Chronic Pain and Sleep: assessing the validity and association of a commonly used pain questionnaire

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Background
Chronic pain is a leading cause of disability worldwide and, as one of the prominent societal burdens, it is a major challenge for healthcare delivery. Sleep disturbances are a common complaint in chronic pain patients, and are known to contribute to the severity and maintenance of chronic pain symptoms. The Brief Pain Inventory (BPI) is a well validated self-assessment tool used to assess the severity of pain and the extent to which pain interferes with daily functioning, but only one question assesses the impact of pain on sleep. Other sleep assessment tools may give a more comprehensive insight into the relationship between pain and sleep. The study therefore aimed to investigate sleep parameters in patients with chronic pain, and to compare the BPI with three validated sleep assessment tools: the Pittsburgh Sleep Quality Index (PSQI), the Pain and Sleep 3-Item Questionnaire (PSQ-3) and the Verran Snyder Halpern (VSH) Sleep Scale.

Methods
This was a prospective, pilot cross-sectional survey, recruiting patients from the Pain Clinic in Aberdeen Community Health and Care Village between November 2016 and January 2017. Ethics approval was granted by the Leicester South Research Ethics Committee. Demographic information was collected and each participant completed the BPI and three sleep assessment tools. Data were analysed using non-parametric approaches.

Results
A total of 141 patients were sent information about the study, and of these 51 patients (37 female and 14 male) were recruited. The median [range] age was 53 [18-88] years and the median duration of pain was 6 [1.8-33] years. The median 'average pain' score was 6 [0-10]. Thirteen (25%) participants had mild pain (0-4), sixteen (31%) had moderate pain (5-6) and twenty-two (43%) had severe pain (7 or more) as scored by the BPI. A greater average pain score was associated with an increased sleep disturbance score and reduced sleep efficiency score (Figure 1). Additionally, sleep disturbance increased and sleep efficiency decreased as BPI sleep score increased (Figure 2).

Discussion
This study was a prospective, pilot cross-sectional survey exploring the relationship between pain and sleep disturbances in patients with chronic pain. Participants completed three sleep assessment tools plus the Brief Pain Inventory. It was found that as BPI pain score increased, the BPI sleep interference score also increased and higher pain scores were associated with a greater degree of sleep disturbance and poor sleep efficiency, identified using specific sleep assessment tools. This high prevalence of sleep disturbance suggests a possible role for interventions to address this as part of the routine management of chronic pain.

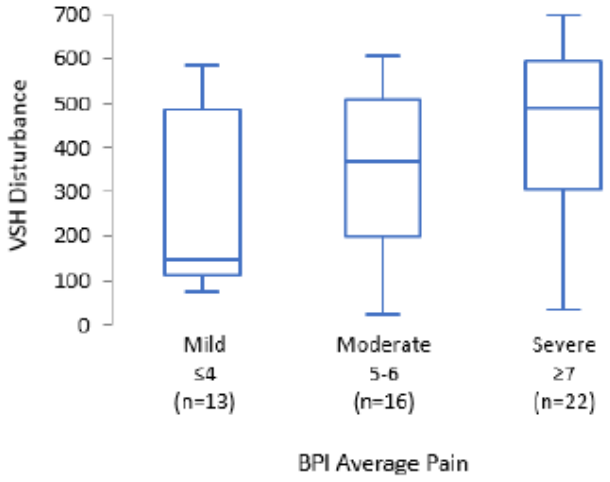

Figure 1

Verran Snyder-Halpern (VSH) Sleep Scale disturbance score by tertile of 'average pain' as measured by the Brief Pain Inventory (BPI), p=0.014. Box and whisker plots show median, interquartile and full range (n=51).

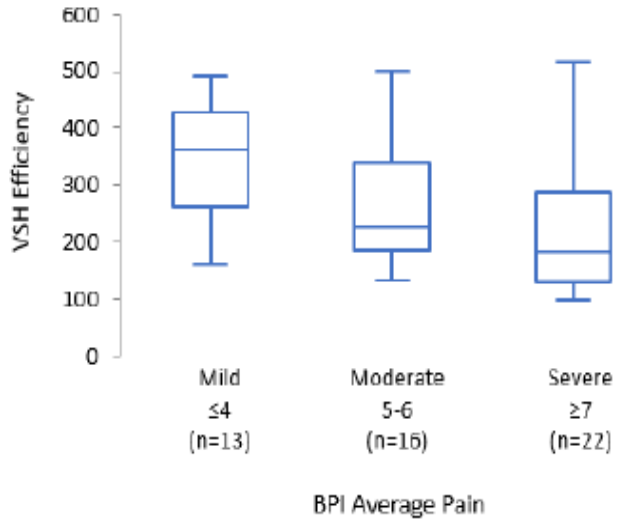

Figure 2

Verran Snyder-Halpern (VSH) Sleep Scale efficiency score by tertile of 'average pain' as measured by the Brief Pain Inventory (BPI), p=0.012. Box and whisker plots show median, interquartile and full range (n=51).