



Introduction

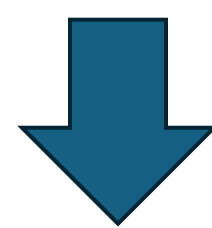
- Chronic pain from degenerative MSK conditions → 20–25% of global years lived with disability (YLDs)
- Conventional care (physiotherapy, NSAIDs, steroids) often provides incomplete relief
- Regenerative therapies (PRP, stem cells, prolotherapy, BMAC) are increasingly promoted as minimally invasive options
- Online marketing claims often **exceed clinical evidence**
- Given patients rely on digital information, accuracy, quality, and readability of online resources on regenerative therapies are critical
- Objective:** Assess online resources on regenerative therapies for quality, accuracy, and readability



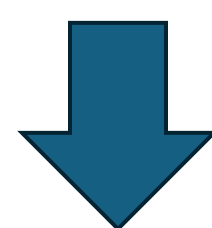
Methods



Online resources identified through the DuckDuckGo search engine.



Two independent reviewers assessed each website using QUEST score, Sandvik score, Gunning Fog Index, and Flesh-Kincaid Grade Level.



Discrepancies were resolved through consensus or by senior reviewer adjudication.

Eligibility Criteria

- Publicly available English content
- Websites presenting information or advertising regenerative interventions for degenerative musculoskeletal pain

Exclusion Criteria

- Websites requiring login or subscription
- Targeting healthcare professionals
- Websites addressing non-pain uses of regenerative therapies

Extracted Variables

- Website characteristics
- Date of access
- Readability (Flesh-Kincaid Grade Level, Gunning Fog Index)
- Quality of website (Sandvik, QUEST scores)

Results

Total websites: 175

QUEST tool

- Most websites scored below 25% on the QUEST tool.
- Less than 10% of sites achieved high quality ($\geq 85\%$ score on QUEST).
- The QUEST tool looks at: clear authorship, attribution, disclosure of conflict of interest, quality of sources, currency, complementarity, and tone.

SANDVIK tool

- Consistent with the QUEST tool, a majority of the sites scored in the poor-fair range (21-50%).
- A small proportion of websites were rated excellent.
- The SANDVIK tool looks at: clear ownership and authorship, source attribution, currency, interactivity and navigability of the site, as well as balance of information.

Reading Scores

- The Flesh-Kincaid Grade Level ranged from 6.6 to 18.3 (median 11).
- The Gunning Fox Index ranged from 10 to 27.6 (median 16).
- Most content was written at the college level.
- Less than 10% of websites met the NIH and AMA guidelines of 8th-grade reading level or lower.

Discussion

- Most online information about regenerative therapies for chronic pain is of **low quality** and **high reading complexity**.
- While a minority of websites offered balanced and transparent content, the majority promoted **unsubstantiated claims** lacking citations, authorship, or conflict-of-interest disclosures.
- These issues contribute to misinformation and **unrealistic patient expectations**. The findings highlight the urgent need for **accessible, evidence-based, patient-centered** digital resources that align with current scientific knowledge.
- Improving online health communication through standardization and readability optimization could enhance patient understanding and support **shared decision-making** in pain management.

References

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