

Self-assessing back pain by app just as effective as traditional methods, study shows

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A patient uses an app-based assessment. Credit: University of Warwick

Patients can assess their own back pain using an app on their phone or

tablet as effectively as current paper methods, a new study from the University of Warwick has shown.

The study, published in the open access journal *Journal of Medical Internet Research*, demonstrates that [digital versions](#) of established measurements for assessing [back pain](#) are just as reliable and responsive, opening the possibility for their use by patients for routine measurements and clinical trials.

The researchers see this study as a necessary first step in the greater use of [digital media](#) in [clinical settings](#), in light of recent calls for greater use of such technology by healthcare providers.

For [health issues](#) that can't be readily measured, such as pain and depression, clinicians will often use [self-assessment](#) to monitor change. In most cases, this will take the form of a paper-based assessment. These go through very thorough validation exercises to ensure that they measure what they intend to robustly and accurately.

The researchers created mobile app versions of the most commonly-used measures in back pain trials: the Roland Morris Disability Questionnaire (RMDQ), visual analogue scale (VAS) of pain intensity, and numerical rating scale (NRS). These were developed with support from the University of Warwick Higher Education Innovation Fund with the aim of being used in [clinical trials](#) and for routine clinical measurements.

Back pain is the number one cause of disability globally, affecting up to 84% of people at some point in their lives. It is estimated that it costs the UK economy billions of pounds each year.

Lead author Dr. Robert Froud from the University of Warwick Clinical Trials Unit said: "We have taken existing outcome measures and shown that they can be migrated to digital media and used in that format just as

effectively as their paper-based versions. Our intention is to develop technology that allows people to securely complete these kinds of assessments on their own phones and tablets in a way that is safe, secure and accurate.

"If you can accurately monitor in [clinical practice](#) what's happening to patients' health, then analytically there is a lot that could be done with the data that will benefit patients. For example, we may be able to detect that particular treatment approaches are working better for certain types of people. We hear a lot about machine learning, but a learning healthcare system is perhaps next.

"The implications are quite big because we can aim to scale up. It opens up potential for the development of new instruments and dynamic instruments that adapt to the answers that a user gives. The potential of using digital technology in healthcare settings is quite extraordinary but you can't do any of that without first having assessments that work robustly and well."

Reliability and responsiveness were used as factors to determine whether their apps were measuring in the way that they should be. Reliability refers to the result of the measure not changing when nothing has changed, while responsiveness refers to a change in the result when a measurable factor has changed.

The researchers divided participants in the study into groups depending on whether they had recorded a change in their [pain](#). People who had received treatment for their condition and improved tested the responsiveness of the apps. Those with [chronic pain](#), and less likely to improve, tested the apps for reliability.

Digital tests have a number of advantages over paper-based versions, including their low cost, lower carbon footprint, better information

security and improving the participant's experience.

Earlier this month, a new report from the Royal College of Physicians, "[Outpatients: The future—Adding value through sustainability](#)," called for greater use of already available technology in healthcare.

More information: Robert Froud et al. Responsiveness, Reliability, and Minimally Important and Minimal Detectable Changes of 3 Electronic Patient-Reported Outcome Measures for Low Back Pain: Validation Study, *Journal of Medical Internet Research* (2018). [DOI: 10.2196/jmir.9828](#)

Provided by University of Warwick

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