

# Predictors for quality of life in patients with chronic pain: a longitudinal study

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## Background & Aim

- Chronic pain** is one of the most prevalent chronic disease conditions affecting approximately **1 in 5 adults** in Europe.<sup>1</sup>
- Chronic pain **interferes** with **all aspects** of patients' lives, from physical well-being to mental health.<sup>1,2</sup>
- The associated **direct and indirect costs** have been estimated at €200 billion in Europe.<sup>3</sup>
- The **multidimensional nature** of chronic pain makes its effective management **challenging**.<sup>4</sup>
- Pain intensity scores do not reflect how pain affects a person's overall quality of life (QoL). QoL assessments provide a more comprehensive view of the patient's well-being.<sup>5</sup> By broadening the focus beyond just pain intensity, healthcare providers can develop more effective, multidimensional treatment plans that **address the full spectrum** of issues related to chronic pain.<sup>5</sup>

**Understanding the predictors** that contribute to the variability in QoL among patients with chronic pain is important for developing targeted interventions and improving patient outcomes.

- This study aims to examine predictors for quality of life in people with chronic pain.
- 1** Which factors predict quality of life 12 months later?
- 2** Which factors are associated with QOL at any timepoint? Do the relations change over time?

## Methods

The dataset of the Warwick Study of Mental defeat in Chronic pain (WITHIN Study) was used which included:

- Online screening
- Self-report questionnaires (0, 6 and 12 months)

- Assessment of QOL:**  
EuroQol-5 Dimension\*
- Mobility: walking
  - Self-Care: washing and dressing themselves
  - Usual activities: e.g. work, study, housework, family or leisure
  - Pain and discomfort
  - Anxiety /depression

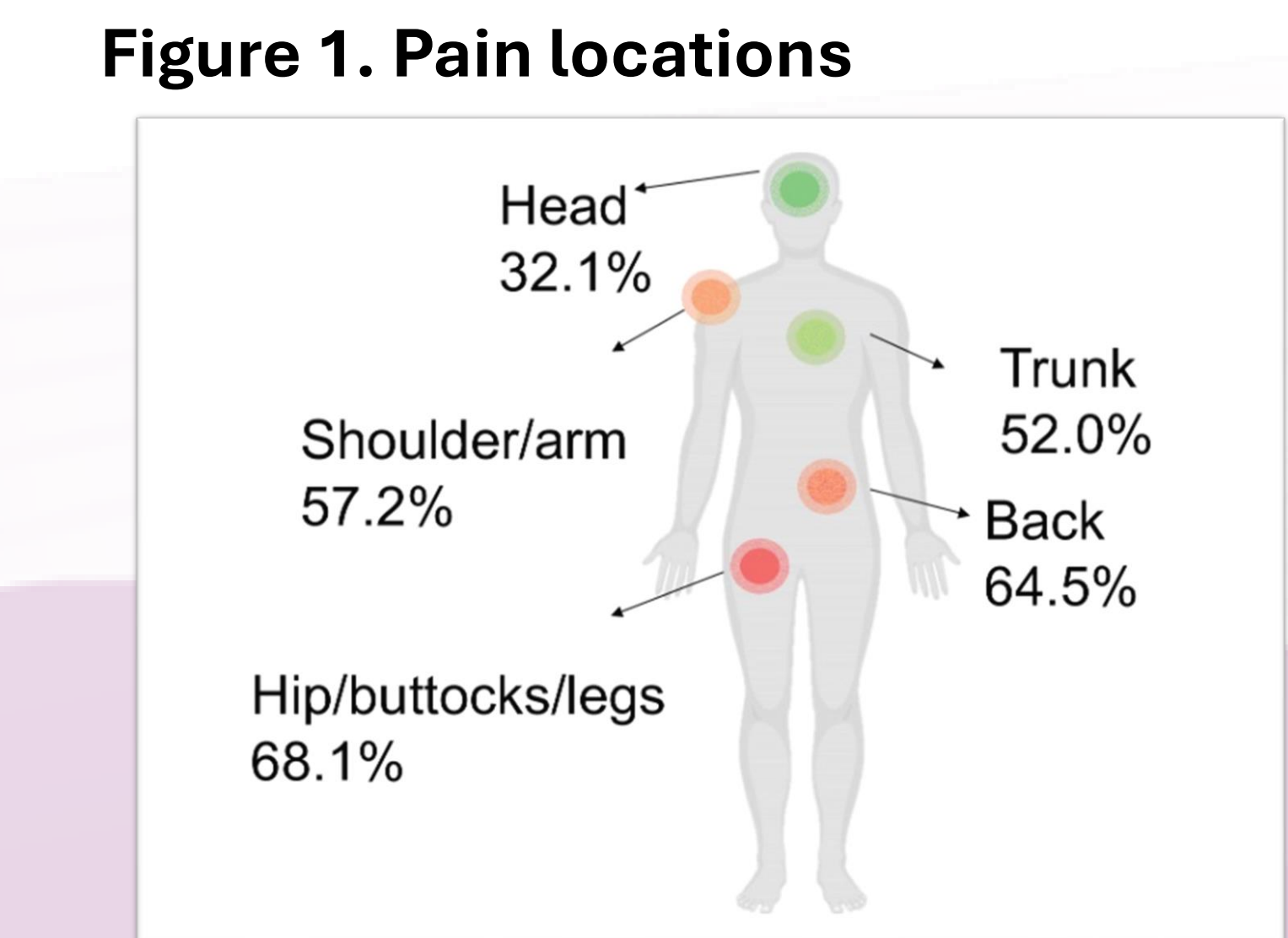
\**(EQ-5D-5L mapped to EQ-5D-3L value sets according to NICE guidelines and utility score normed to UK values)*

**Potential predictors:**

Demographics	Pain variables	Psychological variables & other
- Age - Sex - Body Mass Index - Employment Status - Education - Smoking - Alcohol use - Medication use	- Pain duration - Pain interference - Pain severity - Number of pain sites - Pain vigilance an awareness	- Mental defeat - Activity patterns - Insomnia severity - Perceived stress - Kinesiophobia - Anxiety symptoms - Depression symptoms - Social activity

- Participants:**
- N=527 adults with chronic pain on a stable treatment regime
  - Mean age: 39.9 years
  - 80.4% Female
  - 90.1% White ethnicity
  - Average pain duration: 10.1 years
  - 70.5% repeated the survey at 6 months

- Analyses:**
- Correlations (≥0.8) and VIF (≥5) (Multicollinearity)
  - Linear multiple regression analysis with stepwise selection (Aim 1)
  - Linear mixed-effects modelling (with random intercept) (Aim 2)
    - Best fitting model selected using Akaike's Information Criterion



## Results & Conclusion

**Main results:**  
**AIM 1: Predictors (measured at baseline) for QoL 12 months later**  
Results of the linear regression analyses. Standardized regression coefficients [b] and p-values are presented for all factors in the final model.

- Pain interference with daily activities (b=-.173; p=.012)
- Insomnia severity (b=-.204; p<.001) ⚠️
- Symptoms of depression (b=-.225; p<.001)
- Body-map index score (b=-.089; p=.05)
- Employment status (b=-.120; p=.004) ⚠️
- Pain duration (b=-.095; p=.023)
- Pain severity (b=-.128; p=.033)
- Medication quantification scale score (b=-.086; p=.047)

The regression model explained **46.9%** of the total variance in QoL (Adjusted R<sup>2</sup>= .469)

**AIM 2: Associations QOL & do they change over time**  
Results of the linear mixed model. Fixed effects (unstandardized estimate [B]) and p-values are presented for all factors in the final model.

- Employment status (employed) (B=.060; p<.001) ⚠️
- Pain severity (B=-.037; p<.001)
- Pain interference (B=-.019; p<.001)
- Medication quantification scale score (B=-.005; p<.001)
- Insomnia severity (B=-.006; p<.001) ⚠️
- Depressive symptoms (B=-.015; p<.001)

No interaction effect with time was included in the best-fitting linear mixed model, which suggest that the timepoint did not have any effect on the relations between QOL and the factors.

- Remarks:**
- No interaction effect with time was included in the best-fitting linear mixed model.
  - QoL was fairly stable over time:
    - Baseline Mean: .536, Standard deviation: .271
    - 6 months follow-up Mean: .537, Standard deviation: .264
    - 12 months follow-up Mean: .538, Standard deviation: .284
  - ⚠️ Insomnia severity and employment status are the only factors who do not have any overlap with the QoL domains.

**Conclusion:**  
The strongest predictors for QoL 12 months later in people with chronic pain are pain interference with activities, insomnia severity, and depressive symptoms. Other weaker, but still significant predictors, are the amount of pain body sites, employment status (unemployed), pain duration, pain severity and medication use. Independent of time, pain interference with activities, insomnia severity, depressive symptoms, pain severity, employment status, and medication use are predictors for QoL. **Insomnia severity** might be an important prevention/treatment target considering that it is a strong predictor for QoL and has no overlap with any of the QoL outcome domains.



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**Conflict of interest:**  
The authors have nothing to disclose.