QUANTITATIVE SENSORY TESTING PROTOCOLS IN FIBROMYALGIA: A SCOPING REVIEW

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Background

Quantitative Sensory Testing -QST is one of the most reliable surrogates for measuring Fibromyalgia Syndrome -FMS. Despite its importance, we still have controversies about how to correctly address the evoked responses, as they might differ according to the protocol, individual characteristics, severity of the disease, and other issues.

The variability in testing protocols, coupled with individual differences and the influence of comorbid conditions, can lead to a misunderstanding of the interpretation of evoked responses.

Moreover, understanding these differences is necessary not only for enhancing the accuracy and consistency of research findings but also for more effective diagnostic and treatment strategies in FMS.

Objectives

- To systematically identify how QST protocols are avaliable for evaluating FMS;
- Examine QST protocols and identifying factors that influence their reliability as outcome measures.

Methods

Study design

- Scoping review (DOI 10.17605/OSF.IO/UN69V) updated until April, 2024;
- Databases: Pubmed/MEDLINE, EMBASE and Web of Science;
- No restrictions by date or language.

Litterature search

(("fibromyalgia"[Title/Abstract] OR "fibromyalgia"[MeSH Terms]) AND ("quantitative sensory testing"[Title/Abstract] OR "QST"[Title/Abstract] OR "psychophysical test"[Title/Abstract] OR "allodynia"[Title/Abstract] OR "temporal summation"[Title/Abstract] OR "Pain Threshold"[MeSH Terms] OR "pain threshold"[Title/Abstract] OR "conditioned pain modulation"[Title/Abstract] OR "pressure pain threshold"[Title/Abstract]))

Eligibility criteria

- clinical diagnosis of FMS by ACR criteria;
- adults (+18 years old) both sexes
- at least one psychophysical measurement related to the outcome
- any study design
- low to moderate risc of bias (Rob/Robins)

Results

Our search retrieved 2512 results; after removing duplicates (n= 970), remained 1542 titles and abstract for extration, and after deleting 1313, the final full text reading included 229 articles, which of them 141 composed our final analysis **(Figure 1)**.

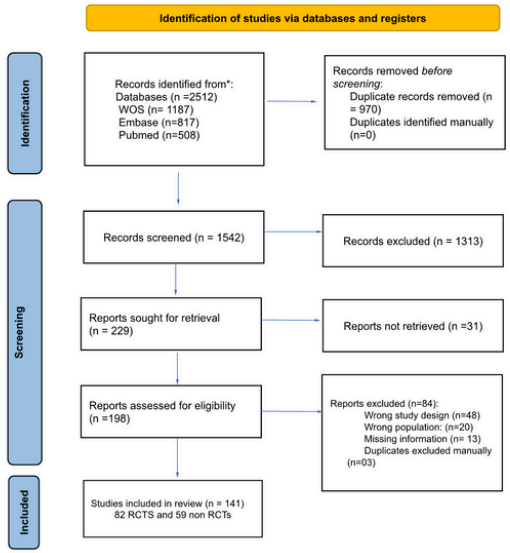

Figure 1. Study flow chart.

Data from the selected studies have been extracted. For analysis, we will consider the method of QST measurement, specifically focusing on parameters such as stimulus type, duration, intensity, temporal summation, and conditioned pain modulation (a centrally processed measure of the effect of the descending pain pathway). Also, due to the number of different methods, data will be categorized into static and dynamic QST.

According to our ongoing extraction, 63 studies applied static QST and 27 studies applied dynamic QST. The most common body testing locations included the forearm, hands, trapezius, legs, and feet.

Table 1. Summary of Quantitative Sensory Testing (QST) Methods Used in Studies

TYPE OF QST	CATEGORY	FREQUENCY OF USE	COMMON TESTING LOCATION
Mechanical Detection Threshold	Static	5	Forearm, Hands, Variable
Mechanical Pain Threshold	Static	5	Forearm, Hands, Variable
Pressure Pain Threshold (PPT)	Static	25	Forearm, Hands, Trapezius, Legs, Feet
Cold Pain Threshold	Static	17	Forearm, Hands, Feet, Variable
Heat Pain Threshold	Static	16	Forearm, Hands, Feet, Variable
Temporal Summation	Dynamic	4	Forearm, Feet, Variable
CPM	Dynamic	23	Forearm, Hands, Feet, Variable

Legend: Quantitative Sensory Testing – QST; Pressure Pain Threshold – PPT; Conditioned pain modulation – CPM.

Conclusions

Our scoping review is still ongoing and has already highlighted several insights regarding the use of QST in the assessment of FMS. Understanding how QST has been measured in the studies found in the literature clarifies the need to rethink the methodologies applied so far for conducting both static and dynamic QST tests.

- A significant variability in QST protocols across studies is noticed, including differences in stimuli type, duration, intensity, and specific methods (static vs. dynamic). This variability can lead to inconsistent findings and complicates result comparisons.
- The lack of standardized methodologies underscores the need for uniform protocols to enhance the reliability and validity of QST measurements, enabling more accurate assessments and comparisons in future research.
- Improved standardization and consistent application of QST can enhance diagnostic accuracy and lead to more personalized therapeutic interventions for FMS patients, ultimately providing a clearer understanding of the disease pathology.
- Further research should focus on refining QST methodologies and exploring the effects of different QST protocols on the diagnosis and management of FMS. Comparative studies evaluating the efficacy of various treatment modalities using standardized QST, for example, could provide deeper insights into effective management strategies for FMS.

Understanding how QST has been measured through studies might shed light on the need to rethink how FMS has been measured and the need for a more careful watch on the results found.