Animations prove effective in accurately measuring pain

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To improve communication about pain between patients and physicians, a team led by researchers from the University of Pittsburgh and UPMC has developed a mobile application called "Painimation" that has the potential to assess and monitor pain better than any previously used measurement tools. Results of the clinical trial were published today in the *Journal of Medical Internet Research*.

"Currently, our only available tools for patients to communicate their pain is to either give them 0 to 10 scales or a selection of words and phrases to describe their pain, methods that have been used for more than 50 years," said lead author Charles Jonassaint, Ph.D., M.H.Sc., assistant professor of medicine, social work and clinical and translational science. "Many pain patients will say their pain can't be measured on the 0-to-10 scale and that it is too challenging to describe their pain using words. As a result, their pain is misunderstood and patients in pain may be prescribed more opioids without always knowing whether they are needed or if they are working."

Painimation is an electronic assessment tool that uses animations to assess pain quality, type and location. With this app, patients are first provided with a selection of animations that they can use to describe the severity of their pain. These animations can then be increased or decreased in speed, color saturation, focus and size to accurately match their pain experience. The app also provides users with the opportunity to label their pain on a human body, allowing them to identify where and how much of their body is affected by pain.

"By using animations, we have the potential to more quickly and accurately understand a person's pain experience, and, more importantly, provide treatments that work and stop those that don't," Jonassaint said.

Jonassaint led a multidisciplinary team that included psychiatrists, technology designers and anesthesiologists as they examined 202 patients with chronic pain—pain more days than not for three months or more. Once the app was fully developed through three phases of testing, the patients used Painimation to characterize the quality and intensity of their pain, alongside the completion of the McGill Pain Questionnaire and the PainDETECT questionnaire, the current standards for assessing pain.

Study results showed that more than 80 percent of patients found the app to be enjoyable, and they would use the app to communicate their pain with their medical care providers. Also, Painimation was completed more quickly than either the McGill or PainDETECT questionnaires, and provided just as much or more information about the type and cause of pain.

"We believe using animations to measure pain can allow patients to not only describe pain sensations in a similar manner to how they experience them, but minimize potential barriers to pain assessment because the effects of language and literacy are taken out of the equation," Jonassaint said. "Further, we can decrease the burden of long, detailed pain assessments while collecting pertinent information on each patient's pain experience through an easy to administer, novel and engaging medium."

"Painimation gives patients an opportunity to describe their pain to physicians in ways not possible with conventional pain rating scales," said Ajay Wasan, M.D., M.Sc., vice chair of pain medicine and anesthesiology at UPMC. "While much development works remains to be done, these early results are very encouraging to the push for better ways to describe the pain experience."

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