What Are Patients Asking About Neuromodulation?

An Analysis of Common Google Search Questions, Website Quality, and Readability

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INTRODUCTION (WHY THIS MATTERS)

Google's People Also Ask (PAA) feature prominently surfaces health questions and sends users to specific webpages. This study evaluated the questions PAA surfaced for neuromodulation and assessed the linked webpages for source, authorship, attribution, evidence-based information quality, and readability.

METHODS

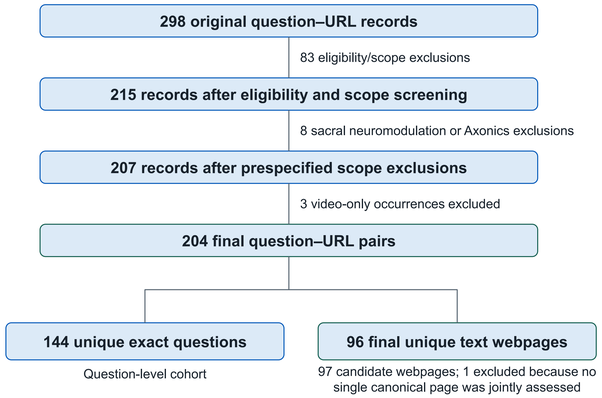
Cross-sectional study. Ten English neuromodulation terms were queried in Google on June 19, 2026, from Rochester, Minnesota, under standardized logged-out and incognito conditions. PAA questions and linked webpages were captured with the Instant Data Scraper Google Chrome extension (version 1.4.4).

Two reviewers independently classified questions by Rothwell category and content theme. JAMA benchmarks assessed authorship, attribution, disclosure, and currency. Brief DISCERN assessed evidence-based information quality.

Question analyses used 204 question–URL pairs. Website source, quality, and readability analyses used 96 unique text webpages after independent review and consensus adjudication.

No human subjects were involved. The Mayo Clinic Institutional Review Board deemed the study exempt from review; informed consent was not applicable.

STUDY SELECTION



STUDY DESIGN

Descriptive cross-sectional study. No hypothesis testing for primary analyses.

No external funding. The authors report no competing interests

RESULTS

Google most often surfaces practical, factual questions about recovery and daily life after neuromodulation.

93.6% factual questions | **34.3% recovery/lifestyle**

However, the webpages patients reach almost always exceed recommended readability levels and show variable evidence-based information quality.

95.8% - 92 of 96 webpages had FKGL above grade 6 | **46.9% - 45 of 96 webpages had Brief DISCERN ≥16**

MEAN READABILITY SCORES

FKGL	SMOG	GUNNING FOG	FLESCH EASE
11.35 ± 2.64	10.69 ± 2.13	12.78 ± 2.17	44.98 ± 13.39

MEAN QUALITY SCORES

JAMA benchmark **2.29 ± 1.10** Brief DISCERN **15.47 ± 4.93**

Flesch Reading Ease: higher = easier
FKGL = Flesch–Kincaid Grade Level
SMOG = Simple Measure of Gobbledygook

LIMITATIONS

- English-language search PAA
- Single location and date
- Google determines PAA selection

CLINICAL TAKEAWAY

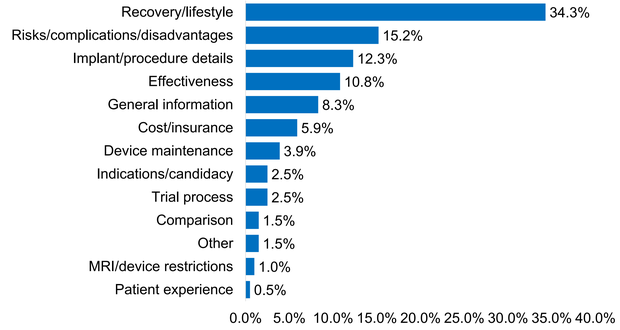
Clinicians discussing neuromodulation should anticipate patient questions about recovery, daily activities, and lifestyle restrictions and provide clear, readable educational resources whenever possible.

FUTURE DIRECTION

Future work should develop and validate vetted resources and test whether directing patients to them improves comprehension and expectation-setting across platforms, regions, and languages.

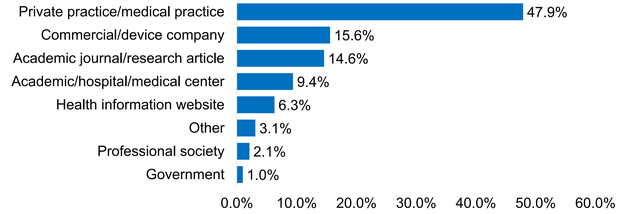
WHAT GOOGLE PAA SURFACED

Theme distribution among 204 question–URL pairs



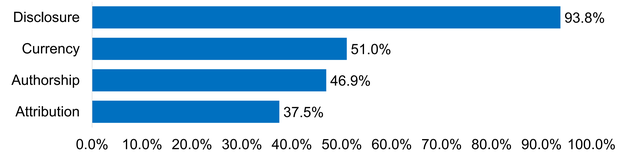
WEBSITE TYPE (WHO PUBLISHED THE PAGE)

Source distribution among 96 unique text webpages



OVERALL WEBSITE QUALITY

JAMA criterion met among 96 webpages; full-cohort descriptive results



SELECTED REFERENCES

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