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TITLE (25 words):
Patient Self-Assessment Tool (BACK-ON-LINE™) for early targeted self-management of low back pain in a workplace: Construct and Discriminate Validation Study

AIM/OBJECTIVE (50)
With high prevalence of low back pain (LBP), combined with an unprecedented waiting time to access physiotherapy, this study objective was to validate a novel, online patient self-assessment tool (BACK-ON-LINE™; BOL), designed for early identification of pain mechanisms (nociceptive [NP] and nociplastic [NC]) likely underlying person's LBP to target early self-management.

METHOD (125 wds)
Between December 2019 and June 2021, 211 people with LBP were recruited from two work sectors (healthcare, transport), associated with high prevalence of LBP, to complete an online BOL self-assessment with 4 subdomains (Pain behaviour, Pain perception, Impact of LBP on work and life). Demographics, pain intensity and duration, days of work absence, Rolland

Morris Disability Questionnaire (RMDQ) and STarT Back were collected. The construct validity was determined using Spearman's correlation test. The discriminant ability and predictive performance were analysed using BOL subgroup characteristics across reference standards (RMDQ≥7, VAS ≥7, Time off work ≥4 weeks, Pain Duration ≥6 months) with STarT Back as a comparator. Ethical approval was gained from the Health Research Authority and Health and Care Research Wales (HCRW) Ethics committee (Ref no:19/HCRW/0035).

RESULTS (150 wds)

150 participants (71.1%) aged 20–61 years completed the survey. The proportions of patients allocated to NP and NC subgroups by BOL were 70.7% and 29.3%, respectively. There were significant differences between NP and NC subgroups in RMDQ, STarTBack scores. Significant subgroup differences were also observed in BOL total and subdomain scores. BOL total and most subdomain scores correlated positively with RMDQ and STarT Back except for the 'Impact of LBP on work' domain. Highest correlation coefficient of 0.66 was achieved with STarTBack indicating a good correlation with high statistical significance ($p<0.0001$). Receiver operating characteristic (ROC) curves indicated good discriminant ability and predictive performance of BOL subgroups across reference standards. BOL and STarT Back instruments discriminated similarly well across the reference standards of disability, absenteeism and pain intensity. With pain duration as the reference standard, BOL scored better to STarTBack (Area under the curve [AUCs]): 0.75 and 0.56, respectively; $p<0.0001$).

DISCUSSION (75 wds)

BOL self-assessment tool was successful in subgrouping working population with LBP based on their pain type. The tool demonstrated high construct validity and discriminate validity equal to STarT Back across most of the reference standards and was better at discriminating patients with LBP over 6 months. Our findings suggest BOL may contribute to the improvement of LBP assessment and potentially support early targeted self-management in workplace.