Title: “The Relationship Between Poor Sleep and Alzheimer’s Disease”

Host: Dale Connelly
Specialists: Mark Wu, M.D., Ph.D.
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Dale: “From the Johns Hopkins University Brain Science Institute…

Dr. Wu: “In our modern society, studies have shown that people are sleeping less and less. 50-60 years ago people used to sleep 8 hours a night, now the average person sleeps about 6 hours a night. So the first thing to do, that we would recommend, is make time for sleep. Remember this is important for your brain, just like you do exercise for your body, sleep is important for your brain. So the first thing we strongly encourage people is to get enough sleep.”

Dale: “Dr. Mark Wu is a neurologist at Johns Hopkins University who specializes in sleep medicine. He collaborated on a new study about sleep and Alzheimer’s disease with Dr. Adam Spira of the Bloomberg School’s Department of Mental Health.

Today on Brain Talk: the relationship between poor sleep and Alzheimer’s disease.

Dr. Spira says that in their study, ‘researchers asked participants how much they sleep they get and what the quality of their sleep is like. Then, they took a look at their brains…”

Dr. Spira: “They underwent pet scans, neuroimaging scans of the brain, in which a special radioactive substance is injected that binds to what is called fibrillar beta amyloid in the brain and it enables us to actually see amyloid plaques in living people. It is a relatively recent technology that enables us to do this sort of research.”

Dale: “One of the hallmarks of Alzheimer’s disease is buildup of amyloid plaque in the brain.”

Dr. Spira: “And what we saw was, when we looked at the association between sleep related variables and the amount of amyloid plaque in the brain, we learned that people reporting shorter sleep duration, or worse sleep quality, tended to have more of this amyloid plaque burden in their brains.”

Dale: “Dr. Wu points out that ‘Alzheimer’s patients are known to have fragmented sleep during the night.’”

Dr. Wu: “What new research is suggesting is the flip might also be true, that is that poor sleep may lead to the progression or development of Alzheimer’s disease. So there are two sides to the coin, and what Adam’s paper suggested was that there is an association and it could be interpreted either way.”
Dale: “Other studies support this idea of poor sleep being related to the buildup of amyloid in the brain. Dr. David Holtzman's lab at Washington University in St. Louis has shown that in mice sleep deprivation led to developed bigger amyloid plaques. And in Dr. Wu’s lab...”

Dr. Wu: “In my lab we’re using a Drosophila, which is a fruit fly model of Alzheimer's disease and we see the same thing. That if you take the flies and don’t let them sleep, they get bigger amyloid plaques.”

Dale: “Another important study this year suggests that one function of sleep may be to increase the flow of fluid around the brain to remove waste products.”

Dr. Spira: “The researchers at the University of Rochester found the cerebral spinal fluid actually cleans out amyloid protein from the brain during sleep, and that might provide potential explanation for the findings that we observed.”

Dale: “Improving our quality of sleep is key for good brain health. The doctors say what’s most important is to maintain a regular sleep cycle of going to bed and getting up at roughly the same time each day.”

Dr. Wu: “So keep our sleep in line with your circadian clock by going to be and waking up around the same time. So don't move your sleep time from 10 PM to 2 AM frequently going back and forth. The next thing we recommend is to try to avoid substances that are going to impair your sleep. So for example, we recommend that people -- people drink a lot of coffee -- we recommend that people try to not drink more than a couple of cups a day and not after 1pm. And also smoking is a big factor. Smoking really promotes insomnia; it really does a lot of things to your sleep, so we strongly recommend that people try to stop smoking in addition of course for other health reasons, like lung cancer and all these other things. So those are kind of some of the big things that we recommend in terms of ways to improve the quality of their sleep.”

Dale: “For more on sleep and the brain, log on to brainscienceinstitute.org. I’m Dale Connelly and from Johns Hopkins University… this is Brain Talk.”