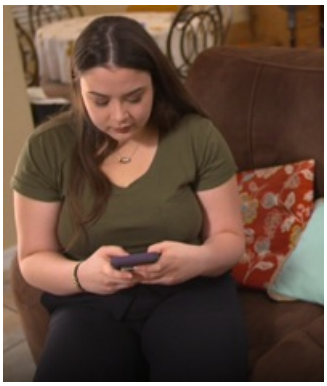
Teens with Obesity Find Artificial Intelligence Coach Helpful in Weight-Loss Program

"Chatbot" feasible and useful in behavioral counseling of obese and pre-diabetic



ORLANDO (May 16, 2019) – Researchers at Nemours Children's Health System have found that an artificial intelligence (AI) behavioral coach, nicknamed Tess (X^2ai, Inc), is feasible and useful for behavioral counseling of adolescent patients in a weight management program. The study, published today in the journal *Translational Behavioral Medicine*, demonstrates adolescents' willingness and positive reaction to engaging in SMS text conversations with the chatbot technology that simulates human interactions.

> *"Everyone is used to AI technology, it's like Siri on your iPhone, so texting with a chatbot isn't that weird. The difference with Tess is that you can actually text her about what you need to achieve or improve your goals and she's encouraging. You can't do that with Siri," said Laura Hernandez, 20, a participant in the study from Davenport, Florida.*

"Nemours uses innovative tools, such as telemedicine health coaching and text reminders, to help patients and families achieve their weight-loss goals, and overcome the time and resource demands of regular office visits," said Lloyd Werk, MD, MPH, director of the Healthy Choices Clinic at Nemours Children Hospital in Orlando. "A natural next step was adding an AI behavioral coach to allow more frequent and shorter interactions to keep patients engaged on the path toward healthier behaviors, as well as provide an extra layer of care outside of office hours."

Nemours collaborated with X^2ai, an innovator in using artificial intelligence for psychological coaching. Nemours clinicians reviewed a library of goal setting behavioral interactions collected over five years. Working with behavioral specialists, the team spent two years pre-populating Tess with hundreds of prompts and responses to counsel obese and pre-diabetic adolescents, including expressions of empathy and compassion for their weight-loss struggles. The chatbot was also customized to interact on the goals of specific individuals, such as a teenage boy who committed to playing basketball to be more active and a girl who shared her interest in cooking and exchanged messages around healthy food choices.

Nemours' Healthy Choices Clinic enrolled 23 patients, ages 9-18, with obesity symptoms to participate in the pilot study to determine the feasibility of adding an AI component to complement existing treatment. Over the course of 10-12 weeks, participants exchanged 4,123 messages with the chatbot in 270 conversations. The chatbot initiated most conversations (73 percent), providing a total of 55 hours, 45 minutes of support, with an average conversation length of 12.5 minutes. Overall, participants indicated 96 percent of the interactions were helpful.

Researchers said the two primary reasons that parents stop taking children to weight-loss programs is the inconvenience and cost of travelling for clinic visits. The chatbot was intended to reduce the dropout rate by providing 24/7 on-demand services to allow participants to engage during off-hours at their own frequency and intensity. Nearly one in five conversations occurred outside typical office hours. The researchers also noted a potential benefit from the anonymous nature of the communication for improving help-seeking behaviors and decreasing stigma of seeking behavioral support. For example, one teen boy who was quiet during face-to-face encounters exchanged 425 messages.

Intensive behavioral counseling is considered a crucial part of effective weight-loss programs. Conversations were screened regularly by a psychologist to detect potential behavioral warnings. However, reading and responding to 4,123 texts would have taken as much as 137 staff hours. Researchers estimate the chatbot provided an estimated $8,933 savings.

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Nemours Children's Health System is committed to investing and supporting prevention services like the Healthy Choices Clinic at Nemours Children's Hospital. The researchers plan to continue this research in to further understand the benefits

and challenges of integrating AI in a clinical weight management program. The study was supported through in-kind efforts from the collaborators in order to test the feasibility of the intervention. In addition to Dr. Werk, authors included Taylor Stephens of the Children and Adolescents Psychotherapy and Technology Research Lab, and Angela Joerin and Michiel Rauws of X2AI Inc., the maker of the chatbot.

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About Nemours Children's Health System

Nemours is an internationally recognized children's health system that owns and operates the two free-standing children's hospitals: the Nemours/Alfred I. duPont Hospital for Children in Wilmington, Del., and Nemours Children's Hospital in Orlando, Fla., along with outpatient facilities in five states, delivering pediatric primary, specialty and urgent care. Nemours also powers the world's most-visited website for information on the health of children and teens, KidsHealth.org, and offers on-demand, online video patient visits through Nemours CareConnect. Nemours ReadingBrightstart.org is a program dedicated to preventing reading failure in young children, grounded in Nemours' understanding that child health and learning are inextricably linked, and that reading level is a strong predictor of adult health.

Established as The Nemours Foundation through the legacy and philanthropy of Alfred I. duPont, Nemours provides pediatric clinical care, research, education, advocacy and prevention programs to families in the communities it serves.

Additional assets available online: Photos (1) Video (1)

https://nemours.mediaroom.com/2019-May-16-Chatbot-Helpful-Weight-Loss-Program