Interview: “This is the only pain management tool that instills a sense of mastery”

By Anne Faulmann, DT

Visits to the doctor can be a distressing experience, especially for children. Procedures that are likely to involve pain, such as vaccinations, blood tests and dental interventions, are stressful for young patients, their parents, physicians and nurses. In order to help children cope with pain and to make visits to the dentist and doctor a more pleasant experience generally, a team of researchers at the University of Calgary have developed MEDi, an innovative robotic pain management tool. Dental Tribune Online spoke with Dr. Tanya Beran, Professor at the Cumming School of Medicine at the university and Founder and Chief Scientific Officer of RaRobots, where MEDi was invented.

Dental Tribune Online: Dr. Beran, how did you come up with the idea for a medical robot to help children cope with pain?

Dr. Tanya Beran: At a child development conference, I saw a video of a teenage boy interacting with a robot. Not only did he show empathy, but he also tried to help the robot. I could not understand why and there was almost nothing in the research. So I started my own, I was surprised to find that children and teenagers tend to think that robots are alive. Now, while working at a children’s hospital, I found it alarming to watch children screaming, struggling, and pleading not to have a needle. I realized that medical procedures need to be easier, faster and far less painful. Then I put two and two together. I thought maybe children would respond to a friendly robot to help them deal with pain.

Could you please explain how MEDi works and what kind of tasks he performs?

We program MEDi with cognitive-behavioral interventions that research shows do work. Some of these include instructions to take deep breaths to relax the muscles, focusing (replacing a negative thought with a positive one), and positive reinforcement (the robot providing a reward). When we teach coping strategies to children, they tend to forget to use them. When we teach them to parents, they tend to use them ineffectively and may even exacerbate children’s anxiety. For example, telling a child that it will be ok can make them angry because to them it is not really true. However, the robot is able to effectively deliver the interventions every time.

Why is MEDi a useful tool during medical procedures, especially for children?

The robot is endearing to children and has lifelike movements. It provides both distraction and pain coaching. MEDi encourages children so they can develop a sense of mastery to deal with the procedure that they can then transfer to other procedures. For example, one mother shared with us that, as a result of her daughter having a blood test with MEDi, for the very first time afterwards, she started talking with her oncologist. The mother believed that this confidence to speak up for herself was due to the positive support her daughter received from MEDi. This is the only pain management tool that instills a sense of mastery.

How can MEDi be of use during dental procedures?

As with any medical procedure, such as vaccinations and blood tests, MEDi can provide the same support during dental procedures that involve a needle. In addition, children have anxiety and fear about medical procedures that are not painful, like having a radiograph taken or an EEG test. MEDi can also work for dental procedures that are not painful to calm nerves, provide comfort, and distract children from negative thoughts and feelings. Our research showed that MEDi increased cooperation from children so the procedures could be completed more quickly and with greater satisfaction from children and their parents.

Has MEDi already been applied successfully in dental practices or have there been any tests regarding MEDi’s effectiveness during dental procedures?

We are looking for a partner in dental practice who would like to bring MEDi in to work with their patients. From our randomized controlled trials, we have evidence that MEDi reduces pain and distress, and we expect to find similar results for other procedures, including dental ones. MEDi attracts patients to clinics. One family drove 60 km for their son to be vaccinated with MEDi, so there could be a competitive advantage for dental clinics as well. Several parents have asked us to create applications for MEDi in dentistry.

MEDi has been developed and tested in Canada. Do you think that it would work in other countries with a different cultural background as well?

MEDi can be programmed with a variety of behaviors and can speak in 20 languages. The words and actions can be selected to be culturally appropriate and highly engaging for children of all ages and developmental abilities. The robot is only limited by our imagination on how to program it!

Contact details available from the publisher.

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