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## **Development and feasibility testing of clinical decision support tool to aid physiotherapists with diagnosis of low back pain**

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**Background:** The advent of technological innovation is considered a significant improvement in the management of low-back pain (LBP). However, decision support systems (DSS) for patients with LBP remains largely unexplored, despite its potential benefits to service providers and users. A DSS for LBP will help put in order the variety of routine tests and questions the physiotherapist needs to perform and enquire to arrive at a specific diagnosis. The study developed and assessed the feasibility of a clinical decision support tool (CDST) to aid physiotherapists with clinical diagnosis of LBP.

**Methods:** Qualitative and quantitative research methods were employed in this study. The qualitative phase was used for the development of the decision support tool (DST) using a three rounds Modified Delphi approach among purposive respondents including physiotherapists and orthopaedic surgeons. The feasibility testing phase of the developed DST was implemented after a two-week period and outcomes were assessed in terms of engagement, satisfaction, level of motivation and user experience. Descriptive of mean, standard deviation and frequency and inferential statistics of t-test were used to analyse the data.

**Results:** A three-end user (patient, physiotherapist and admin) DST was developed. The most positively rated items were “frequency of usage” (100%), “ease of usage” (60%), “technical support” (60%), and “ease of learning” (60%) System Usability Scale (SUS). The tool had a modified mobile app rating scale (M-MARS) score of  $16.5 \pm 1.00$  before the intervention and  $18.3 \pm 0.57$  after the intervention out of a total of 22.5. Moreover, there were significant differences between participants’ rating of the tool before and after intervention in “information” ( $22.0 \pm 1.87$  vs  $25.4 \pm 1.52$ ;  $p = 0.04$ ) and “total app quality rating” ( $16.5 \pm 1.00$  vs  $18.3 \pm 0.57$ ;  $p = 0.04$ ).

**Conclusion:** The findings of this study show that the developed DST for LBP diagnosis has high usability, quality rating, and change in health behaviour. Also, there was a significant increment in participants’ rating of the tool after use. The implication of this study is that DST could potentially assist with diagnosis in the management of LBP.

**Ethics:** Ethical approval was sought from the Health Research Ethics Committee of the Institute of Public Health, Obafemi Awolowo University, Ile-Ife, Nigeria (Registration number: IPHOAU/12/1396).

**Funding:** There was no funding received in relation to the study.