagnose and treat injuries that involve joint function, or that only flare up when people move the damaged area.

The scientists made the movies by speeding up the process of taking images with an MRI. Typically, a single image takes about three minutes, and the person being scanned must stay totally still. The UC Davis team was able to grab one image every half second, building a

sequence of images in just 30 seconds.

They also had to find a way to stabilize the magnetic field in order to remove dark bands that can obscure parts of an image when a person moves during the scan.

A report on their work was published online Dec. 31 in the journal PLOS One.

- *Erin Allday*

THE BODY

New finding in how cells communicate with others

Many types of cells communicate with each other by sending out long-distance "tubes" to carry messages, a new finding that runs counter to previous assumptions about how signals are passed between cells.

The long-distance signaling method was found by a team of scientists from UCSF which was studying cellular communication in fruit flies.

For decades, scientists have believed that neurons were the only cells that communicated through direct contact, by creating synapses to connect brain cells and carry messages. Other types of cells were believed to communicate by sending proteins into the fluid surrounding clumps of cells, in hopes of the proteins reaching their intended targets. In fact, many non-neuron cells do communicate that way, but the UCSF scientists found that some also share messages over tubes known as cytonemes.

These cytonemes hadn't been seen before because they are delicate, and for many decades it was impossible to preserve them in a laboratory setting. Better techniques for viewing living cells helped scientists find the cytonemes.

The research was published Jan. 2 in the journal Science.

- *Erin Allday*

BRAIN INJURIES

Early-stage reactions investigated

The long-term effects of traumatic brain injuries are well known, but Stanford researchers are uncovering what happens at the cellular level in the hours just after a blow to the head.

Researchers from Stanford and the National Institutes of Health have devised a method that allows them to inflict injury to a mouse's brain and then, using an intracranial microscope, see how individual cells react, starting just five minutes after the injury.

In one of the discoveries, they learned that the body tries to plug holes in the meninges, the layers of tissue that wrap around the brain, by mobilizing special cells called microglia toward the site. That reaction had never been seen in living brains before the study.

Scientists hope this work will help lead to new therapies for limiting or even preventing traumatic brain injuries from occurring.

The results were published online last month in the journal Nature.

- *Victoria Colliver*

PTSD

Activity in brain area found to add to stress

Increased activity in a specific part of the brain may hold the key to eliminating post-traumatic stress disorder, researchers at Stanford University, McLean Hospital and Harvard Medical School have found.

The scientists discovered that heightened activity in what's known as the medial prefrontal cortex of the brain is linked to decreased activity in the amygdala, the part of the brain that creates memories of scary experiences.

They tested the theory using mice that were taught to fear a loud sound. The researchers decreased the level of activity in the amygdala of some of the mice by increasing activity in the prefrontal cortex. Those mice no longer feared the sound.

Researchers say the work could help lead to human treatments for a number of fear-related conditions, including PTSD.

The study was published last month in the journal Neuron.

- *Victoria Colliver*

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