



Podcast Transcript

Music in Health and Healing

Episode 1 – The Beneficial Effects of Music on the Brain

The following transcript has been lightly edited for clarity. Elite Learning does not warrant the accuracy or totality of audio transcriptions provided by an independent contractor resulting from inaudible passages or transcription error. An occasional transcription error may occur.

Guest

Margaret-Ann Carno, PhD, MBA, MJ, PNP-AC/PC, ATSF, FAAN

- Dr. Carno is a Professor of Clinical Nursing and Pediatrics at the University of Rochester, School of Nursing.
- She currently directs the RN to BS completion program at the school, along with an NP practice in pediatric sleep medicine.
- She has a Master's in Business Administration along with Master's in Jurisprudence in Health Law Studies
- Her nursing background is pediatric critical care and with post master's certificates as a Pediatric Primary Care Nurse Practitioner and Pediatric Acute Care Nurse Practitioner.
- She has also taught graduate ethics and public policy and undergraduate ethics.

Host

Leana McGuire, BS, RN

- Over 30 years of experience in healthcare
- Teaching experience in leadership development and executive coaching
- Background in content development, visual performance, speaking and podcast hosting

Transcript

(SOUNDBITE OF MUSIC)

LEANA MCGUIRE, HOST: Could music therapy be a beneficial tool to add to your non-pharmacological intervention's toolkit? Researchers are finding that music therapy has many benefits in the realm of health and

healing, from reducing stress and promoting relaxation to reducing anxiety levels before surgery more effectively than prescription drugs. Music therapy has been used to treat pain and multiple mental disorders such as anxiety, depression, and post-traumatic stress disorder. It has also been proven effective in dementia, Parkinson's, Alzheimer's, and even autism.

We are glad you are joining me for this series on music in health and healing, where we will discuss how music is used in Western healthcare to promote physical and psychological healing and to improve quality of life in neurological conditions.

(SOUNDBITE OF MUSIC)

McGUIRE: Welcome to our podcast on Music in Health and Healing. This is going to be a great topic for everyone. Our subject matter expert today is Dr. Margaret Carno, professor of clinical nursing and pediatrics at the University of Rochester School of Nursing in Rochester, New York. Welcome, Dr. Carno.

MARGARET CARNO, GUEST: Thank you so much. I'm really excited about talking about health and music in healing.

McGUIRE: Yes, I'm excited about this, too. This is so intriguing to me. Now, you know, this sounds like a silly question because we all have our own concepts. But what exactly is music and what are the basic components of music?

CARNO: Okay. So first, before we start talking about music, we really have to discuss what is sound. So, with sound is something that makes the air vibrate with a pressure wave and then these particles keep vibrating and keep pushing other particles along until they hit our tympanic membrane. And the start of it could be the plucking of a string, the blowing in an instrument, our own vocal cords.

Um, so there's a whole bunch of different ways that these pressure waves can be started. And then how fast the pressure wave is, is what we call the frequency, which we measure in cycles per second. So, they're called Hertz and those determine the pitch. So, if it's faster, it is a higher sound than if it's lower.

McGUIRE: Oh, okay.

CARNO: And as humans, we really can only hear about 20 and 20,000 hertz with our best area of hearing between 205 hundred excuse me, 25,000 hertz.

McGUIRE: Wow.

CARNO: You know, that's why they have dog whistles. Dogs hear differently than cats, then humans. Now as I said, the frequencies, the pitch, the amount of energy are what we call decibels, and that's the loudness.

McGUIRE: Okay.

CARNO: So, start so basic from starting with that is when you think about music, we have rhythm. So, you know the beat tone, which can be a steady sound pitch which we just talked about. The frequency quality is called timber or timber depending upon. And the way the notes, the rhythm, and a melody are put together is what we call music.

And really all music is, is a collection of sounds in a time, in a way that expresses feelings and ideas. There's color when you think about it, when you think about the different tones or different instruments that are used, it's used for communal practices along with personal enjoyment. And we associate pitches and certain note phrases with certain feelings.

So, when you think about the sweeping orchestral pieces of any Harry Potter movie, for example. Right, or that those two-note opening phrase of Jaws, or even the Rights of Spring, you know, those invoke feelings. And it's interesting there's been some there's been a lot of information on music and health healing by the biology of it.

And the real thought is that music is the rhythmic driver, meaning that the rhythm helps the body to sync up, become synchronous. And so, and this is how it helps with stress reduction and promotes empathy.

McGUIRE: Oh, wow.

CARNO: So, you know, it affects a wide range of things that we will talk about as we go through this podcast. And we have to remember music is the one thing humans do that affects all the brain.

McGUIRE: All the brain. So, all the brain. So that's interesting. I didn't realize that was so effective. Let's talk about the physiology of that. So how does it affect the brain? And can you walk through how all those areas are? That'd be great.

CARNO: Sure. So, our frontal lobe really, you know, when we think about it, we think about emotions and regulation. That's music enhances the function. And we'll talk about that more when we talk about traumatic brain injury. But yeah, music enhances that, and our frontal lobe helps with the pleasure. Our temporal lobes, if it is a song, the left interprets the words, and the right interprets the sound.

McGUIRE: Wow, that makes sense when you say it like that. I just never thought of it.

CARNO: Broca's area is where we start feeling about the music. The Wernicke's area is how our brain analyzes and enjoys the music, even the occipital lobe

McGUIRE: uh huh.

CARNO: Some people can listen to music, close their eyes, and actually see the rhythm or the melody with their closed eyes. Or some musicians can actually see the notes. So, really it increases dopamine in parts of the brain similar to the levels that you get when you ingest cocaine. So, we're talking real pleasure symptoms. It affects the amygdala.

It controls pleasure. The hippocampus actually increases neurogenesis in the hippocampus to produce new neurons and improve memory. The hypothalamus acts right on that. That's where we get our decrease in blood pressure, increase in heart rate, or if it's fast music that revs us up, it can increase blood pressure and heart rate. And then interestingly, it also increases dopamine at the putamen area, which is where our responses to rhythm is of the brain.

And we'll talk about it a little more. But we can use music in patients with Parkinson's at a certain rhythm to help them walk, help their gait be better. Be less at risk of falls. The problem with that, though, is we haven't been able to extend it longer than the time of listening to music.

McGUIRE: Sure. Oh, wow.

CARNO: But that is, you know, a quick rundown of all the different areas where music affects the brain.

McGUIRE: Wow. That's really impressive. The Parkinson's scenario in particular, that really does speak to how the brain is affected by it now. And they do say it can soothe the savage beast, right? I mean, yes, isn't that the expression? So, when it is calming and it does feel like it's decreasing your blood pressure, it actually is.

CARNO: It is. And it also decreases your respiratory rate. So, the sound processing actually begins in the brainstem. So that's where your heart rates control, your blood pressure, your respiration. And it also decreases cortisol production. It makes the body relax. And there's been published studies, one well, 2016 where they actually played music in a surgical ICU and it decreased heart rate, blood pressure, both systolic and diastolic, respiratory rate and increased oxygen saturations.

McGUIRE: That's amazing. Wow. Everyone should be doing that. That's really something else. Now, it's interesting because I think there's some level you can, you know, correct me if I'm wrong on this, but I think there's some level of preference that's associated. I'm thinking of a scenario. My brother loves classical music, and I would be I stayed at his place, and he played it at night to help him sleep.

And it wasn't calming. It wasn't like Bach. It was like, you know, that the coyotes chasing the roadrunner kind of going back to our first introduction to classical music. Right?

CARNO: Music. Oh, yeah,

McGUIRE: Absolutely. But I and I found it. I found it really annoying. But he found it calming, which is interesting, right?

CARNO: Yes. I mean, when we talk about music and we talk about whether it be calming or stimulating, you really have to take preference into account. For example, I am in a rock band. Yeah, it's a little side project.

McGUIRE: That's fantastic.

CARNO: Besides teaching. I've been into music. The reason I'm so interested in this is because I've been an amateur musician my whole life.

McGUIRE: Yeah, myself as well as you can see my little.

CARNO: I see the guitar.

McGUIRE: Yes, I've learned a lot already.

CARNO: So, it really talks about preference, rhythm and the rate. I mean, if it is at a nice 80 beats per minute, that's going to help you slow down as opposed to a song that's at 120 beats per minute. But that 120 beats per minute may help you with exercise, you know, to motivate you to do exercise to get you going.

So, you can actually use music both to calm you and to stimulate you. And that's what the beauty is.

McGUIRE: Yeah, no kidding. No kidding. Okay. So as for using it in health and healing, is there some historical basis to this or what can you tell us about when this started?

CARNO: Yes, there is some historical. What we do know is that the first Bone Flute that was found, it was found in France between, and it was made between 20,030 thousand years ago.

McGUIRE: Goodness.

CARNO: So, we're talking, you know, early in human civilization. And when you think about it, the person making it had to figure out how to blow into it, where to put the holes. And, you know, so it encompassed everything of brain and development. And muscle memory. There is some early work. They have just unearthed these letters from Bologna in the 14th century when musicians would be sent to people's homes to try to help them with their melancholy and other diseases.

Now, it didn't help, obviously, with any infectious disease process. However, the patient reported feeling better and there's even a report in the 1700s. In 1871, John Jackson, who was a British neurologist, actually used music to help a child speak. The child couldn't speak but could sing the words. And so, there's a lot of historical reference to using music, maybe not directly in health, but still to bring that communal and that healing process.

McGUIRE: Isn't that fascinating? Then he couldn't speak, but he could sing. And we know there are several cases of people who have severe stutters, but when they sing, they're fine.

CARNO: Yes.

McGUIRE: That has certainly arisen. Mel Tillis being one of them, if I remember correctly. So, I know it's been used for neurological conditions. So, can you talk more about that piece?

CARNO: Okay. So, as I mentioned before, there's been a lot of work in Parkinson's in helping patients with Parkinson's to move at a regular rate and to lose the tremors. And multiple studies have shown that it improves gait, it improves stride length, cadence, and velocity with the cueing. So, it's almost like the brain just is like, oh, okay, this is the rate and rhythm I need to be walking at.

And that becomes the rate and rhythm the person walks at, which is amazing.

McGUIRE: It is.

CARNO: And there's it also has shown to improve mood. We know with Parkinson's that there are some mood swings and mood issues. And whether it's because of the dopamine or just because having a chronic illness. But we have seen where it has helped with mood. So, there was a study published in 2020 that when the person a person with Parkinson's deemed the music as pleasurable, they had a much higher improvement in their gait than when it was just like a steady monotone, like a metronome or unpleasant music.

Also has been used in patients with Tourette's to decrease the tics and it's both self-reported and observed. And finally in children with autism there's been some small pilot work that has demonstrated a decrease in their stereotypical behaviors and compulsive behaviors.

McGUIRE: That's really interesting. So obviously, when you talk about how it can alter a mood or help alter a mood, it can also help people express a mood. I'm assuming as well. You know, I'm just thinking of times when I'm thinking of teenage angst. I think we've all had it. But there were times when you were feeling certain things and if you played the music, it helped you work through the mood as much as it did, as much as it has the power to change your mood.

And I'm sure that's why there's a lot, you know, why angry music is popular with people who are angry because it helps. Am I going down a rabbit hole here?

CARNO: No, you're not. Yeah, but we have to be careful, because when we think of some music that we might consider angry, like thrash metal and sure. That really, you know, 200 beats a minute if you look at the words to that also, it is not it's anger, but it's not. It's more, it's not anger at a person.

It's more helping the listener release their anger.

McGUIRE: Right. Okay. Got it. Got it. Yeah, that's fantastic. I mean, I'm the power that it has is amazing. I've already learned so much about this. What about degenerative diseases like Alzheimer's or dementia? Does it help with that?

CARNO: Yes, it does. There have been multiple studies that show have demonstrated it decreases agitation, some anxiety, depression, and earlier stages of degenerative brain diseases, improves psychological symptoms. Early it can actually boost cognition, memory, and motor function along with quality of life. Now that is early in the degenerative process. What we do know is even toward the end of the Alzheimer's continuum or dementia continuum, patients still respond to music that they grew up with.

They will start singing it or at least moving to it. And this is people who have no other, who do not interact with their environment. So, they're just sitting there at the severe end of Alzheimer's. But when they hear music of their generation, they start to sway to it, sing to it, move to it. Smiles come out on their faces.

There's even a YouTube video. Not that that's the best in evidence based. However, it was a 98-year-old ballerina, Russian ballerina, and they played Swan Lake for her, and she had been totally disengaged. She started to move her hands in the way she would have danced to Swan Lake.

McGUIRE: Oh, wow, that's beautiful. Yeah. Are there any since. Go ahead. Sorry.

CARNO: Go ahead. I'm sorry.

McGUIRE: No, you carry on. Go. Okay. Are there any theories on why that's the case?

CARNO: They feel that couple of reasons that those memories are very, very still very deep in the brain, in, you know, the limbic system, the amygdala. So not in the cortex that's being destroyed, but very deep in what some biologists called the reptilian brain. You know, that very deep, the amygdala, the hypothalamus, all those things that we need to live and breathe and survive.

They also with dementia does not affect the cerebellum. When you look at dementia patients, their cells are not affected. What's affected is the connection between the cerebrum and the cerebellum so that connections gone. But the actual movement part of the brain is now gone.

McGUIRE: Wow.

CARNO: And there have been studies that have even demonstrated that it music will calm patients with dementia better than any other non-pharmacological method.

McGUIRE: Wow, that's really impressive. I was wondering if it had something to do with the while you've mentioned that that the cerebellum. I was wondering if it had something to do with the fact that we use every part of our brain to process it. That all the other ones are still able to on some level, yes. Process, even if.

Yes. Communication isn't happening. It's fascinating.

CARNO: Yes. Because, you know, as I mentioned before, you know, we're talking about the amygdala. The hypothalamus, you know, we're talking deep brain structures.

McGUIRE: That's incredible.

CARNO: So, yes.

McGUIRE: From what I know, while you are the subject matter expert on a lot of things and we're grateful that you are, but I know that your main expertise has been pediatrics, correct? Have you seen it used or practiced in pediatrics?

CARNO: Yes, we do use it a lot. My background is actually in pediatric critical care. So that's why the physiology is, you know, I understand quite well for distraction during painful procedures or even getting blood drawn

there. Some people will use it to help decrease nausea, you know, just to kind of block the thought of that constant nausea, just to kind of like relax the patient.

So, we have seen it in in that. We've seen it in neonatal intensive care units where soft music is played, the premature infants, their heart rate decreases to a normal level. Blood pressure is at an appropriate level and especially someplace like that that's quite loud. And but to have that calming music. And think about it.

What do parents do to their newborn baby? That's one of the first things they do. So, I sing to them.

McGUIRE: That's true. Oftentimes while they're pregnant. Yes, there is that. I've heard that, too, exposing the fetus to music or singing to the singing to the baby. That's really.

CARNO: Interesting. Yes, it is. That we still need a lot more research on. But still it. The baby does hear the mother's voice.

McGUIRE: Right? Right. Wow. The research piece of it, doing the research must be fascinating for people that are involved on that level.

CARNO: Yes. Yes, very fascinating.

McGUIRE: Wow.

CARNO: A little hard because, you know, there is that subjective part of music. Sure.

McGUIRE: But yeah. So, what about pain control? Would it help with that?

CARNO: There have been a number of studies that showed adults in ICUs where listening to music activates actually both mu receptors. So, what we use for opiates, along with release of endorphins. So, you know, obviously it has to be music that the person enjoys. But it can really increase the sense of pleasure, decreases the sensation of pain can cause decrease in release of all the stress hormones that you don't need to have running around in it when you're in the ICU and that decrease in cortisol levels will last a little while.

So, it's not just immediate while you're listening, it will last a little while. And there was actually a meta-analysis done not too long ago. I actually personally know one of the authors and they demonstrated they looked at all the research out there and in this meta-analysis they actually demonstrated that 20 to 30 minutes is the golden amount of time to listen to music to help with pain.

Less than 20 minutes did not significantly change the pain scores, at least in the studies that they looked at.

McGUIRE: Hmm. That's interesting. And that's not to say that you stop at 25 to 30, you can continue, but you need to get to that point, is what you're saying.

CARNO: Yes, right. Yes. You need to get to that point.

McGUIRE: So, this really speaks a lot to nursing intervention when you think about it. Even, you know, if you have a patient who's intubated, you can ask family members what their favorite music is. And it doesn't have to disturb the masses if you had like, you know, earbuds or something and tested the volume first, of course. Goodness, we don't want to blast them out of the room.

CARNO: Yes.

McGUIRE: Yeah, but that's fascinating.

CARNO: And think about it, with childbirth, mothers are encouraged to listen to their favorite music, bring what you know calms them.

McGUIRE: Right.

CARNO: So, it you know it's being used, and we know it works it's just now the research is catching up with what we've been doing for a very long time.

(Sound bite of music)

McGUIRE: Yeah, yeah, it may even. Of course, this is entirely theoretical, but it may even help the baby through the birthing process. If it's music in the room, who knows? I'm just throwing stuff out there because that would be a really hard thing to figure out.

CARNO: That would be.

McGUIRE: Hard to be subjective with a newborn. Yes. And they're going to cry regardless. So, there you go.

CARNO: Well, and we want them to cry.

McGUIRE: Yes. Oh, yes, we do. Maybe we should play music they don't like. No, I'm kidding. Sometimes bad music can make me cry. So, there you go. Again, it's perception. One person's great calming music is another person's not so much.

That is all the time we have for episode 1. We hope you will join us for episode 2 as we continue the discussion on the culture and history of music and take a deeper dive into how music is used to treat traumatic brain injuries and other mental health disorders. This is Leana McGuire for Elite Learning with Colibri Healthcare.

Episode 2 – The Positive Effects of Music on Health and Healing

(Sound bite of music)

McGUIRE: We are so glad you could join us for episode 2 of our series Music in Health and Healing. In episode 1 we spent time understanding what music is and how it affects every part of the brain. We also discussed a meta-analysis study where the researchers found that 20 to 30 minutes was the golden amount of time needed to listen to music to help with pain. In this final episode of the series, we are going to focus on how music was used in other cultures, the effect that music has on mental health conditions, and even its influence on empathy.

CARNO: And it can if it can decrease the amount of pain or anxiety, think about all the medical pharmacology we could save our patients from needing.

McGUIRE: I've already heard of it being used for these mental health conditions such as depression and anxiety before. But can you elaborate?

CARNO: So, as I said, we've talked about depression and anxiety. There's actually been studies that have demonstrated in using it with patients with schizophrenia. Now, when we think about schizophrenia, we were thinking on the much more severe end of the mental illness continuum, but it has been shown to decrease the symptoms of affective flattening, poor social interaction, and in the general lack of interest.

So, it exhibited strong, pleasant feelings, and overall improvement of quality health. I mean, it's not going to decrease the need for psychopharmacology. However, if we can decrease the amount of drug or actual drug we have to give and or supplement it with, you know, music therapy, that would be great.

McGUIRE: Oh, yeah, absolutely. Is it practiced or is I mean, is it a common practice to use it on psych units? Is that happening that you're aware of?

CARNO: Not that I am aware of and not that I can really find in the literature.

McGUIRE: Okay. Gotcha. And again, I guess because it's subjective, it would have to be a headphones thing anyway.

CARNO: Yes.

McGUIRE: Yeah. Interesting.

CARNO: Yes, yes. But we also we haven't talked about situational depression. We've talked about overall depression.

McGUIRE: Right. Let's.

CARNO: They have found in adults after surgery that, you know, after major surgery that when those patients select some music, it does improve their depressive scores. And this is both those going into surgery without any depression and those going into surgery with a major depressive disorder.

McGUIRE: Wow. Isn't that amazing? Very interesting. So now can it be used with people who have traumatic head injury?

CARNO: Yes. Yes. And the literature is really growing on that. There is now music-based rehab for patients after traumatic brain injury. And it uses a couple of things. It uses both music as a way to calm the patient and also to increase executive function, increase neuroplasticity, as we talked about before. And also helps with emotional regulation. So those are just some things that listening to music can do. When you incorporate some very simple musical techniques, such as playing a hand drum or shaking, you know, a musical instrument or beginning to play a recorder that actually improves the feeling of accomplishments and also stimulates portions of the brain to start working together and making new connections. So that as the person is going through rehab, that the person can do more and more because of the neuroplasticity, you're making more improved connections that are going over what has been damaged. And know just that sense of regaining some function in life. Sure. Also singing with our traumatic brain injury patients can help with speech acquisitions.

McGUIRE: Wow! There is that again.

CARNO: So, if the speech centers are damaged, it can help with that. And there's also some evidence that shows it even helps with white matter increasing white matter, not just gray matter of the brain. So, increasing the structural components of the brain. We're going back to speech and singing. I think that some of the most famous videos of this are when the former House of Representative Gabby Giffords was shot.

In the head. There were multiple videos when she got to rehab of the speech therapists using singing to help her regain her speech back. And there's a lot of data demonstrating music-based rehabilitation is really important with patients with traumatic brain injury of all sorts, whether it's car accident, gunshot wounds, stroke, I mean, all those types of brain injuries. It really, really helps with.

McGUIRE: So, it's interesting. I had a friend several years ago who had a traumatic brain injury. He told the story of several times of how he really had no memory of the incident or after the incident, but kind of woke up in a group therapy where they were throwing a beach ball back and forth. And he kind of came to and from that moment on, he could play music and he never had prior.

So, I don't know if that would be indicative of a certain area of his brain being injured, but he played and I'm not saying he was a virtuoso on any of these, but he played three or four different instruments and he had never had any interest or been or ability prior to that. Is there anything you can share regarding that or is that...

CARNO: That has been reported in the literature a number of times and the reverse where somebody who was a musician got part of the brain damage that you wouldn't expect to affect the ability to play music does. A couple I mean for more popular literature Dr. Oliver Sacks, who is since deceased he was the basis for Patch Adams and

Oh, the awakening. With Robin.

McGUIRE: Brilliant.

CARNO: So, he was a neurologist and a musician, and he published a book called Musicophilia. And there's a couple of it was from his neurological practice and there were a couple people that had been injured somehow, some way, and they developed musical abilities. One person had been struck by lightning.

McGUIRE: Wow.

CARNO: And yeah, it's a fascinating book to read. It's a quick book to read. But he really describes a lot of it because he worked with a lot of patients who had some sort of traumatic brain injury.

McGUIRE: Can you repeat the name of that for our listeners?

CARNO: The book Music Philia Music u s c i p h i l a

McGUIRE: got it

CARNO: and it's Oliver Sacks. S a c k s.

McGUIRE: Okay. I'm writing it down myself. And if our listeners have not seen The Awakening or Patch Adams, that I mean, those are great films. They're really, really well done. Okay, let's talk about cultures, different cultures. Are they using it for health and healing or what can you tell us about music across our great planet here.

CARNO: Of music has been used for centuries in healing rituals, whether it's healing rituals for the individual or for the community. And it can be singing, chanting, drum circles. You know, people don't think of drum circles as music, but that's music. Some cultures still use music to induce a trance like state, to summon the spirits that they want to summon certain spirits, get certain music.

It has been a way to preserve culture and healing practices in cultures that have had to move, whether because of natural disasters or being forced to move. So, there's really no cultures that I could find that didn't somehow incorporate music as a health and healing ritual, huh? I mean, you can think about when you go to a Baptist church, there's a lot of gospel singing to bring that community health and healing.

The first health and healing music was chant, and that's where Gregorian chant. And our classical music started.

McGUIRE: Right

CARNO: So, there are lots of different cultures, different rhythmic dances. So, you have to have some sort of music to do the rhythm dance, the rhythmic dances, you know. So, there's a lot of ways that music has been used. And what's hard about some of it, when we discuss ancient, it's because it's like stories have come down, you know. We have cave paintings, and they actually think some cave paintings where it's just a person holding a bow, but there's no animal is actually a representation of the bow being used for music.

You know, you pluck the string.

McGUIRE: Yeah.

CARNO: Thus, you get, you know, all of our string instruments, right? And the lyre and the lute and all of those. So, it is in some ways hard to look at because, you know, it is not written down.

McGUIRE: Sure. And what's the expression about common language or music? Is the language there's something on the tip of.

CARNO: Music is the universal language.

McGUIRE: That's it. I knew it was in there somewhere. You pulled it out of me, or I pulled it out of you to help me. The universal language. Because it really is. It's. It crosses all and even I mean, you talk about cultures that speak different languages and you can walk into France, and they'll have a karaoke and singing American songs.

I mean, even if they don't necessarily understand the words, it's just it's the music, it's the feel, it's the association. But also, I think being open to listening to music from different cultures is I mean, you know, you're an amateur musician and I know I do this. I don't know what you do. But I'm really open to listening to what other people, including Gregorian chants, just to see and get a feel for that.

And it's amazing how it evokes calmness or emotion just through the notes, right? With classical, you don't need lyrics, you don't need them.

CARNO: And there's different styles when we think of more Western music, our traditional classical music, but there's also all the Eastern music. It uses a totally different scale. And there are lots of people that watch Old Bollywood movies. And some of the newer ones are using more of the Western scales, but a lot of them are using still use the eastern scales, which evokes different expressions in people.

And that also goes to preference because if you are not grown up listening to that type of music and that style of music, it might seem very harsh to you.

McGUIRE: Yes. Yeah, right. Right. Is there any evidence or that you're aware of any way that opening your mind to different types of music can help with cognition or just.

CARNO: Helps with cognition because it is still developing all those different connections with the neuroplasticity. The other thing though, it increases empathy. How you see the world.

McGUIRE: Yeah.

CARNO: And how do you view others. Right. By listening to a wide variety of music. Music is an expression as we talked about anger, culture, personal beliefs, anger at a system, you know that that's how it all. And it all evolves and it's all related. You can trace all the different styles of music back and forth, but it really is that universal language that everybody knows.

And most people like something of music.

McGUIRE: Yes, that is true. An interesting project, maybe not related to health and healing. It is in a way though, because I think that we have music in the background or we watch a movie and they use music to evoke emotion, but we're really not paying attention to that so much. But it really does have an effect. I had a project in college where I had to watch a movie blindfolded and it was actually, I had to go to a physically go to a theater and watched an entire movie.

A friend of mine went with me because I, you know, couldn't find my way. I had to remain blindfolded throughout the whole thing. And afterwards she said, how was it? And I said, that was an amazing soundtrack. And she said, oh, I didn't even notice the soundtrack because my brain was focused on the music. It was an entirely different experience, and I felt every emotion that was going on in the movie, even in the scenes, with no dialog, right?

So, we're not really aware.

CARNO: That is correct. I know for me, one of the soundtracks that really evokes that I could not watch physically watch the movie but listening to the soundtrack was Steven Spielberg's Schindler's List. John Williams and Itzhak Perlman used that emotional connection of music.

McGUIRE: Yeah, that's yeah.

CARNO: to help. But you're right to blindfold yourself instead of watching like an Indiana Jones movie, you know where the chase scenes are. You know when the love scene is, you know, and that's all subtexts. I mean, and this isn't how with health and healing, but marketing, there's research in marketing and how to get people to spend more money in grocery stores.

And how to target buy your demographics, what music you should be playing in your grocery store in your, you know, convenience store.

McGUIRE: Right. Somebody understands the connection between the brain and music quite well. Yeah.

CARNO: Yeah, yes.

McGUIRE: Well, and the fascination with it being healing is just it's just fascinating to me that, and I'm thrilled that it's being used in practice in a huge way. So, one of the other things that I was thinking about was, was just that relationship, again, with the brain in music, in how you can be somewhere and hear a song from your past.

And it literally can transport you right to another place.

CARNO: Yes. And that's that memory, that's that real deep memory in the brain in those older sections of the brain and music evoking those feelings and those emotions and triggering the cortex to really look at what the situation was back then.

McGUIRE: So, it would be smart for us as nurses with intervention or any health care professional, really. Again, to find out from a family member or the patient themselves what their favorite pieces of music are that calm them. I think it would probably also be smart of us to ask our loved ones what's their favorite music? Because you never know, right?

At some point. I mean, yeah, someone could ask me, my brother, my brother's favorite piece of music, and I would I'd be hard pressed because his classical is not classical that I would listen to. Just because it evokes completely different feelings in me. But I think that would be a smart thing to know.

CARNO: It is. I actually have been involved with the university I work with, and it has a children's hospital and their pediatric sedation service. When kids come in for whether it's shots, blood draws, or some other painful procedures, if they enjoy music, they will ask them what their favorite music is and have the family bring it in to see if that will help decrease either the anxiety or the amount of sedation the patient needs.

And we're learning a lot about that whole block of pain perception. I'm blanking on the exact term, but, you know, we're people are starting to use virtual reality.

McGUIRE: Mm. Right.

CARNO: With music and you know, it's, it's great.

McGUIRE: Yeah. Yeah. Do you find I mean if I walked into a community hospital tomorrow, I highly doubt that I would see music being used, incorporated into the healing process. With, with the patient population there, is it happening in research hospitals or educational hospitals that you're aware of?

CARNO: In some places. Yes, we actually did one of our DNP students did it in one of our MICUs, and they were instituting it in our MICU. I'll be honest, I think because of COVID, it's kind of dropped off because of the cleaning and.

McGUIRE: Right.

CARNO: But if people bring it in, if they bring their own in like if they know their first scheduled surgery or scheduled procedure or they are allowed to use it.

McGUIRE: Okay. That's good to know. I guess it wouldn't hurt to use it during a procedure, I guess, unless it was a sterile situation, and they didn't want it in there.

CARNO: Yeah.

McGUIRE: You know, anything? Biopsy, colonoscopy, anything you could bring your music in for.

CARNO: Oh, yeah.

McGUIRE: And it has definitely an effect on animals. So, it means all our brains are different, but not that different on a lot of levels. So, we've seen cases where it calms them as well.

CARNO: Yes. Yes, that is correct.

McGUIRE: Wow. I I'm this stuff really excites me. Again, having played music, it excites me as it does you. I know. And I think it would excite anyone from a caregiver perspective, correct?

CARNO: Oh, yes. Yes. Because it's something you think of, it's something easy that a caregiver could do to help whomever. So, whether they are sitting next to their loved one's bedside, you know, bring in some way of listening to music softly. If they have a single patient room or, you know, check, make sure that the volume is not too high on earbuds or headphones when they're home, you know, if they're taking care of a dementia, you know, one of their loved ones is one of the different dementias playing the music that they love will maybe help calm them, also relax the caregiver because the person isn't so anxious. And the caregiver can also take a deep breath.

McGUIRE: Right. It's a win-win. Yeah, absolutely. And I can think of instances when I worked in ICU where we had patients where either the family were distant and hadn't arrived or they didn't have family that we were

aware of. And would it be, do you think, advantageous to experiment with different kinds of music? In that case, if you had no one to give you, you know, you can't say what's their favorite music could you find...

CARNO: It would depend upon how stable.

McGUIRE: Sure, sure.

CARNO: Okay. You know, you could probably guess by age.

McGUIRE: Oh that's.

CARNO: A good. I mean, I hate to be put ageism in here.

McGUIRE: That's relevant. That's relevant. Absolutely. I wouldn't want as we're of the nineties played while I was trying to calm down. It's just not my era. Now I've dated myself. Everyone's going okay. Not that they thought I was in my nineties anyway, but yeah. Yeah. Well yeah. That's a really good point. Yeah. On age I was thinking maybe you could experiment with different types of what you perceive to be calming music, but it could.

CARNO: Do that.

McGUIRE: Too. But the age, that's a really relevant piece. I mean.

CARNO: Yeah.

McGUIRE: It's reality.

CARNO: There are apps that have calming music on them that we know, you know, a certain beat, certain tone, certain pitches, certain melodies do calm almost everybody.

McGUIRE: Right. I think our spa channel on Sirius XM or something like that. Yeah. That would be really interesting. This is very practical. I love this information not just because there's so much research related to it. Again, it's a win-win on every level for everyone involved. I don't see a negative unless there was actually something played that caused.

But if you notice the heart rate going up and them getting more anxious, then you just stop it. So, I see I see no negatives related to this. Obviously, there's been a lot of research and it's been around for potentially 35,000 years that people have been wanting to make and share those sounds. That it would be really helpful from a nursing perspective to pay attention to that.

Add that as part of your care plan to find out what their music is and encourage them to listen to that.

CARNO: Yeah, I mean, it's simple, it's easy.

McGUIRE: It's free in most cases.

CARNO: And it can if it can decrease the amount of pain or anxiety, think about all the medical pharmacology we could save our patients from needing.

McGUIRE: Yeah, yeah. And it and I think you you've mentioned this earlier, it takes about 25 minutes to 30 minutes for it to have a full effect from a pain perspective specifically. Yes, but you don't have to listen all day. You don't have to listen 24 hours a day, maybe an hour. Here, take it off. Rest and, you know, apply it at another time.

So that's really helpful. Well, I'm fascinated. I think I've said I'm fascinated several times throughout podcast. It's turned out to be my favorite word through all of this. But I think it's really helpful. It's encouraging and it's applicable, it's something that we can all do now and take into consideration. You know, I know it's easy and I've certainly fallen into this where I think, you know, I just don't have time.

I've got a million things going on. But when you think about it, the benefits, and the win-win and really, it's just an inquiry and potentially someone bringing the music in for the patient. So, I love how it applies to dementia and Alzheimer's. I'm sure it applies in long term care facilities, whether they're suffering from degenerative disease or not.

So, I think this is absolutely fantastic information. Is there anything you'd like to add before we wrap up our wonderful podcast on this great topic?

CARNO: And I think we have to remember for ourselves, too.

McGUIRE: Oh, yes. Nice.

CARNO: You know, I mean, we toss around the word self-care all the time. But when we think about it, you know, even for ourselves as caregivers, you know, listening to music that we like.

McGUIRE: Yeah.

CARNO: I mean to us taking the time just to even if it's just in the background.

McGUIRE: Yeah.

CARNO: That's just taken the time for us to listen to what we like. We can get all these benefits too.

McGUIRE: That's a great thing to add. Even if even if and I know it's not we're not trying to control pain necessarily or maybe sometimes depending on the individual, the circumstances. But even when you have your break, I think sometimes we have a tendency to go to this [phone] while we have a break and with that sense of urgency to keep up and not miss anything.

And I think that can actually raise our anxiety level to a certain degree, where if we took that 15 minutes and put our earbuds in and just, you know, closed our eyes and chilled for those 15 minutes, it's amazing how refreshed you can feel after that. So, I'm really glad you brought that up. That's great. Applicable for ourselves as well.

So again, this is a fabulous topic.

CARNO: Thank you.

McGUIRE: It's a fascinating topic. Apparently, according to me.

CARNO: Yeah.

McGUIRE: And we're really thrilled that you shared your expertise with us today. This was extremely informative. Yeah, an eye opening. So, I know our listeners probably gained a great deal from this today, so I thank you genuinely, Dr. Carno, for spending this time with us. We really, really appreciate it.

CARNO: Thank you. Anytime.

McGUIRE: And we thank you for listening. Today, we encourage you to check out elitelearning.com for other courses that we have available. As you work through your career and advance your career hopefully, you'll find that there's a lot more that you can learn on elitelearning.com. Again, this is Leana McGuire for Elite Learning by Colibri Healthcare.

© 2022 Elite Learning. All Rights Reserved.