

Health & Wellness Webinar: Insomnia and Sleep Disorders: Understanding and Managing These As We Age

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Transcript

[0:00 Introduction]

Dr. Anthony Levinson: So just a quick intro for Dr. Sophiya Benjamin. She is a geriatric psychiatrist, an Associate Professor and colleague of mine in the department of Psychiatry and Behavioral Neurosciences at McMaster, and also the Schlegel Chair in Mental Health and Aging at the Schlegel University of Waterloo Research Institute for Aging. She's also the co-founder of GeriMedRisk, which provides education and consultation to physicians and others about the best use of medications in older adults. Also, an award winning educator and a postgraduate research lead for psychiatry at McMaster's Waterloo campus. So, thank you again for joining us. And take it away, Sophiya. You're still on mute there.

Dr. Sophiya Benjamin: Thank you, Anthony. I'm so excited to be here to talk about sleep. It's one of my favorite topics to speak about. So, I'm just to, you can see my screen. So, I have no conflicts to disclose. I am not paid for any for profit organizations and have no financial relationships with any drug companies. So just wanted to say that at the beginning.

So today we're going to cover a number of topics in sleep. Not all of them, but we will focus on normal sleep and aging. We'll briefly cover a few sleep disorders but focus primarily on insomnia and the treatment of insomnia. And then we'll talk about medications and substances and how they affect sleep.

[1:27 What is normal circadian rhythm?]

Dr. Sophiya Benjamin: So, this is a graph of a normal circadian rhythm. There are two processes that really drive our sleep and wake cycle. So, there is the circadian arousal drive. This is driven by light, our hormones, that are secreted in our brain. And this happens regularly, every 24 hours. There's also another drive that's called a homeostatic sleep drive. So, essentially, the longer we are awake, the more the homeostatic sleep drive builds up. And then at some point late in the evening and at night, these two drives actually make us go to sleep. The homeostatic sleep drive can be impacted if we nap. Just like if we have a big meal, then it's harder to eat after. If we nap, then that disturbs the homeostatic sleep drive, and then it is harder to fall asleep. And we'll talk a little more about napping later on in the presentation.

[2:53 What are the different stages of sleep?]

Dr. Sophiya Benjamin: So, when we sleep, there are different stages that we experience in sleep. So, we go from being awake into what's called stage 2 sleep. And within this, they are broken into N1, N2, and N3. So, these are non-rapid eye movement sleep. And this is the deep kind of slow wave sleep where a lot of rest and recovery happens. And during this time, our body is in a hypoaroused state, our muscles can move. And a lot of this sleep happens earlier in the night. There's another stage of sleep that's called REM sleep that you may have heard of, or rapid eye movement sleep. And when we measure this sleep, it actually looks like our brain is awake. So, it's also called a paradoxical type of sleep. But the key difference is that our muscles are paralyzed, and this happens more in the later hours of the night. And it's important that our muscles are paralyzed during this stage of sleep, or else we would be acting out our dreams.

[4:06 What are some age-related changes to sleep?]

Dr. Sophiya Benjamin: So, we also go through changes in our normal sleep pattern as we age. So, when we're born, we have a high need for sleep. And as we age, some of this decreases. Some of the key differences in sleep as we age is our slow wave sleep decreases. And remember, we talked about how this is an important part of sleep and recovery. And slow wave sleep does decrease with age, and so does REM sleep, but to a lesser extent. The amount of time that we are in bed, awake but not sleeping, so that's what the WASO part of this graph is, that does increase with age. There are a number of factors that drive changes in sleep with aging. Some of this is loss of routine, loss of external time markers that keep us on a regular circadian rhythm. There can also be more sleep fragmentation, where we wake up more often as we age, and we find it harder to go back to sleep. And so these are some of the changes that happen with aging.

[5:25 What are the various sleep disorders?]

Dr. Sophiya Benjamin: Almost every other person I treat usually have either sleep disorder or sleep-related symptoms that are comorbid with other psychiatric disorders. But when someone says that they have difficulty sleeping or they are tired during the day, insomnia is one disorder that I think about. But it's also possible that they could have a number of other conditions. Some of them are related to breathing during sleep, some of them are related to movement during sleep. Some disorders are related to specific sleep stages. And as I mentioned before, substances, and when I mean substances, those are like alcohol or cannabis can also affect sleep, and medications can also affect sleep. So, it's an important part of assessment to get more detail so that we understand exactly what type of sleep disorder we're dealing with. So, these are examples of sleep disorders that we will not go into detail, but I will mention here.

[6:30 What are restless leg syndrome, REM sleep behaviour disorder, and substance or medication- induced sleep disorders?]

Dr. Sophiya Benjamin: So restless leg syndrome is a movement- related sleep disorder, and individuals who experience this will have an urge to move their legs. This becomes worse in the

evening or at night. It is relieved with activity, and it can be quite distressing. One key thing to remember is some of the medications that are used to treat restless leg syndrome can cause certain psychiatric side effects that we have to monitor for.

The other disorder that I sometimes see is called rapid eye movement sleep behavior disorder. So, it's a long one, but it also goes by REM activation disorder. And this happens when, remember, we talked about the REM stage of sleep and how it's important that the body is paralyzed, in this disorder the body does not get paralyzed during REM sleep and the individual may call out or strike out inadvertently while they are acting out their dreams. Often bed partners will tell me that they stopped sleeping together in the same bed several years ago because they were either struck or kicked, and so they don't actually sleep with the person who's experiencing the disorder. An important thing to remember about this type of disorder is many of them can go on to develop Parkinson's disease or Lewy body type dementia. Not all of them do, and it can take decades. So, it's just something to monitor for and something to speak with your doctor about.

And substance and medication induced sleep disorders are also common. There are many medications that we use that affect sleep. It can affect the ability to go to sleep, but many medications, even if we don't realize, change the quality of sleep, and can actually suppress certain sleep stages.

[8:40 What is sleep apnea?]

Dr. Sophiya Benjamin: So, we'll briefly touch on sleep apnea. As Anthony mentioned, we got a lot of questions before this talk, and sleep apnea was a large number of questions that we got, and I think there will be another talk covering sleep apnea. But the main features of sleep apnea is that the individual is not able to breathe for periods of time while they're sleeping. And what I have up here is actually called the STOP-Bang Questionnaire. And there's a website where if you suspect that you have any of these symptoms, like snoring, you feel tired during the day, other people have seen that you stop breathing or you're choking or gasping in your sleep, then you can go to that website, which will be in the handout and actually fill out the questionnaire. And it's a screening questionnaire, but after this, your doctor might recommend that you have a polysomnogram and that can confirm if you have sleep apnea. And usually the treatment is CPAP, and that's a very effective treatment and can actually make a very big difference in people's lives.

[9:56 What is insomnia disorder?]

Dr. Sophiya Benjamin: So now we come to insomnia disorder, which we're going to spend a lot of this talk speaking about. Insomnia is very common, anywhere between 30% to 50% of individuals in some populations experience insomnia symptoms, and around 15 or 13% of individuals reach full criteria for insomnia disorder. So, it's very common, and it can cause a lot of impact on other medical conditions and actually worsen other medical outcomes. So, it's important to recognize it as a disorder and treat it, because there's actually a very effective treatment that we'll talk about.

So, what is insomnia disorder? Primarily, it is a dissatisfaction with the quality or the quantity of sleep that we experience. And this might mean difficulty falling asleep, difficulty going back to sleep after waking up at night or waking up very early in the morning and not being able to go back to sleep. And it's also a very subjective dissatisfaction. So, the individual usually complains of tiredness or distress or some kind of impairment during the day. And generally, it's also a chronic disorder after it develops, unless it's treated. So, the symptoms occur at least three nights a week for three months or more, though many individuals can experience it for years.

One thing to remember is these individuals are diagnosed only after they have enough opportunity to sleep, but they are not able to sleep. So, we can think of different times in our lifespan where we don't have enough opportunity to sleep as young parents, but as we age, we may be caregivers to others, where if the person we are caregiving for is not sleeping through the night, then that might be disruptive and we might be busy during the day, so there might not be enough opportunity to sleep. So that's an important thing to explore and that it's not explained by another disorder. So, these are the key criteria for insomnia disorder.

So sometimes people ask me, "Well, why do some people develop insomnia and others don't?". And this is a model that was proposed by Spielman. This is from the 1980s, but it still holds true, and it makes a lot of sense in explaining how the disorder develops.

So, if we were to imagine two individuals getting admitted to the hospital, say they're going in for a surgical procedure, and we'll just call them Jack and Jill. So, Jill, in general, is not an anxious person. She is not usually preoccupied with health concerns, and so she goes to the hospital. And for any of you who've been admitted, you know that it can be noisy, people wake you up in the night to take your blood pressure, someone wakes you up very early in the morning to take a blood sample. So, it can be a disruptive experience to sleep at the hospital. So, Jill doesn't sleep well. She's a little tired. The next day she has the surgery and then she's discharged home. She has some pain when she goes home the next day, so she experiences more discomfort that night and doesn't sleep well the next night either. The third day she is tired. She says, "Well, of course I'm tired. I didn't sleep well for two nights, but it's going to be better tonight." So, Jill goes to sleep and thinks nothing of it on the third night, whereas Jack is someone who is a little more anxious, a little more preoccupied. He's worried about the surgery, and he's already anticipating that he likely won't sleep well at the hospital. And of course he doesn't. And the next day he has the surgical procedure, he's discharged home, he has pain, and now he's already worried. He's thinking, "Oh, I didn't sleep well yesterday. I'm not sure if I'm going to be able to sleep well today", and he has pain. He doesn't sleep well that night. And then the third day, when he is tired, he starts becoming quite preoccupied about his sleep. And now he tries to go to bed even earlier. So, he says, "Okay, I'm going to catch up on my sleep. I'm going to go to bed at seven." And now Jack is lying in bed, trying to sleep, not going to sleep, worrying about going to sleep.

So, the first two nights that I described is this kind of acute insomnia that happens when we have a stress. But when it becomes chronic insomnia is when people start worrying about sleeping. They are in bed, not sleeping. And this period of time gets longer and longer, and they start developing all these thoughts and beliefs about sleep and how they are poor sleepers. And

when it comes to bedtime, they actually become more anxious and more aroused, and this makes it even harder for them to go to sleep. And then this becomes a vicious cycle. And the longer they go through this, it's almost like our brain rewires itself to associate bedtime with anxiety and hyperarousal, and this is specifically called conditioned arousal. So, for most of us, bedtime is associated with rest and sleep, whereas in insomnia, bedtime and the bed environment becomes associated with anxiety. It's almost paired in our brain now with anxiety, hypervigilance, and hyperarousal.

So, I'll give you one last example about this. I was recently at a conference for insomnia, actually, and I was talking to an older adult who had come to the conference to give input based on her experience. And she was talking about how she has had insomnia for a long time. And we were sharing stories and I said, "Oh, you know what? It can be hard to sleep in a new town. I didn't go to sleep very well last night because I was in a totally new environment and I was kind of anxious, but it's okay." And she said, "I've not slept well most of my life, but last night I was in a hotel, I think maybe it was dark, and I actually slept much better." And this is pretty classic in many people who have chronic insomnia, where they will describe that when it's a different sleep environment, they actually sleep a little better. It doesn't mean you can only sleep in hotels, but it's just another clue that their bed and their bed environment is now paired with anxiety, and it makes it harder for them to go to sleep. So, this is called conditioned arousal.

[17:23 How is insomnia disorder treated and assessed?]

Dr. Sophiya Benjamin: So, there are very robust evidence-based treatments for insomnia. And every guideline and every professional organization that has written guidelines about this basically say the same thing, that the most evidence-based treatment for insomnia is cognitive behavioral therapy for insomnia. There's also some evidence for brief therapies of insomnia, which is basically one part of CBT-I, stimulus control, sleep restriction, and relaxation are also parts of the multicomponent CBT-I. And this is based on more than 40 randomized control trials. And overall, it's less expensive and patients prefer it to follow this treatment compared to medications. The challenge is that it's often not available, and we'll talk about alternatives if you are not able to find a therapist.

So, a sleep assessment usually consists of a sleep history, which is a two-week sleep diary, and I'll show you an example of this. The physician might also ask for a history of your medical conditions, whether it's pain, breathing-related problems. It's also important to rule out sleep apnea because CBT-I does not treat sleep apnea, but sleep apnea and insomnia are often comorbid or they can go together. We also try to get a detailed mental health history and a history of medication and other substances. There's no sleep lab testing needed to make a diagnosis of insomnia disorder.

So, this is an example of a sleep diary that's at one of the websites that we recommend. You can download it as a PDF, and it helps you track your sleep over a two-week period. This is a second example that's from mysleepwell.ca, which is also an excellent website that is in your handout, and you can download this PDF. What this sleep diary does is it helps you understand your sleep pattern over a period of two weeks, and it'll help you determine your behaviors

around sleep, when you're napping, when is the last time you drink coffee during the day, how long you actually are in bed, and what part of it you are sleeping. And once you have a lot of this information, then the next steps for CBT-I become easier.

[20:12 What is cognitive behavioural therapy for insomnia (CBT-I)?]

Dr. Sophiya Benjamin: So, the components of cognitive behavioral therapy for insomnia are four. So, it includes stimulus control, sleep restriction, cognitive restructuring, and relaxation training. And I'll go over each of them. I often find that if I can convey these concepts to my patients and then supplement it with written or web-based information, many of them can actually self-coach themselves and are quite successful in self-treating their insomnia.

So, let's talk about stimulus control. One of the problems with insomnia is that we've now learned this association between bed and sleep, that rather than a positive association of rest, now becomes one of anxiety and hypervigilance. And what stimulus control does is it tries to extinguish this negative association or break the association and repair it with the original association, which is rest and relaxation.

So, what we want the person to do is not stay in bed when they are trying to go to sleep and anxious. So, the instructions that are given are go to bed only when you're sleepy. So don't go to bed really early in the evening. Maintain a regular schedule and a wake up time. And this is key because the time that we wake up is how our circadian clock is set. And people who wake up at 10:00 a. m. Or 11:00 a. m. They will find it almost impossible to go to sleep at nine or ten or eleven. So, their whole sleep phase will change. And the next instruction is if you are awake in bed, leave the bed after approximately ten minutes. So, you don't have to be very specific about it. It's just a ballpark. If you feel like you've been in bed for a bit and you cannot sleep, then the instruction is to get out of bed, do something really boring until you feel drowsy, go back to bed when you're sleepy, and don't watch the clock. So once people start doing this, then what happens is they spend less time in bed worrying and over time this association becomes unpaired.

It's important to make some modifications for older adults. One of them is that stimulus control is important during the day as well. So, if you are spending a lot more time in bed during the day, either reading, watching tv, or napping. All of those also count. So, it's important to not stay in bed and use it only for sleeping. And the other instruction for older adults is be careful when you are getting out of bed at night, especially if there are mobility issues. So, adaptations can be made such that the person can actually reposition themselves rather than getting out of bed if it's really hard for them to get out of bed, or maybe having some lighting in the room that helps them.

So, the next and probably the most counterintuitive parts of CBT-I is sleep restriction. So, people might wonder, "Here I'm telling you that I cannot sleep, and now you're telling me that I should sleep even less? This makes no sense." But what sleep restriction tries to do is fix this fragmented, broken sleep that occurs and also decreases again spending time in bed while awake. So, the goal here is to increase sleep efficiency by increasing the sleep drive.

So, remember we talked about that homeostatic sleep drive that increases during the day. So, we want that to be at its peak or maximum when the person goes to sleep such that they don't have a hard time falling asleep. And the sleep diary is a key part of sleep restriction. And what we try to do is give the individual a sleep prescription that decreases their time in bed such that their efficiency is about 80% to 85%. So, I'll explain this a bit more. So, imagine that you find in the sleep diary that on average the individual is sleeping about five and a half hours at night, but they are spending about 9 hours in bed, and they are awake for about three and a half hours in bed, trying to sleep but not sleeping. And all of this time then they are pairing bed with anxiety, so they will get a sleep prescription that says the new time in bed is 6 hours. And what this does is the five and a half hours that they're actually sleeping, they are in bed and asleep, and the time that they are awake but not sleeping is drastically decreased. What this also does over the next few days is it pushes the sleep drive even further, such that by the time they get in bed they are quite exhausted, and they sleep. And once they reach a sleep efficiency of sleeping about 85% of the time in bed, then the time in bed is increased gradually, such that over time they might actually be sleeping 8 hours in bed. So, this is very effective and works within a few weeks. And for some it actually works within days.

So, some adaptations as we age for those who are unable to tolerate the feelings of sleepiness during the day, sleep compression is a different type of sleep restriction, where rather than drastically decreasing the 9 hours to 6 hours, we decrease the time in bed gradually by 30 minutes at a time until we reach a certain sleep efficiency. The other adaptation is that some people may need a nap, and it's really difficult to stay awake during the day. So, for those who feel like I cannot manage without a nap, make the nap a strategic one. So don't take multiple naps, just take one nap. And this usually should be done before 3:00 p.m. And make it short. So, it's 20 minutes or less. So, you might actually set an alarm and make sure you wake up in about 20 minutes so that it's not a long sleep because we don't want it to affect the sleep drive.

So, the next part of CBT-I is cognitive restructuring. So, this is addressing those unhelpful thoughts that actually make us anxious about sleep. And I see many of these verbalized by my patients. I sometimes see them in notes that are documented. So, things that we might think are, "I really have to sleep tonight because tomorrow I have to be at my best." So, you're putting some pressure on yourself already. Or when you're awake at night, you might think, "Oh, here go, I'm awake at one. I'll probably be up for a while now" or again thinking that "Oh, I'm so tired, if only I could sleep more, I'll have more energy during the day." So already we are putting pressure on ourselves. We're beating ourselves up for not sleeping, and it only makes things worse.

The treatment for this is sleep education. And when people start CBT-I, I tell them, even if you don't sleep at all tonight, it's okay, you can manage tomorrow, and then the next night will be okay. So, taking some of the pressure of having to or wanting to sleep so badly can actually decrease the anxiety. And over time, just restructuring some of these very unhelpful thoughts and challenging oneself that it doesn't have to be so anxiety provoking.

It's important to know that sleep hygiene, which is recommended by many people and it's an important part of sleeping well, it doesn't work for insomnia. And it's important for prevention and maintenance, but once an individual has developed chronic insomnia sleep hygiene alone

does not work. One of the websites that we recommend, mysleepwell.ca, it has a really good handout on sleep hygiene habits. So, one example is, don't drink coffee after 01:00 p.m. Avoid napping. Wake up at the same time every day. So, things that we've discussed.

The way one of my colleagues describes this, which I think is a helpful analogy, is that sleep hygiene is like seeing a dental hygienist. It's important to keep your teeth clean. It's important to brush your teeth, it's important to have regular teeth cleaning with your hygienist. But if you develop a cavity, it doesn't matter how many times you brush your teeth or it doesn't matter, just the scaling, and you will need a full treatment. So, CBT-I is the treatment. It kind of reverses this negative association. And once you are sleeping well, then to maintain that good sleep, you want to follow all the sleep hygiene techniques.

So, relaxation training is also a part of CBT-I. It doesn't work in and of itself. It has some evidence, but really not as much as stimulus control or sleep restriction. And a lot of the relaxation training happens during the day where the individual is taught to relax the body. This can be individualized to the person. So, for someone who doesn't like to meditate, maybe it's a different type of relaxation, maybe stretching, or for some, they might find visualization or imagery helpful. So, it can be individualized to that which feels comfortable for the person who is doing it. So hopefully in the last few slides, you've learned a little about what CBT-I is, and we'll give you lots of resources to reinforce this information at the end of the talk.

[31:21 What medication treatments are there for insomnia?]

Dr. Sophiya Benjamin: So now we're going to shift gears and talk about medications for insomnia. So, medications for insomnia are very common. In fact, older adults are the group that uses sedating medications more than any other age group. So about 13% of older adults were using sedatives in 2019. It was slightly lower from 2017, when 16% of older adults were using it. These medications can cause a significant amount of harm. When we've looked at this information in meta-analyses, we find that to treat an individual, so 13 individuals need to be treated for one person to experience a benefit, and these benefits are not huge.

So, once you've internalized that this is a behavioral disorder and that's how it develops, so it's really hard to change that behavior with a medication. A medication might help you go to sleep that night because it just overrides that anxiety, and it knocks you out. But the next night, you're going to experience the same types of thoughts and behaviors. And none of these medications are recommended for long-term use anyway. And one in seven, people who use these medications can experience significant harm. And some of the side effects are drowsiness, fatigue, headaches, nightmares. People can also get into motor vehicle accidents, and there's a much higher incidence of cognitive impairment or dementia.

So, this is a graph. We won't go into detail, but this is a sample of more than 1.5 million people, and they compared the number of falls. So, these were falls with significant injury as well. And they found that those who used sleep medications, like the z-drugs, trazodone, benzodiazepines, there were more than twice as many falls in the groups that took the sleep medications compared to those who didn't. And we see this signal over and over again.

People have been trying to figure out if we can find a perfect sleep medication for a long time. So, there were barbiturates, which were quite dangerous, then benzodiazepines. Then there were the non-benzodiazepine z- drugs that were touted as being more safe. Now, there are melatonin receptor agonists and orexin receptor antagonists. So, all of these are available on the market.

But the question is, "Is there really an ideal sedative medication?" And if you look closely at the graph, and I'll kind of walk you through it, if you want a perfect sleep medication, it's something that you should be able to take right around the time that you sleep. It has to act fast, because you don't want to take the sleep medication in the evening, and then it starts erratically working at some point in the evening when you're not ready to sleep. So, it has to act fairly quickly, but it also has to stay in the body long enough to keep you asleep and magically disappear in the morning. And there is really no such sleep medication because the ones that are very short acting often are out of the body halfway through the night. And the ones that are really long acting can stay in your body the next day and cause hangover like symptoms. And these are the ones that cause cognitive clouding faults, motor vehicle accidents. And the other key thing to remember is, in older adults, it can take much longer to clear the medication compared with the same medication in someone who is younger. And many of these studies were actually done in younger adults. And so even the information on the insert may or may not apply to you.

So, if we want to look at this another way, so, this is a table. On the left, you see a list of different types of sleep medications. And the T_{max} is the time that the drug takes to reach peak levels in your blood. And the half-life is the amount of time it takes for half the drug to be metabolized and eliminated from the body. And you can see that many sleep medications, even if they have a short time to peak, actually have a really long half-life. And some medications, like diazepam, which is Valium, can stay in your body for hundreds of hours, and this tends to build up over time. So, you can see how these medications can cause a lot of harm. But it gets more complicated because now that people are afraid of some of the benzodiazepine medications, because they've heard about it and how harmful they can be, older adults are getting prescribed antidepressants and antipsychotics as off label sleep medications, and these can also result in significant harm. So, it's important to try to avoid these as well, if possible.

[36:55 How do alcohol and cannabis affect sleep?]

Dr. Sophiya Benjamin: What about alcohol? Many individuals like to have a drink before they go to bed. So, alcohol has very specific effects on the sleep architecture. Alcohol is a very powerful inhibitor of REM sleep, and it stays in the body for about 5 hours, at which point it gets metabolized, and then it causes a REM rebound. So, our sleep architecture is a little different at that time. And people wake up, and people who experience this will often say, I wake up at three and I'm wide awake and I can't go to sleep. And usually that's a pattern that we see when people are using alcohol to sleep. Sleep apnea can be made much worse with alcohol, and so can restless leg syndrome.

Cannabis and sleep. This is becoming very popular these days, and many individuals take cannabis for sleep. There are some preliminary studies that show that, yes, it can decrease the

time it takes to fall asleep. But again, it's based on the formulation. We don't know what the exact doses are often and whether it's THC or CBD. What we do know is that it does suppress slow wave sleep significantly, and this is the restorative part of sleep. Many people who use cannabis to sleep will say they don't dream at all, because it causes complete REM suppression. And REM is an important part of when we consolidate memories, when we process emotions. So, if you don't have REM, then even if you are sleeping, your quality of sleep could be quite different. And a recent meta-analysis, a review, found that there's actually very low quality to no evidence that cannabis even works, and that in some conditions, it can actually worsen sleep. The other cautions are it can cause daytime impairment, it can cause impaired driving. There's potential for falls. Some individuals, especially with THC, can experience psychotic symptoms and it is a drug at the end of the day and it can interact with other drugs as well. And finally, after using it for a prolonged period of time, it can cause withdrawal and it can cause a rebound insomnia.

[39:30 What resources are available to help with insomnia disorder?]

Dr. Sophiya Benjamin: So, we're going to talk about a few resources. This is an excellent website that is Canadian by David Gardner and Andrea Murphy in Dalhousie, Nova Scotia, mysleepwell.ca. They have a ton of resources. So, I would highly recommend going to this website and exploring information about CBT-I. We actually have a couple of handouts that they developed that we are going to be sending you.

This is another great website. This is by the American Academy of Sleep Medicine (sleepeducation.org). They have a public-facing part of their website where they provide a lot of education about all the different sleep disorders. It's a little harder to navigate compared to sleepwell.ca.

If you are the type of person who prefers to read a book, this is an excellent workbook for CBT-I, 'Sink Into Sleep'. This is by Dr. Judith Davidson from Queen's. And this is another book option, 'Quiet Your Mind and Get to Sleep'. This will also be in your handout.

If you would like an app to supplement the work that you're doing to track your sleep, to enter information about your sleep rather than in a sleep diary, CBT-i Coach is a free app. It's evidence-based and they don't collect any personal information. You don't have to pay for it. It was developed by the Veterans Administration hospital system in the U.S., but it's publicly available and anyone can use it.

Similarly, SleepEZ is a digital interactive CBT-I course that was also developed by the Veterans Administration hospital system that anyone can access, and it guides you through all the CBT-I steps. So happy to take questions and have discussion at this time.

That was a great overview of an important topic. I've been trying to keep up and answer as many questions as possible in the Q and A section. I do want to talk a little bit about some of the questions that were presubmitted and we also have a few more to cover in the Q and A.

[42:00 Are there medications that are known to worsen insomnia?]

Dr. Anthony Levinson: So, one of the questions that was sent in was "Are there medications that are known to cause or worsen insomnia?" So commonly prescribed medications and some of the examples that were thrown out were things like blood pressure medications or heart medications. Any ones that you'd like to highlight from that standpoint?

Dr. Sophiya Benjamin: Yeah. So, there are several medications that can affect sleep and even the ones that we think don't affect sleep do affect sleep. So, a common example is antidepressants also suppress REM. They can make restless leg syndrome worse. So, the broad advice that I would give is, if you have a sleep disturbance, then looking at your medications with a pharmacist or with your doctor is an important step. It's also important to look at the timing of when you're taking medications. So certain medications have to be taken in the morning because they can be activating. And, like stimulants are a really good example that if you take it in the evening, you won't be able to sleep. It's like having caffeine late in the evening. So those are examples of medications that is important to take note of. But talk to your pharmacist and talk to your physician about your individual list and how it might be affecting sleep.

Dr. Anthony Levinson: I am always a bit surprised, too, at how many people drink quite a bit of caffeinated coffee in the evenings and don't necessarily make the connection with either insomnia or anxiety.

[43:44 Are melatonin and magnesium effective for insomnia?]

Dr. Anthony Levinson: We had quite a few questions related to melatonin and magnesium. So maybe we kind of deal with each of those separately. But melatonin people were asking questions about, "Is it effective? Can I take it on a daily basis? What would be the recommended dose and any long-term problems with use over time?"

Dr. Sophiya Benjamin: Yeah, so melatonin is so commonly available that almost everyone seems to be taking it at some point. But there's actually no evidence for melatonin in insomnia disorder. What melatonin is actually used for is jet lag and in some sort of circadian rhythm disorders, which we didn't talk about because they're not that common. So, it's really not for regular use. It's a one off if you're trying to reset your clock, because it's a hormone that our brain secretes when it's dark and it's affected by light and dark. And the other thing to remember about any supplement is what you're getting may not be what the label says, and that's been shown in studies. So, dosing a supplement is not always easy. And many of the doses that are on over-the-counter shelves is way more than your brain would secrete. So, they are very supraphysiological doses that you probably shouldn't be taking.

Dr. Anthony Levinson: What I will often recommend for people is same thing. There's not a lot of good evidence to support it, but if you want to give it a try, use a reputable supplier of the vitamin or supplements and treat it as a trial for a limited period of time. I am always struck like in the hospital setting where I work, the melatonin is very liberally ordered. And I think in part it is a recognition that sleep in the hospital setting when there's noises and lights is so

challenging, and it may represent a safer alternative than some of the other sedative hypnotic drugs that you highlighted in terms of the adverse effects.

What about magnesium? Any comments on magnesium?

Dr. Sophiya Benjamin: Yeah, so magnesium seems to be all over the popular media. However, there's a recent meta-analysis that looked at magnesium in older adults for sleep, and they only found three studies that met the criteria. And there were a total of about 130 something older adults that were included in the meta-analysis and they actually didn't find evidence for it. So disappointing. But if someone is taking it and it may be just having a placebo-like effect, so there isn't a lot of evidence for it, unfortunately. T

[47:10 Are over-the-counter sleep medications bad for you?]

Dr. Anthony Levinson: We had some questions or comments related to over-the-counter sleep medications. And also in that same vein, "What about Gravol? Is it bad for you?" There was one person who posted that they've been using kind of like a half-dose, and they find that they tolerate it well without side effects. But I would say many people do have adverse effects to over-the-counter sleeping medications. I think we talked in the last webinar about antidepressants and many of them having anticholinergic side effects. So many of the drugs, like Gravol, have that same side effect that can cause confusion or light-headedness or other adverse effects. But any other comments about over-the-counter sleep medication?

Dr. Sophiya Benjamin: Absolutely. Please don't take Gravol for sleep.

Dr. Anthony Levinson: Yeah, well, this person's having a good experience with it, so I didn't want to rain on their parade, but that was certainly my experience with patients is not good longer-term. Many people do run into adverse effects, especially those effects on memory.

Dr. Sophiya Benjamin: Because it can cause confusion, it can cause delirium in many people, it can cause urinary retention in some. So, someone in college might be able to take Gravol here and there and get away with it, but when you're much older, it can really cause some significant side effects. And instead of taking Gravol, I think it's better to speak with your physician because there may be some alternative medications that actually have lower side effects.

[48:54 Can meditation help with falling asleep?]

Dr. Anthony Levinson: Some of the questions about non-medication strategies. You did speak a little bit about relaxation therapy, but what about "Can meditation help in falling asleep?"

Dr. Sophiya Benjamin: I think if it works for the individual, then that's great. Meditation alone has not been shown to fully reverse this. I think understanding the way insomnia develops and then reversing it is probably more effective than just pure relaxation therapy. But there are many individuals who don't have insomnia who like to meditate for ten minutes before bedtime. And it's a soothing routine and it helps them. By all means, continue doing it.

Dr. Anthony Levinson: And I think as far as what you talked about in terms of maintenance or good sleep hygiene, I think often people do recommend sort of the wind down time. So, I think some people use meditation as part of their wind down time.

One of the other questions related to cognitive behavioral therapy for insomnia or CBT-I, "How do you know if you have a good clinician or a good practitioner, a good therapist, or a good app? What are some of the ways to know if you have a good therapist?"

Dr. Sophiya Benjamin: Yeah, so the apps and the digital CBT-I modules, we've curated them, and we know that they are evidence-based. The therapist is a harder question because I have a hard time finding people who do CBT-I, even though it's not a very complicated, it's not even as complicated as doing CBT for anxiety or CBT for depression. And that is something that we are working on at a provincial level at this time to try to make it more widely available. But that is a big barrier, not having enough therapists.

Dr. Anthony Levinson: Yeah, I think probably some of the resources that we've mentioned. Doing a little bit of reading around some of the free resources and the app would at least help you to know that these are the principles of CBT-I. And my practitioner is sort of using that approach.

[51:21 What are the effects screentime, reading, or using audiobooks before falling asleep?]

Dr. Anthony Levinson: Some of the questions that came up around screen time or sleep hygiene, "What are the effects of screen time, reading, or audiobooks on sleep in terms of before falling asleep?"

Dr. Sophiya Benjamin: Yeah. And I think each of them have different effects. So, with screen time, you're exposed to light. And melatonin, which our body naturally secretes, is a response to darkness. And so, when we expose ourselves to bright light just before sleep, it can affect your circadian rhythm, which your homeostatic drive might be able to overwrite, but not always. So, it's not a good idea. Reading, if it's relaxing, that's great. Audiobook if it's relaxing, that's great. Sometimes I get into reading books and then I can't stop. That disrupts my sleep. So, it's individualized, I would say.

Dr. Anthony Levinson: Reading boring books really crucial here. Yeah, that's right.

[52:18 What should I do if I have to wake up in the night to urinate?]

Dr. Anthony Levinson: We had a few questions for people who have to get up in the middle of the night to go to the washroom to urinate, and it disrupts their sleep. So, any suggestions for people where sort of waking up in the night to go to the bathroom is a disruptor?

Dr. Sophiya Benjamin: Yeah. So, the first thing is it's very common in many older adults. I hear this often. Some strategies are to limit drinking fluids after a certain period of time in the evening to decrease the likelihood. If the person has incontinence, then actually, pelvic floor physiotherapy is a really good option to try to strengthen those muscles and to help not have to urinate multiple times. Some of the medications that are used for it can also cause confusion, so it's better to try, similar to CBT-I, actually, pelvic floor physiotherapy has a lot of evidence for increasing the ability of the bladder to retain urine.

The other issue is if someone has hypertrophy of the prostate and they are having multiple small episodes of urination, then that's something that has to be treated in a different way.

Dr. Anthony Levinson: For others to probably making sure that they schedule or go to the washroom before they go to bed. That can help a little bit as well.

Dr. Sophiya Benjamin: Definitely.

[53:53 Should I be napping?]

Dr. Anthony Levinson: I know you did allude to napping a little bit. There are sort of mixed statements in the chat. Like some people say, "Jeez, when I nap, I feel like I have a more restful sleep than when I sleep at night." Is it always a negative? I think for sleep hygiene, one of the recommendations is don't nap during the day, be physically active to tire yourself out. But is napping always going to adversely affect sleep at night?

Dr. Sophiya Benjamin: So, it affects one's homeostatic sleep drive. However, sleep does vary by individual. So, a lot of this advice is for people who have difficulty sleeping. So, if the individual naps and they're sleeping, great. Sure. I think that's probably, like many cultures have nap in the afternoon and it doesn't affect them. I think there's nothing wrong with that. But once it starts affecting your sleep, then these are things you can do to make your nighttime sleep better.

[55:02 Is there an association between sleep disorders and dementia?]

Dr. Anthony Levinson: You mentioned the association between REM sleep behavior disorder and some of the dementias. There was a more general question about whether sleep disorders are common with dementia, and if so, why is that?

Dr. Sophiya Benjamin: Yeah, so this sort of bi-directional relationship has been shown multiple times, and there are more recent studies with large populations showing that people who've had poor sleep over long periods of time are at higher risk for developing dementia.

People are also finding that sleep architecture changes quite early in cognitive impairment. It just may not be something we are recognizing now. So, I think that field is really evolving. And also, the other clear association is people who are using sedative medications have a much higher risk of cognitive impairment.

[56:04 How is a sleep assessment done by a health care professional?]

Dr. Anthony Levinson: Can you say a little bit about what, there were a few people asking about how they would get assessed at a sleep clinic, and I did type in some responses about who works there, but maybe say a little bit about what is the experience like in a sleep lab. What would a sleep consult kind of look like in that sense?

Dr. Sophiya Benjamin: Yeah. So going to a sleep lab may be different from a sleep assessment with a physician. So, I might assess someone for insomnia, but I actually don't work in a sleep lab. I work in a clinic, in an office. So, it can happen in different ways in different places.

Often people go to a sleep lab for diagnosing specific types of disorders. So, sleep apnea, you need a sleep lab study. Though, actually, people find that that's a barrier for many to have to go to a sleep lab. And now they are trying to do studies where you can do the same type of test at home and give the results and still qualify. So that is in the works. There are other types of sleep lab tests that happen during the day, called an MSLT test, that would be specifically for narcolepsy. But basically, the individual goes there. There are different types of monitors that are fitted on them, and then they have to sleep there, which it can be not an easy sleep experience, but it's important to monitor for these things. And so that's how it's done. Yeah.

Dr. Anthony Levinson: And typically, the person will have the kind of sleep lab with the assessments, usually the sort of electrodes and electrophysiologic things attached, monitoring breathing and brainwaves. And then there'll be a follow-up with the consultant, who is usually somebody who has additional a physician with additional training in sleep medicine. And they will interpret the history, the physical exam, as well as the findings from the sleep lab to hopefully come up with a diagnosis and a treatment strategy.

[58:18 Are wearable devices accurate in tracking sleep metrics?]

Dr. Anthony Levinson: There was another question about the accuracy of wearable devices that track sleep metrics. So, for example, I think the Fitbit has sort of sleep measures, the Apple Watch and some of the other wearable devices. Are they accurate? Are they helpful? Do you have any recommendations with respect to wearable devices?

Dr. Sophiya Benjamin: Yeah. So, the current recommendation from most sleep experts is that the routinely or commonly available devices like the Fitbit, they don't actually track sleep accurately. They often track movement, which may or may not directly correlate with sleep, and then it gives readings of sleep stages. So, for many who are anxious about their sleep, it actually makes it worse and there are studies that have tried to validate sleep diary versus actigraphy. But when you see actigraphy, often these are specific devices that sleep studies use, not the regular Fitbit or Apple Watch. I think it may be great for tracking your physical activity and tracking other health habits, but it may not be the best choice for tracking your sleep.

[59:38 What is the role of hormones in insomnia during menopause?]

Dr. Anthony Levinson: There was a question, both presubmitted and also in the Q and A about the role of hormones in insomnia. For example, kind of perimenopause and postmenopause. The question in the chat previously was whether or not insomnia was associated with the menopause. And I did answer back that it's actually one of the more common symptoms and it doesn't always get better post menopause, but anything more with respect to hormones and their role in insomnia?

Dr. Sophiya Benjamin: Yeah. So, people experience a lot of symptoms during menopause that can cause acute insomnia. So just like a hospitalization, except this is much longer, where people are waking up multiple times in the night, they're having hot flashes, they're not able to go to sleep. So, it can really be a precipitant to developing insomnia. And the part that's key is even if the primary precipitant is treated and, say, the hot flashes are treated with a different treatment, if they develop chronic insomnia, that has to be treated separately. So, the hot flashes might go away, but the insomnia might become chronic. So that needs to be treated.

Dr. Anthony Levinson: There is evidence that's where the role for CBT-I would come in again, right?

Dr. Sophiya Benjamin: Yeah. And the same is for pain or any other sort of precipitant that causes people to have disrupted sleep that becomes chronic would have the same principles.

[1:01:18 Are there medical conditions that can cause insomnia?]

Dr. Anthony Levinson: And I think that it's a really good foundation there, too, because one of the other questions was, are there medical conditions that can cause insomnia? And, absolutely. Like insomnia symptoms, anemia, iron deficiency, electrolyte disturbances, heart failure, pain, depression, bipolar disorder. There are a large number of conditions, medications that can cause the symptoms of insomnia. And if that persists for long enough, it can become this more chronic insomnia, in which case, addressing both the underlying medical issues and using something like CBT-I for the insomnia would be beneficial. There was another. Sorry, go ahead.

Dr. Sophiya Benjamin: I just remembered something when you said the list of disorders. So, while CBT-I is recommended for primary as well as insomnia, that's comorbid with other disorders, bipolar disorder is one of the conditions where we really have to be careful with sleep restriction and monitor very closely because restricting sleep in bipolar disorder can precipitate mania. It's a very small population compared to all the people who have insomnia, but just caution there.

Dr. Anthony Levinson: Well, I feel like we could go on forever here and there's, I think another as fast as I can try and type answers in the Q and A, there's another 60 questions. I think we did our best to try to cover off as many as we could. And I do think there are people even in the

chat in the Q and A saying we need to have another session on sleep apnea because of how common and important that condition is.

But before we go, I do want to just quickly remind people about the McMaster Optimal Aging Portal, source of evidence-based information, and we will also be posting the recording from this webinar on the Portal. You can subscribe to email alerts, you'll find out about future online events, e-learning, and recorded webinars as well. We have continuously updated evidence-based blog posts and evidence summaries. Recordings are posted as videos as well on the Portal, and we also have lovingly handcrafted e-learning, including our recent dementia risk reduction series and content on various conditions and mobility. And our recordings will be available from these sessions on both the Alumni Association YouTube channel as well as our Portal's YouTube channel.

So once again, I want to thank the Alumni Association, thank all of you for joining us, and especially thank our guest, Dr. Sophiya Benjamin. It's been great having you, and thanks for a great webinar.

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